REPORT

Blackwattle Bay Navigation Study

Precinct Plan Assessment Report

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Enhancing Society Together

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1 Introduction

This navigation study report has been prepared by Royal HaskoningDHV (RHDHV) and on behalf of Infrastructure NSW, to form part of the Blackwattle Bay State Significant Precinct Study (SSP Study). The SSP Study seeks a rezoning for new planning controls for Blackwattle Bay, located on the south-western side of Pyrmont.

Blackwattle Bay presents a significant opportunity for urban renewal across 10.4 hectares of predominantly government owned land less than 1km from the Sydney CBD. NSW Government is investigating the delivery of a Metro Station in Pyrmont and has recognised the potential to transform the Pyrmont Peninsula with a new 20-year vision and planning framework through the Pyrmont Peninsula Place Strategy.

In 2015 NSW Government recognised The Bays Precinct as one of the highest potential urban transformation sites in Australia with the release of The Bays Precinct, Sydney Transformation Plan. Following this, the Minister for Planning recognised the renewal of Blackwattle Bay and the broader Bays Precinct as a matter of State planning significance and to be investigated for rezoning through the State Significant Precinct (SSP) process. Study Requirements for the Blackwattle Bay investigation area (formerly known as 'Bays Market District') were issued by the Minister on 28 April 2017.

A critical part of Blackwattle Bay's revitalisation and vision has been NSW Government's decision to relocate the Sydney Fish Market from its existing location on Bank Street to the head of Blackwattle Bay. This was sought through a State Significant Development Application (SSDA) process and approved in June 2020. The new Sydney Fish Market was designed alongside the baseline Blackwattle Bay studies to ensure that key aspects of the project are consistent with the vision and objectives for Blackwattle Bay.

The outcome of the State Significant Precinct process will be a new planning framework that will enable further development applications for the renewal of the Precinct, connected to the harbour and centred around a rejuvenated Sydney Fish Market. The framework will also provide for new public open spaces including a continuous waterfront promenade, community facilities, and other compatible uses.

This report provides a comprehensive investigation of navigation to address a part of the Study Requirements and support the development of a new planning framework for Blackwattle Bay.

1.1 Purpose

The purpose of this report is to:

- Establish the existing waterway navigation and usage;
- Identify key issues and challenges for precinct planning of Blackwattle Bay; and,
- Develop recommendations to be to be carried forward into the precinct planning of marine infrastructure within Blackwattle Bay.

1.2 'Blackwattle Bay' State Significant Precinct

The Blackwattle Bay SSP Investigation Area ('Study Area') encompasses the land and water area, known as Blackwattle Bay, between Bank Street and the Glebe foreshore shown in **Figure 1**. The land is located within the City of Sydney local government area (LGA).

Figure 1: Location and site plan of the Precinct (Source: FJMT)

The land within the Study Area is approximately 10.4 hectares (ha) in size. It is largely government owned land containing the Sydney Fish Market (wholesale and retail), recreation and boating operations and facilities. There are three privately owned sites including a concrete batching plant operated by Hymix, wholesaler of seafood Poulos Brothers, and Celestino. The Blackwattle Bay land area wraps around the southern and eastern edges of Blackwattle Bay and is bounded by Bridge Road to the south and Bank Street to the east. The Western Distributor road / Anzac Bridge is located adjacent to the eastern boundary before traversing over the northern section of the site. The water area of Blackwattle Bay is approximately 21 hectares.

The location of the existing and proposed Sydney Fish Market site within the 'Blackwattle Bay' investigation area is shown at **Figure 2**.

Figure 2: Blackwattle Bay (Source: FJMT)

1.3 Principles and Vision for 'Blackwattle Bay'

Principles for a future Blackwattle Bay were formed through extensive community consultation in August 2017. These were further developed in 2019, together with a vision for the precinct. Both are provided below. These have guided the development of the Precinct Plan and will continue to guide future development proposals within the Study Area.

Vision:

"Blackwattle Bay offers an extraordinary opportunity to reconnect the harbour, its surrounding neighbourhoods and the city; to showcase Sydney's living culture and stories of Country; to build an inclusive and iconic waterfront destination that celebrates innovation, diversity and community."

Principles:

1. Improve access to Blackwattle Bay, the foreshore and water activities for all users
2. Minimise additional shadowing to Wentworth Park and Glebe Foreshore (in mid-winter) and create new places with comfortable conditions for people to enjoy.
3. Pursue leading edge sustainability outcomes including climate change resilience, improved water quality and restoration of natural ecosystems.
4. Prioritise movement by walking, cycling and public transport.
5. Balance diverse traffic movement and parking needs for all users.
6. Link the Blackwattle Bay precinct to the City, Glebe Island and White Bay and other surrounding communities and attractors.
7. Mandate Design Excellence in the public and private domain.
8. Integrate housing, employment and mixed uses to create a vibrant, walkable, mixed use precinct on the city's edge.
9. Maintain and enhance water uses and activities.
10. Allow for co-existence and evolution of land uses over time.
11. A place for everyone that is inviting, unique in character, socially inclusive and affordable.
12. Expand the range of recreational, community and cultural facilities.
13. Plan for the future community's education, health, social and cultural needs.
14. Deliver development that is economically, socially, culturally and environmentally viable.
15. Embed and interpret the morphology, heritage and culture of the site to create an authentic and site responsive place.
16. Foster social and cultural understanding and respect to heal and grow relationships.

1.4 Study Requirements

On 28 April 2017 the Minister issued Study Requirements for the Blackwattle Bay Precinct. Of relevance to this study are the following requirements as they relate to the preparation of a transport impact assessment, including maritime users:

> ***5. Traffic and Transport***
> *5.3. The [transport impact] assessment should consider, but not limited to:*
> - *Location of existing and future wharves, maritime safety for vessels accessing any wharves / berths that are located in the Bays Market District, including any maritime navigational impacts or considerations,*
> - *Future needs of all water users including recreational, commercial, fish markets and ports users and an outline of how all water users can be accommodated in the future taking into account safety, operational, recreational requirements,*
> - *If a ferry service is proposed:*
>   - *Assessment of the type of ferry service and a forecast of its patronage as part of the integrated transport solution servicing the Bays Precinct and the site,*
>   - *Consideration of the impacts of any proposed new ferry terminal and associated ferry services on existing and future maritime developments within the White Bay and surrounds,*
>   - *Consideration of the impacts on the existing Glebe Island Bridge,*
>   - *Consideration of the impacts and implications on any potential future upgrade of Glebe Island Bridge.*

This report will address these requirements to inform the transport impact assessment (refer **Table 1**). The navigation impacts of the precinct study will be addressed by this report as appropriate for the precinct planning stage. Recommendations regarding potential navigation impacts and mitigation measures will be put forward to be carried through to further refinement of marina and wharf designs and

part of future development applications. A detailed navigation impact analysis would be completed at the development application stage.

Table 1: Study Requirements Reference Summary

Study Requirement	Report Section References	Comment
Location of existing and future wharves, maritime safety for vessels accessing any wharves / berths that are located in the Bays Market District, including any maritime navigational impacts or considerations.	Section 2.4, 2.5, 2.6, 2.7, 3.4	A detailed navigation impact analysis would be completed at the development application stage.
Future needs of all water users including recreational, commercial, fish markets and ports users and an outline of how all water users can be accommodated in the future taking into account safety, operational, recreational requirements.	Section 2.9, 3.3, 3.4, 3.5, 4.1, 4.2, 4.6, 5.0	A detailed navigation impact analysis would be completed at the development application stage.
If a ferry service is proposed:		The nature of the potential future ferry service(s) provided within the precinct is currently unknown and requires further consultation with Transport for NSW and/or other private operators. The nature of the ferry service provided would be dependent on the future selection of a ferry operator and their specific requirements and will be scoped at the next stage.
• Assessment of the type of ferry service and a forecast of its patronage as part of the integrated transport solution servicing the Bays Precinct and the site.	-	
• Consideration of the impacts of any proposed new ferry terminal and associated ferry services on existing and future maritime developments within the White Bay and surrounds.	Section 4.5	
• Consideration of the impacts on the existing Glebe Island Bridge.	Section 4.3, 4.5	
• Consideration of the impacts and implications on any potential future upgrade of Glebe Island Bridge.	Section 4.3, 4.5	

2 Existing Waterway Navigation and Usage

2.1 Tidal Water Levels

Tidal water levels in Sydney Harbour are represented by tidal planes at the Fort Denison tide gauge, and are summarised in **Table 2**.

Table 2: Sydney Harbour Water Levels (MHL, 2012)

Tidal Plane	Chart Datum (metres)	Australian Height Datum (metres)
Highest Astronomical Tide, HAT	2.1	1.18
Mean High Water Springs, MHWS	1.57	0.65
Mean High Water, MHW	1.45	0.53
Mean High Water Neaps, MHWN	1.33	0.41
Mean Sea Level, MSL	0.95	0.03
Mean Low Water Neaps, MLWN	0.56	-0.37
Mean Low Water, MLW	0.44	-0.49
Mean Low Water Springs, MLWS	0.32	-0.61
Lowest Astronomical Tide, LAT	0	-0.93

2.2 Water Depths

Water depths on navigation charts are typically displayed as depths below Chart Datum, which approximates the Lowest Astronomical Tide (LAT). Water depth information (relative to Chart Datum, CD) has been sourced from the Transport for NSW - Maritime Infrastructure and Geospatial Services division and is displayed on **Map 1** (refer **Appendix 1**).

Water depths within Blackwattle Bay are deepest in the middle of the Bay, where depths of up to 7m are found. Water depths adjacent to existing wharf, marina and jetty structures are generally between 2m to 6m.

The shallowest water depths of 0m occur at the shoreline along the eastern side of the Bay and generally deepen to 2m within 10m to 50m of the shoreline. Water depths are around 2m along the shoreline at the head of the Bay and deepen to 4m within 10m of the shoreline. Water depths along the western shoreline of the Bay are generally 2m, with water depths of 3m at the pontoon facilities used by Glebe Rowing Club and Sydney University Boat Club. An anchorage zone exists within the embayment between Sydney University Boat Club and the headland at Bellevue House and has water depths of 2m to 4m.

The maximum water depths in the adjacent area of Rozelle Bay are located along the northern side of the Bay where depths of 6m to 7m are enjoyed by marina facilities including Roads and Maritime Services, Sydney Superyacht Marina and Sydney Boathouse. Water depths at the head of the Bay are shallower and range from 0m along the shoreline to 2m to 4m at the Seawind Catamaran marina facility. Along the southern shoreline water depths are shallower than the northern side of the Bay and range between 2m and 4m in the anchorage zones in the embayments between Bellevue House and Glebe Point and adjacent to Bicentennial Park. A notable shallow water area exists offshore of the entrance to Johnstons

Creek, where water depths of less than 2m extending some 150m offshore are indicated by a north cardinal mark.

Water depths within the marked navigation channel beneath Anzac Bridge are between 6m and 8m, and are around 7m within the navigation channel through the Glebe Island Bridge. Beyond the Glebe Island Bridge water depths increase to 12m on the approach to Darling Harbour through Johnstons Bay and similar water depths exist within White Bay.

In summary, the relatively deep water depths within Blackwattle Bay are favourable for a wide range of boating activities. These water depths are also generally available in neighbouring bays (Rozelle Bay, Johnstons Bay and White Bay). This deep water in combination with sheltering from swell and wind waves found elsewhere in the outer Sydney Harbour, and the availability of flat waterfront land makes the Bays Precinct attractive for siting of industrial, commercial and recreational boating facilities and also the use of passive recreational craft.

2.3 Navigation Widths

A relatively wide navigation area exists within Blackwattle Bay for transit of commercial and recreational vessels. At the entry to the Bay, a 250m width exists between the headland at Blackwattle Bay Park and the foreshore beneath the Anzac Bridge and adjacent to Bank Street. Further into the Bay, special marks delineate the anchorage zone on the western side and a 250m wide navigation area exists to the eastern shoreline. The narrowest width for passage of boats of around 180m exists between the rowing club facilities on the western shoreline and the marinas on the eastern shoreline owned by Blackwattle Bay Marine Operatives and the existing Fish Market.

Beneath the Anzac Bridge the waterway width is around 250m between the facilities at Sydney City Marine and the opposing foreshore. However, port and starboard markers delineating the navigation channel beneath the bridge indicate that a width of 140m is available for navigation.

The navigation width narrows significantly to 18.8m through the eastern portal of the Glebe Island Bridge. It is noted that the western portal (18.7m clearance) of the Glebe Island Bridge has restricted water access due its proximity to the commercial shipping berths at Glebe Island (Berths 1 & 2) (SMEC, 2016). Beyond this point the waterway width opens out to a maximum of 300m within Johnstons Bay and ranges between 220m to 280m on the approach to Darling Harbour.

2.4 Navigation Rules

The Transport for NSW Boating Handbook (TfNSW, 2020) provides boating information for operating on NSW waters including water traffic rules. The “Safety on the Water” section from the Boating Handbook is provided within **Appendix 2** to this report and includes the following sub-sections:

- Know the Rules;
- Navigation Marks and Signs;
- Night Safety;
- Special Areas;
- Big Ships and Small Boats; and,
- Go Easy on the Drink.

The water traffic rules include guidelines on preventing collision and the interaction of vessels, and reference is made to the requirement to comply with the International Regulations for Preventing Collisions at Sea.

The Boating Handbook states the following in relation to Sydney Harbour:

> *Sydney Harbour is a unique waterway that is used extensively by a diverse range of recreational and commercial boats including large ships, ferries, charter boats, cruisers, yachts, runabouts, sailing skiffs, dinghies, sailboards, rowing shells, kayaks and dragon boats.*
>
> *The Harbour is an extremely busy waterway that requires you to be aware of your responsibilities and to take care when boating, especially in busy navigational channels, and make allowances for commercial activity.*
>
> *There is a need to consider paddlers, rowers and sailors as well as accommodating the needs of commercial operators and those wishing to cruise, ski and fish on the Harbour.*
>
> *The number of vessels on the Harbour is increasing each year, providing a greater challenge in managing the potential for additional conflict and incidents to ensure safety on the waterway.*
>
> *There is a continuing need for an understanding and commitment to water safety by all people using the Harbour. The different types of boating may not always be compatible and can lead to potential conflicts: for example, people sailing in organised events and commercial vessels operating to timetables.*

Transport for NSW - Maritime has launched a safety awareness initiative, aimed at the boating community, called 'You're the Skipper. You're Responsible'. The campaign is designed to encourage all recreational operators to take responsibility for their actions on the water highlighting that boat operators, or skippers, are responsible for the safety of their vessel and the people onboard, and that they should keep a proper lookout for other boats, non-powered vessels (including kayaks and dinghies) and swimmers. The information booklet produced for this campaign is included within **Appendix 2**.

The clear message from Transport for NSW - Maritime is that the responsibility for safety rests with the boat users themselves.

2.5 Paddle Safety on Sydney Harbour

In addition to promoting safe operation of motorised vessels, Transport for NSW - Maritime has also launched a safety campaign for passive craft targeted at the use of canoes and kayaks. The Paddle Smart safety campaign (refer brochure in **Appendix 2**) outlines requirements for paddle safety on Sydney Harbour, which include:

- paddling on the outside (starboard or right-hand side) of channels or rivers where possible, not in the centre;
- keeping a proper lookout at all times;
- keeping clear of larger vessels and being aware of their wash;
- crossing behind motorised vessels, not in front;
- wearing a lifejacket when more than 100m from shore on enclosed waters or at all times on open waters, with a strong recommendation that a lifejacket is worn at all times in Sydney Harbour;
- a minimum requirement to carry a torch between sunset and sunrise, and a strong recommendation that craft have an all-round white light visible in every direction

A map of Sydney Harbour was included in the campaign brochure. This shows that the central main channel of Sydney Harbour, including the adjacent areas of Darling Harbour, Walsh Bay, White Bay and Johnstons Bay are considered heavy traffic areas that are not recommended for paddlers. Rozelle Bay and Blackwattle Bay were not considered to be heavy or busy traffic areas or areas prohibited to paddlers (e.g. Sydney Cove) on the map.

In addition to the above safety requirements, Rowing NSW has published their own Code of Conduct (effective 19 February 2008) for Rowing and Sculling Shells, which is available on their website. This document outlines additional light requirements (over and above Rule 25 of the Regulations for Preventing Collisions at Sea, adopted in NSW through the Navigation (Collision) Regulations 1983) for rowing and sculling shells over 4m in length. The Code of Conduct states that in restricted visibility conditions and between sunset and sunrise, vessels greater than 4m in length should exhibit:

- two all-round white lights, one attached to the vessel at or near the forward end, and one attached to the vessel at or near the aft end;
- a continuous white light is considered acceptable if it is visible in clear conditions from a distance of 1km;
- a flashing white light is considered acceptable if it flashes at least once per second and is visible in clear conditions from a distance of 1km;
- notwithstanding the above, it is considered acceptable for a light to be masked so as not to interfere with the vision of the vessel's occupants, provided at least one light is visible from any direction.

2.6 Navigation Restrictions

Navigation restrictions are shown on Transport for NSW - Maritime Boating Map 9G – Port Jackson Western Area, Lower Parramatta and Lane Cove Rivers (dated April 2016), which is reproduced below on **Figure 3**. Navigation restrictions are also shown on **Map 2** (refer **Appendix 1**).

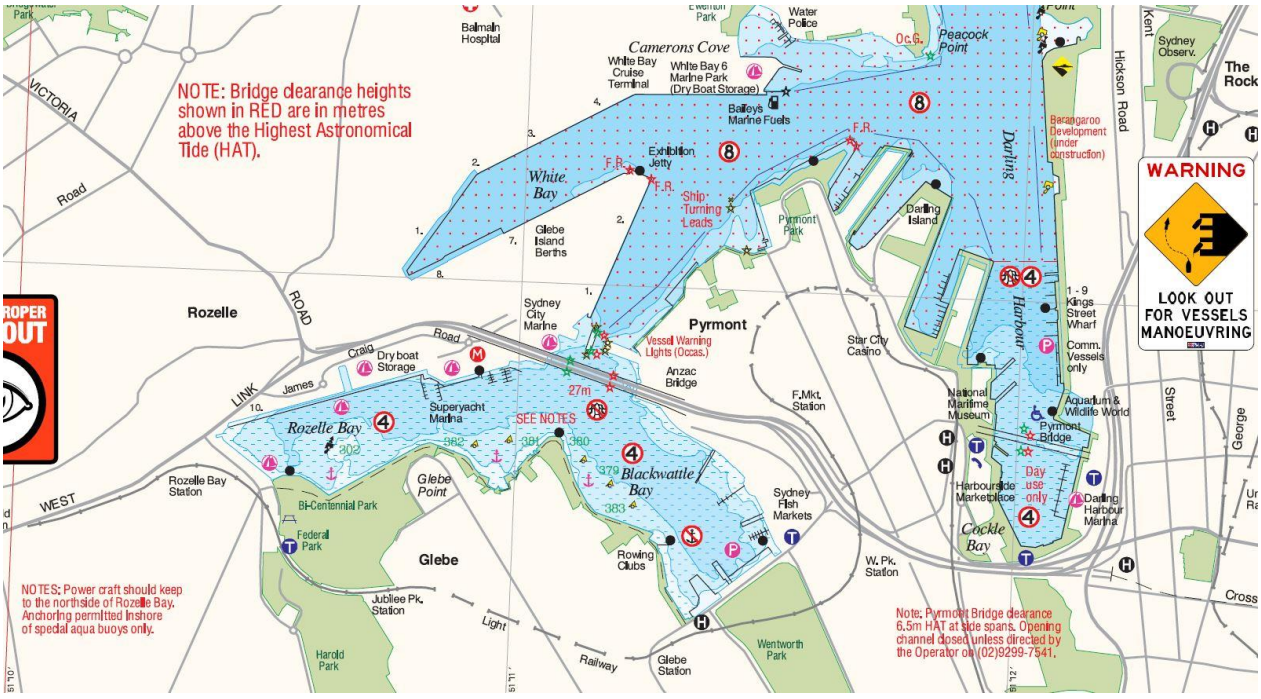


Figure 3: Extract from Transport for NSW - Maritime Boating Map 9G

Navigation restrictions include:

- 4 knot zones within Rozelle Bay and Blackwattle Bay.
  Restriction noted by Transport for NSW (2014) to be introduced due to high volume of traffic and interactions between commercial and recreational vessels, including large powered vessels and dragon boats and rowing boats;
- 8 knot zone in Johnstons Bay and White Bay.
  Restriction noted by Transport for NSW (2014) to be introduced due to high traffic volume and vessel interactions;
- No wash zone in Blackwattle Bay.
  Restriction noted by Transport for NSW (2014) to be introduced due to existence of slipways and commercial vessel operations; and,
- No anchorage zone near the existing Fish Market
  Restriction noted by Transport for NSW (2014) to be introduced due to high traffic area.

It is noted that Rowing NSW successfully applied for an exemption to the 4 knot speed limit introduced in Rozelle Bay and Blackwattle Bay while rowing supervision is being conducted (i.e. rowing boats accompanied by a tinnie escort to facilitate on-water coaching). This is documented in NSW Maritime letter correspondence dated 9 January 2008 and included within **Appendix 2**.

Special marks delineate preferred anchorage zones at the following locations:

- on the southern shoreline of Rozelle Bay adjacent to Bicentennial Park;
- on the southern shoreline of Rozelle Bay in the embayment formed between Glebe Point and the headland adjacent to Bellevue House; and,
- on the western shoreline of Blackwattle Bay in the embayment between the headland at Blackwattle Bay Park and the rowing club facilities.

Navigation aids installed to guide vessels within the waterway include:

- north cardinal mark to indicate shallow water offshore of the entrance to Johnstons Creek;
- lit port and starboard beacons to delineate the navigation channel beneath Anzac Bridge;
- lit port and starboard beacons to delineate the navigation channel through the eastern portal of the Glebe Island Bridge;
- lit special mark beacons to indicate the ends of the Glebe Island Bridge (normally rests in open position); and,
- lit special mark beacons to indicate the end of the eastern (Pyrmont) road approach to the Glebe Island Bridge.

Notes on the Transport for NSW - Maritime Boating Map advise that power craft should keep on the northside of Rozelle Bay.

Bridge clearances (refer **Figure 4**) relative to Chart Datum are reported by Port Authority of NSW (2015) to be 4.9m (inner end) to 6.8m (outer end) for the swing-span of the Glebe Island Bridge (6m under the side spans) and 29.1m for the Anzac Bridge (and noted on the Transport for NSW - Maritime Boating Map as 27m relative to Highest Astronomical Tide). Further navigation requirements for the Glebe Island Bridge were noted in Acil Allen (2013) and SMEC (2016) to include:

- vessels must give way to outbound traffic;

- vessels must navigate through the Eastern Channel (eastern portal), unless directed otherwise by the Harbour Master (the western channel is closed);
- the Harbour Master periodically issues directions to maritime vessels in the vicinity of Glebe Island Bridge, such as altering the navigation channel if bridge maintenance is occurring; and,
- vessels must give way to traffic lights installed on the bridge when in operation. These traffic lights are controlled by Harbour Control (Vessel Traffic Services) when a large vessel needs to navigate through the channel. Operators of large vessels can inform Harbour Control of their intended transit and Transport for NSW - Maritime also has a secondary control unit.

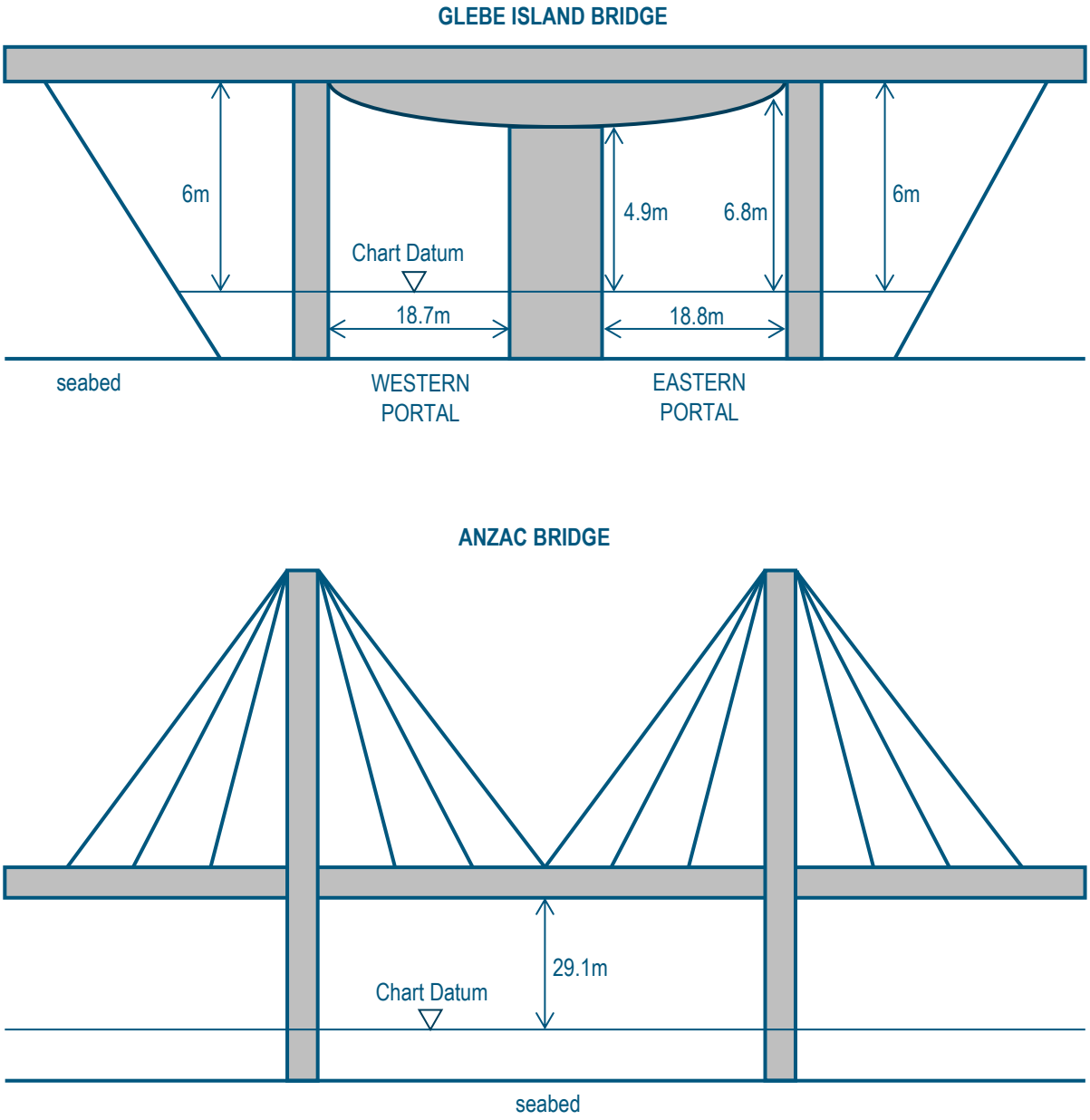


Figure 4: Bridge Clearances at Glebe Island Bridge and Anzac Bridge

2.7 Existing Vessel Use

2.7.1 Recreational Power Boats

Recreational power boats are serviced by a number of berthing and boat storage facilities within Rozelle Bay and Blackwattle Bay.

Berthing and boat storage facilities within Rozelle Bay include:

- Sydney City Marine;
- Sydney Superyacht Marina;
- Sydney Boathouse; and,
- Seawind Catamaran Marina.

Berthing facilities within Blackwattle Bay include:

- Blackwattle Bay Marina (5 year temporary use approval)
- Blackwattle Bay Marine Operatives; and,
- existing Fish Market (northern mooring jetty);

In addition to permanent berths, there are also public wharves available for temporary mooring of visiting recreational vessels. These facilities comprise:

- Rozelle Bay Public Pontoon at Bicentennial Park (refer **Figure 5**) – signage indicates the pontoon is for casual mooring only (pick up and drop off, vessels attended at all times), maximum vessel length of 10m, and maximum draught at low tide of 1.4m;
- Blackwattle Bay Public Pontoon at the headland adjacent to Bellevue House (refer **Figure 6**) – signage indicates the pontoon is for casual mooring only (pick up and drop off, vessels attended at all times), maximum vessel length of 10m, and maximum draught at low tide of 2.4m;
- Glebe Rowing Club pontoon in Blackwattle Bay (refer **Figure 18**) – low freeboard pontoon designed primarily for rowing boat access; and,
- existing Fish Market public pontoon in Blackwattle Bay (refer **Figure 7**) – provides a drop off/pick up facility for visitors to the existing Fish Market, accommodates vessels of up to 6m in length, 1.2m water depth is available at low tide.
- Overnight moorings are also available in Rozelle Bay and Blackwattle Bay.

These facilities cater for a range of motorised vessel sizes including trailable recreational boats (runabouts, motor cruisers), motor yachts, super yachts and larger sized recreational boats less than 11m in length (dry storage at Sydney Boathouse).

Figure 5: Rozelle Bay Public Pontoon

Figure 6: Blackwattle Bay Public Pontoon

Figure 7: Existing Fish Market Public Pontoon (Blackwattle Bay)

2.7.2 Sailing Yachts

Facilities that cater for sailing yachts are located in Rozelle Bay and include:

- Sydney City Marine (refer **Figure 8**) – boat repair and refitting of sailing yachts;
- Sydney Heritage Fleet (refer **Figure 9**) – restoration of heritage boats including sailing skiffs; and,
- Seawind Catamaran Marina (refer **Figure 10**) – marina offering berths specifically for service, repair, chartering and boat management of large ocean going catamarans and tri-marans (only dedicated multihull marina in Sydney), some motor yachts and cruisers are also berthed.

Figure 8: View across Rozelle Bay towards Sydney City Marine repair facility (Rozelle Bay)

Figure 9: View across Rozelle Bay towards Sydney Heritage Fleet (Rozelle Bay)

Figure 10: Seawind Catamaran marina (Rozelle Bay)

2.7.3 Commercial Vessels

Commercial vessels use the waterway to access berths and repair facilities located at a number of waterfront premises occupied by marine contractors. Commercial vessels used by these contractors include tugs, workboats and barges. Marine contractors are primarily located along the northern shoreline of Rozelle Bay (refer **Figure 11**) and include:

- Clement Marine;
- Australian Wharf and Barge;
- Polaris Marine; and,
- Waterway Constructions.

Figure 11: View of marine contractors along northern shoreline of Rozelle Bay

Transport for NSW - Maritime operational vessels are berthed outside the Transport for NSW - Maritime Head Office on the northern shoreline of Rozelle Bay, adjacent to the Anzac Bridge (refer **Figure 12**).

Figure 12: View across Rozelle Bay of Transport for NSW - Maritime Head Office and adjacent operational vessel berths

Within Blackwattle Bay, a number of marina berths are provided for charter boat operators. These include:

- Blackwattle Bay Marina – previously provided 22 berths with vessels including All Occasions Cruises vessels and 12 other charter operators, this marina facility is now vacant and the vessels have been relocated to Bank Street Marina (refer **Figure 13**);
- existing Fish Market (refer **Figure 14**) – the end berths of the northern mooring jetty are used by Manly Fast Ferries and Fusion Cruises; and,
- Blackwattle Bay Marine Operatives (refer **Figure 15**) – provides up to 26 informal berths for use by charter operators, no public access to adjacent foreshore (privately owned Hymix concrete batching plant).

Figure 13: Aerial view of Bank Street Marina below Anzac Bridge, Pyrmont

Figure 14: Existing Fish Market northern jetty end berths occupied by charter boats (Blackwattle Bay)

Figure 15: Blackwattle Bay Marine Operatives

Fishing trawlers also access Blackwattle Bay to berth at the existing Fish Market facilities, which include:

- dedicated fishing trawler berths at the inner berths of the northern timber mooring jetty (refer **Figure 16**); and,
- main concrete jetty with hardstand area (trawler wharf, refer **Figure 17**) is used for unloading, reprovisioning, refuelling and maintenance of fishing vessels.

Figure 16: Existing Fish Market northern jetty inner berths occupied by fishing boats (Blackwattle Bay)

Figure 17: Existing Fish Market main concrete jetty (Blackwattle Bay)

2.7.4 Rowing Boats

Rowing is a popular activity in the Bays Precinct with boat houses for rowing clubs occupying waterfront land within Blackwattle Bay and use of the waterway on a regular basis for training purposes. Existing facilities providing waterway access for rowers include:

- beach launching area within Bicentennial Park (Rozelle Bay, refer **Figure 28**);
- Glebe Rowing Club (GRC) boathouse and pontoon (Blackwattle Bay, refer **Figure 18**);
- Sydney University Boat Club (SUBC) boathouse and pontoon (Blackwattle Bay, refer **Figure 19**);
- Dragon Boat ramp at Bank Street, Pyrmont (Blackwattle Bay, refer **Figure 23**); and,
- foreshore access steps adjacent to Sydney Secondary College (Blackwattle Bay Campus, refer **Figure 29**).

Figure 18: Glebe Rowing Club pontoon (Blackwattle Bay)

Figure 19: Sydney University Boat Club boathouse and pontoon (Blackwattle Bay)

A voluntary rowing guide has been developed by Transport for NSW - Maritime in consultation with local rowing groups (including Dragon Boating Clubs) and details a recommended rowing course throughout Rozelle and Blackwattle Bays. This rowing course is shown on **Figure 21** and **Map 2** (refer **Appendix 1**) and, based on observations during a Saturday morning site visit, is generally adhered to by rowing clubs

during training activities. The course runs in an anti-clockwise direction around the perimeter of both Rozelle and Blackwattle Bay with row boats staying on the starboard side and keeping a distance off of 25m to 40m from berthing structures and moored vessels.

The Glebe Rowing Club (GRC) website notes that training can comprise 2 to 5 laps of the course and the best water conditions for rowing are early morning or late afternoon. During meetings with GRC it has been noted that Blackwattle Bay provides a 500m practice run, Rozelle Bay provides a 1km practice run, and weather permitting, White Bay to Barangaroo provides a 2km practice run. The GRC Club Handbook includes a Rowing Map (refer **Figure 22**) that also indicates an extended rowing course through Johnstons Bay and into White Bay. However, it is noted on the GRC website that rowing in White Bay is undertaken on the weekend if water conditions are good and that a tinnie escort (refer **Figure 20**) is required for rowing beyond White Bay.

Figure 20: Row boat with tinnie escort in Blackwattle Bay

From review of information on the GRC and SUBC websites, rowing training occurs on most mornings during the week and over the weekend. Learn to row programs are also held by the clubs and are typically scheduled on Saturday or Sunday mornings at 9am-11am following early morning rowing training.

Sydney Secondary College (Blackwattle Bay Campus) is located on the western shoreline of Blackwattle Bay and offers rowing, kayaking and dragon boating as part of its school sports curriculum.

A J.B. Sharp Series rowing regatta was also held in 2016 with a racing course being set out within Rozelle Bay and Blackwattle Bay. This was attended by a number of Sydney rowing clubs and multiple rowing boat access points were utilised to launch boats onto the water for the event.

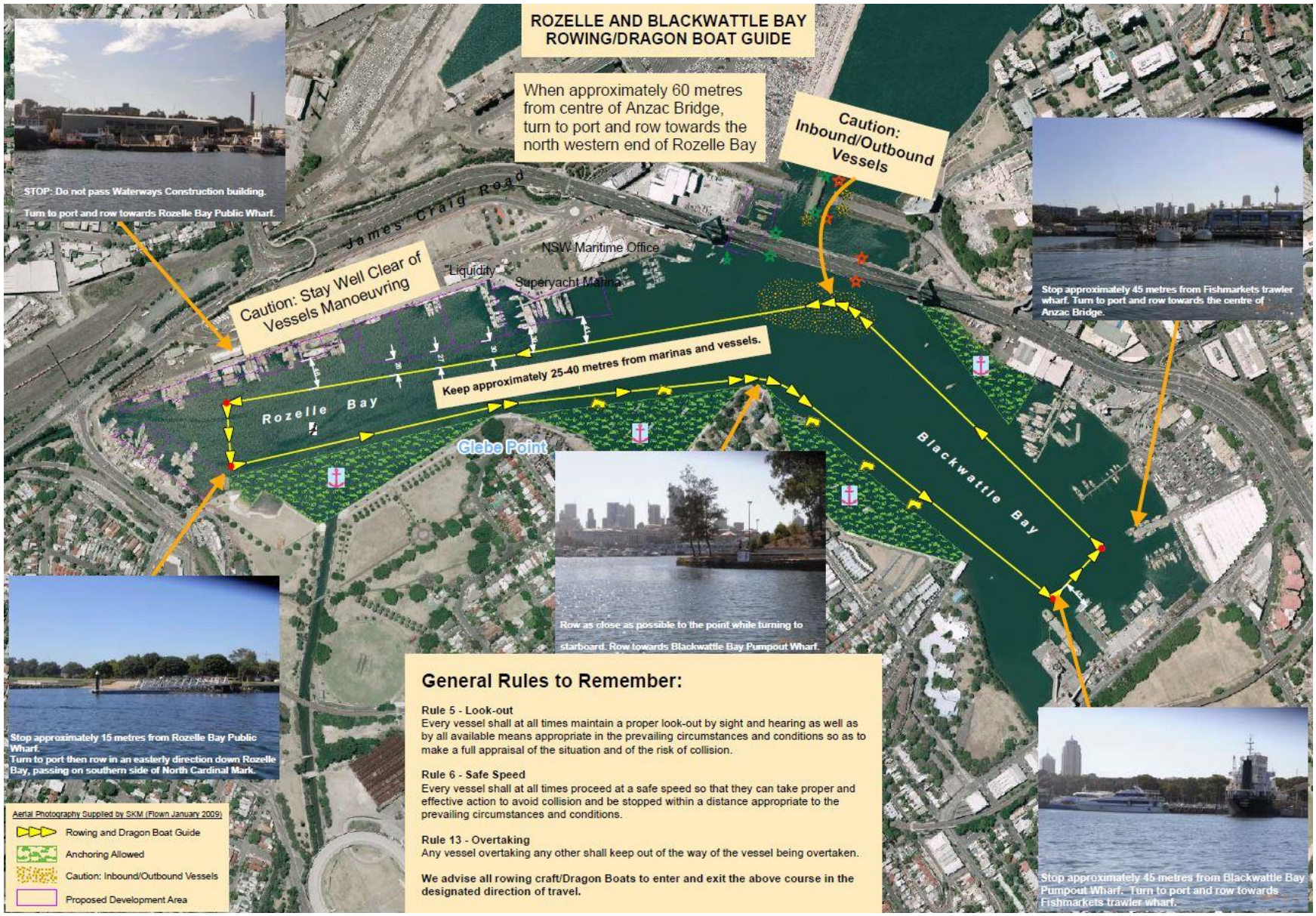
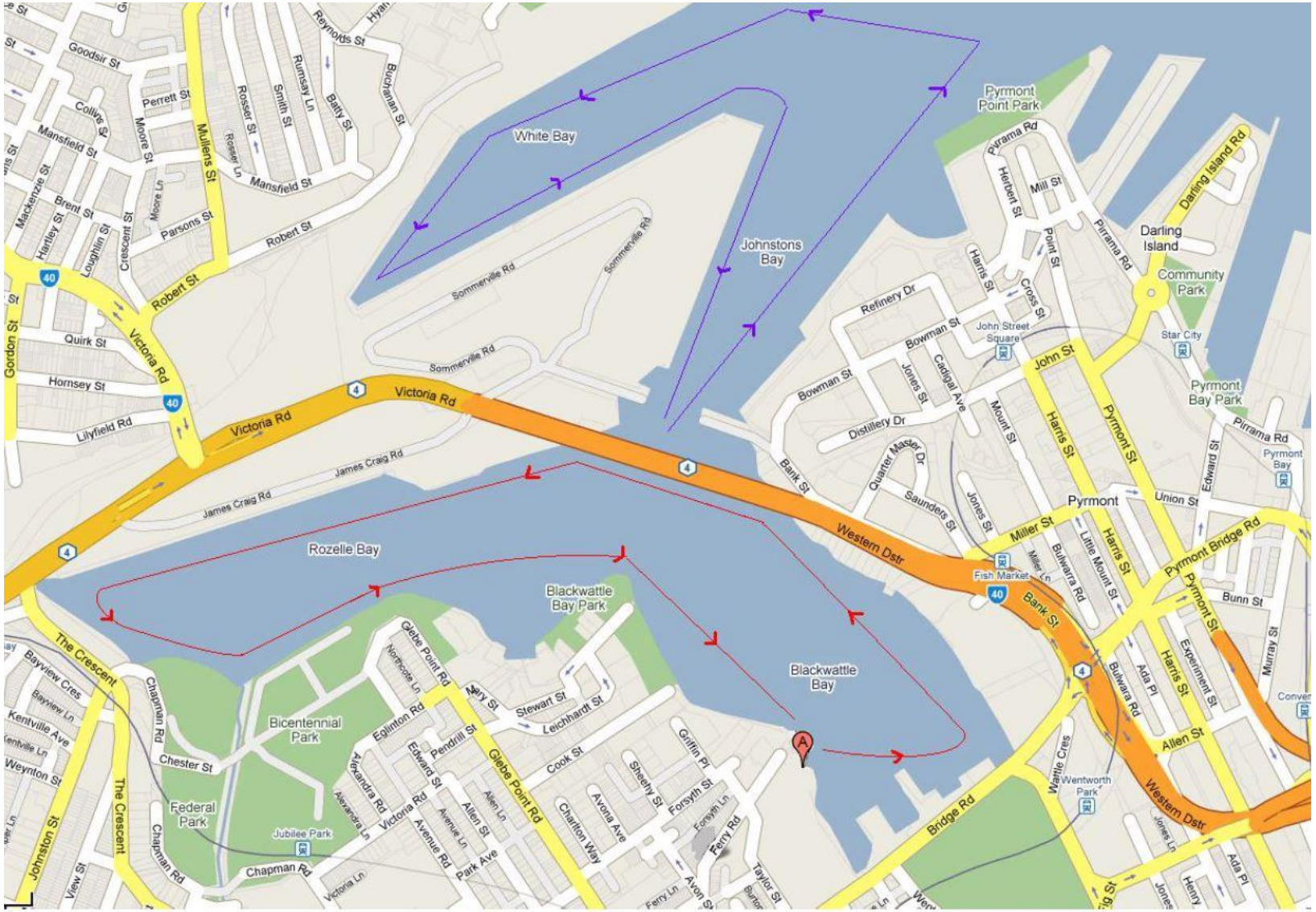


Figure 21: Recommended Rowing Course in Rozelle Bay and Blackwattle Bay (SSM, 2017)



The red line shows the standard Blackwattle Bay and Rozelle Bay course, while the blue line shows the extended White Bay course (note that the direction of rowing is indicated by the arrows).

Figure 22: Glebe Rowing Club Handbook Rowing Map

2.7.5 Dragon Boats

Dragon boating is another popular passive recreation activity enjoyed on the waterway. Dragon Boats NSW Inc. occupy waterfront land used for dragon boat storage and have a dedicated ramp launching facility (including lighting) at Bank Street, Pyrmont (refer **Figure 23** and **Figure 24**). According to the Dragon Boats NSW (DBNSW) website, 15 dragon boating clubs use the Pyrmont facility on a regular basis for training ahead of dragon boating regattas held in regional NSW, interstate and in the Sydney metropolitan area. The Bank Street site is also used as an unsealed parking area for dragon boat club members and is surrounded by a chain wire security fence.

Figure 23: Dragon boat launching ramp at Bank Street, Pyrmont

Figure 24: Onshore dragon boat storage racks and parking area at Bank Street, Pyrmont

The dragon boating clubs follow the same training route around Rozelle Bay and Blackwattle Bay as described above for rowing clubs. This was confirmed by observations during a Saturday morning site visit. It was also observed that dragon boats can row two abreast in pairs (refer **Figure 25**) and that dragon boat clubs also use the Blackwattle Bay Public Pontoon as a marshalling area for crew changes (refer **Figure 26**).

Figure 25: Dragon boats rowing two abreast

Figure 26: Dragon boat clubs using Blackwattle Bay Public Pontoon

Dragon boat club training is generally held in the evenings during weekdays (most popular on Tuesday and Thursday evenings) and on Saturday and Sunday mornings. A summary of the training schedules collated from review of dragon boat club websites is provided in **Table 3**.

DBNSW have advised that additional training by corporate groups takes place from November to January and is scheduled Monday to Friday between 5.30pm and 8.30pm. State crew training is also undertaken from January to March by 6 boats between 1pm and 4pm on Sundays. National crew training is also undertaken during early morning periods.

Table 3: Schedule of Dragon Boat Club Training at Bank Street, Pyrmont

Club	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Blackwattle Bay Dragon Boat Club	6.30pm-8pm		6.30pm-8pm				8.45am-11am
Naga Spirit Dragon Boat Club						9am-11am	
Pacific Dragons Dragon Boat & Outrigger Canoe Club	6.45pm	6.45pm	6.45pm	6.45pm	Morning	8am	8am
ACCA Dragon Boat Racing Team		6.45pm-8.30pm		6.45pm-8.30pm		8.30am-10.30am	
Bluefins Dragon Boat Racing Team							8.45am
Mavericks Dragon Boat Club		6.30pm-8pm		6.30pm-8pm		8.30am-10.30am	
Chinese Youth League Dragon Boat Club		6.30pm-8.30pm		6.30pm-8.30pm		9.30am-11.30am	
City Dragons Dragon Boat Club							9am-11am
Different Strokes Dragon Boat Club		6.30pm-8pm		6.30pm-8pm		7am-9am	
Dragons Abreast Sydney		6.30pm-8pm		6.30pm-8pm		7.30am-9am	
FFB Dragon Boat Club	6.30pm-8pm		6.30pm-8pm			7.30am-9.30am	
Flying Dragons			7pm				9am
Sydney Tsunami Dragon Boat Club		6.30pm-8pm				8.30am-10.30am	
Sydney Zodiacs		5pm-6.30pm		5pm-6.30pm		7.30am-9am	
The Sloths Dragon Boating Club	6.45pm-8.30pm		6.45pm-8.30pm			7.45am-10am	

AM Training	
AM Peak Day	
PM Training	
PM Peak Day	

2.7.6 Canoes and Kayaks

Rozelle Bay and Blackwattle Bay are highly regarded waterway areas for calm water kayaking and are listed as top destinations for kayaking within Sydney Harbour on websites of kayak tour operators, travel blogs and passive recreation groups. In addition to the sheltered waters, other attractions of the area for kayaking visitors include paddling beneath the iconic Glebe Island Bridge and Anzac Bridge, extensive

foreshore park areas for picnicking, the Glebe Foreshore Walk including canoe storage racks (refer **Figure 27**), surrounding industrial and commercial activities, and dining options at the existing fish market and The Boathouse (Blackwattle Bay).

Figure 27: Canoe storage racks adjacent to Sydney Secondary College, Blackwattle Bay

A dedicated kayak launching area is also provided at Bicentennial Park on the southern foreshore of Rozelle Bay (refer **Figure 28**). This comprises steps leading down to a 20m wide shallow beach area that has been recessed into the shoreline. A low freeboard pontoon is also provided at the adjacent public wharf (refer **Figure 5**).

Several sets of water access steps (refer **Figure 29**) are provided as part of the Glebe Foreshore Walk along the western shoreline of Blackwattle Bay (two sets of steps) and the southern shoreline of Rozelle Bay (three sets of steps). These steps provide water access from the elevated promenade level and could be used for launching of passive craft.

Figure 28: Steps leading to beach launching area for passive craft at Bicentennial Park, Rozelle Bay

Figure 29: Water access steps along the western shoreline of Blackwattle Bay

Annandale Boat Hire is located at the head of Rozelle Bay (behind Seawind Catamaran marina) and offers hiring of kayaks and stand-up paddleboards.

A range of passive craft were observed on the water during a Saturday morning site visit. These included fishing kayaks, outrigger canoes (refer **Figure 30**) and sea kayaks (refer **Figure 31**).

Figure 30: Outrigger canoe in Blackwattle Bay

Figure 31: Sea kayaks in Rozelle Bay

2.8 Glebe Island Bridge Traffic

An indicator of the level of boating traffic in the area is provided by estimates of the number of vessel movements per day through the Glebe Island Bridge (refer **Figure 32**).

A report assessing options for Glebe Island Bridge (Acil Allen, 2013) contains estimates of 200 to 300 movements per day based on consultation with maritime businesses and Transport for NSW - Maritime. The same report notes that 78% of trips were believed to be business related rather than for leisure. It was estimated that vessel movements were likely to grow by 2 per cent per annum. **Table 4** summarises the estimates of vessel movements obtained from consultation with maritime businesses undertaken by Urbis (2012).

Table 4: Estimated Glebe Island Bridge Vessel Movements (Urbis, 2012)

Business Operator	No. of Vessel Movements
Sydney Superyacht Marina	10-15 per day
Sydney Boathouse	up to 20 per day (excludes dry stack storage traffic)
Seawind Catamarans	4-20 per day depending on low/peak season
Sydney City Marine	up to 10 per day
All Occasion Cruises	10-30 per day depending on low/peak season
Blackwattle Bay Marine Operatives	8-14 per day depending on low/peak season
Sydney Fish Market Pty Ltd	20-30 per day

Further consultation was undertaken by SMEC (2016) and estimates of vessel movements contained within this report are summarised in **Table 5**. The report also concluded that several vessel types using the waterway would be limited by the available air draught of 4.9m (above Chart Datum) beneath the Glebe Island Bridge in its closed position. This is demonstrated by the typical dimensions of vessels accessing the Bays Precinct, which were summarised in SMEC (2016) and are reproduced in **Table 6**. It should be noted that the common vessel types accessing or departing Blackwattle Bay would include:

- Corporate and Day Charter boats;
- Fishing trawlers;
- Recreational boats (runabouts, motor cruisers); and,
- Passive vessels (rowing/dragon boats).

Figure 32: View of Glebe Island Bridge looking towards Johnstons Bay

Table 5: Estimated Glebe Island Bridge Vessel Movements (SMEC, 2016)

Business Operator	Type of Vessel	No. of Vessel Movements
Sydney City Marine	sailing yachts, charter boats, superyachts, recreational vessels	10 per day
Sydney Superyacht Marina	superyachts	5-15 per day
Sydney Superyacht Marina	smaller motor yachts	5-15 per day
Sydney Boathouse	motor yachts and power boats	10-30 per day
Sydney Boathouse	dry stacked power boat (less than11m)	120 per day
Seawind Catamarans	multihull vessels	4-24 per day
Blackwattle Bay Marine Operatives	charter boats	8-14 per day
Blackwattle Bay Marina	charter boats	10-30 per day
Sydney Fish Market Pty Ltd	charter boats	3-10 per day
Sydney Fish Market Pty Ltd	fishing trawlers	3-10 per day
Sydney Heritage Fleet	large heritage boat (John Oxley)	less than 1 per year
Sydney Heritage Fleet	small heritage boats (rowing boats, motor boats, sailing skiffs and historic replica boats)	3-10 per day
Transport for NSW - Maritime Head Office	Transport for NSW - Maritime operational vessels	highly variable
Marine Contractors (Rozelle Bay)	tugs, workboats and barges	highly variable

Table 6: Typical Dimensions of Vessels in the Bays Precinct (SMEC, 2016)

Vessel Type	Length (m)	Beam (m)	Draught (m)	Air Draught (m)	Approx. No.
Charter Boat (largest)	42	14	2.4	8.9	41
Fishing Trawler (largest)	17	5	-	10	9
Heritage Fleet – John Oxley (largest vessel)	51	9.8	3.4	22.7	8
Barge (max.) with crane	56	18	3.7	24	18
Tug (max.)	29	9	3.6	15	4
Workboat (max.)	13	5.1	1.4	4	4
Transport for NSW - Maritime Operations vessel	7 to 16	7 max.	2.3	< 5	23
Sailing Yacht – largest that fits under Sydney Harbour Bridge	38	9	4	50	occasional, only to SCM
Superyacht (motor)	24 to 73	7 to 10	2 to 3	10 to 22	24
Yacht (motor)	< 24	< 7	< 2	< 10	56
Boat LOA<11m (dry storage)	11	3.7	0.9	< 5	570
Seawind Catamaran	12.5	6.8	1.2	20	16
Passive vessels					

2.9 Existing Vessel Capacity within Blackwattle Bay

A review of vessel capacity within Blackwattle Bay was completed by SMEC (2018) based on study of aerial imagery. The resultant berth numbers and size distribution of different types of vessels is summarised in **Table 7**, **Table 8**, and **Table 9**. The total number of different types of vessels berthed in Blackwattle Bay comprised:

- Barge = 7 vessels
- Fishing Trawlers / boats = 13 vessels
- Corporate Charter = 29 vessels
- Day Charter = 21 vessels

Table 7: Vessel Capacity at Giddens Jetty (SMEC, 2018)

Vessel Type	10 – 15m	15 – 20m	20 – 25m	25 – 30m	30 – 35m	Total
Barge		2		4	1	7
Corporate Charter	1	2	2	2		7
Day Charter	4	3	1	3	1	12
Total	**5**	**7**	**3**	**9**	**2**	**26**

Table 8: Vessel Capacity at Blackwattle Bay Marina (SMEC, 2018)

Vessel Type	10 – 15m	15 – 20m	20 – 25m	25 – 30m	30 – 35m	35 – 40m	Total
Corporate Charter	7	4	3	3	4	1	22
Day Charter							
Total	7	4	3	3	4	1	22

Table 9: Vessel Capacity at Sydney Fish Market (SMEC, 2018)

Vessel Type	10 – 15m	20 – 25m	25 – 30m	30 – 35m	Total
Day Charter	3		5	1	9
Fishing Trawlers / boats	9	4			13
Total	**12**	**4**	**5**	**1**	**22**

2.10 Existing Waterway Occupation Areas

The existing waterway occupation areas within Blackwattle Bay have been obtained from the Transport for NSW - Maritime Infrastructure and Geospatial Services division and are displayed on **Map 3** (refer **Appendix 1**). These areas include several different types of waterway occupation arrangements with Transport for NSW - Maritime, which comprise:

- **Agreement for Lease (AFL)** – these tenures are for proposed developments, a licence agreement is entered into by the lessees and Transport for NSW - Maritime while the proposed structures are being constructed;
- **Current tenures under a Lease agreement (CAN_LET)** – these leases range from 3 to 20 years unregistered and 20 years registered at NSW Land and Property Information;
- **Licence (LICENCE)** – alternative to Lease agreements, set up for community sites (e.g. local government, sailing/rowing clubs) and short term occupations; and,
- **Statutory Periodic Tenure (SPT)** – set up for monthly occupations for short term occupations.

The nature of existing waterway occupation leases and licences is summarised in **Table 10** and is based on information provided by the Transport for NSW - Maritime Commercial Tenure and Development division.

Table 10: Summary of Existing Water Occupation Areas in Blackwattle Bay

Lessee	Type	Description	Expiry Date (initial length)
Dragon Boats NSW Inc.	LICENCE	• onshore area and dragon boat launching ramp at 5-15 Bank Street, Pyrmont • leased area 990m^2 includes launching ramp and onshore dragon boat storage area (excludes surrounding onshore land used as unsealed parking area) • permitted use within the leased area includes storage and launching of dragon boats belonging to the Licensee and its members, and the storage of shipping containers • Deed of Licence notes that the licensee is also permitted to park vehicles between 6am and 6pm on the same day within parking bays marked along the fencing adjacent to Bank Street on land that is outside the leased area • launching ramp and northern portion of Bank Street site is currently shown as an Agreement for Lease (AFL) area in Transport for NSW - Maritime mapping • after the terminating date of the licence, the licensee becomes a monthly tenant on the same terms and conditions of the licence, tenancy can be terminated by either party by giving at least one month's prior notice in writing to the other party	30 Sep 2016 (5 months)
Hymix Australia Pty Ltd	LICENCE	• marina pontoon berthing facility for charter boats, and also includes an adjacent lot owned by Transport for NSW - Maritime (Lot 26 DP815847) • the licensee must at its cost remove the wharf when the licence expires • sublicenced to Blackwattle Bay Marine Operatives Pty Ltd who manage berthing and receive rent from tenants, sublicence includes use of adjacent onshore land (part of Lot 24 and Lot 25 DP815847) for parking of vehicles and storage of maritime related materials • after expiry of the initial licence period the licensee can continue the licence for a further period terminating at any time one month after either party gives notice of termination to the other party	30 Sep 2001 (10 months)
NSW Fish Marketing Authority	CAN_LET	• Sydney Fish Market wharves including northern timber mooring jetty, main concrete jetty (trawler wharf) and public pontoon • leased area 7,824m^2 • option to extend for 20 years	31 Dec 2024 (32 years and 9 months)
The Council of The City of Sydney	LICENCE	• Glebe Rowing Club pontoon, including deck and walkway, post rail fence, ramp and pontoon • leased area 304m^2 • permitted use includes the installation, maintenance and repair of improvements and use of the premises by the general public • casual berthing is permitted for such reasonable duration as is necessary to allow the loading and unloading of goods, embarkation and disembarkation of persons, or the launching and recovery of vessels, during which time the vessel cannot be left unattended • permanent berthing is not permitted at any time • after the terminating date of the licence, the licensee becomes a monthly tenant on the same terms and conditions of the licence,	21 Nov 2016 (5 years)

Lessee	Type	Description	Expiry Date (initial length)
		tenancy can be terminated by either party by giving at least one month's prior notice in writing to the other party	
The Sydney of University	CAN_LET	• Sydney University Boat Club pontoon and boathouse • leased area 534.5m^2 • permitted use of Ground Floor Level comprises uses associated with the activities of rowing, canoeing, sailboating and for functions and other purposes associated with The University of Sydney, its staff and students • permitted use of First Floor Level is as a licenced restaurant	22 Jan 2018 (21 years)

Review of the expiry dates in **Table 10** indicates that number of leases and licences have lapsed. However, these agreements typically include holding over provisions that enable the lease/licence to be continued on a monthly or 6-monthly basis until either the party provides notice for termination.

The Bank Street, Pyrmont Masterplan (Maunsell, 2006) notes that the main building on the property occupied by Poulos Bros Seafood Pty Ltd overhangs the waterfront. This may present a constraint for continuous foreshore access if this is desired as part of future planning.

3 Blackwattle Bay Precinct Plan

3.1 General

The proposed precinct plan for Blackwattle Bay is provided for reference within **Appendix 3** and in **Figure 33**, **Figure 34** and **Figure 35**.

3.2 Rezoning Proposal

The SSP Study is proposing to rezone Blackwattle Bay with a new planning framework and planning controls to enable its future urban renewal.

The proposal is based on a Blackwattle Bay Precinct Plan ('Precinct Plan') which provides a conceptual layout to guide development of planning controls for the precinct and has informed this assessment. The Precinct Plan is shown in **Figure 33** and **Figure 34** below. The Precinct Plan provides overarching guidance about how an area should be developed based on local character and place, current and future demographics, economic and social trends, cultural and environmental considerations, and urban renewal aspirations and needs regarding land use, community recreation, transportation, housing, and jobs. Key characteristics of the Precinct Plan include:

- New homes, jobs and services close to the CBD including:
  - 5,636 jobs / or approximately 5,600 jobs
  - 2,795 residents /or approximately 2,800 residents
  - 1546 dwellings
- A continuous waterfront promenade – the missing link in an otherwise 15km walk from Woolloomooloo to Rozelle
- New connections to bring the neighbourhood closer to the harbour through new and improved pedestrian and cycling links
- Improved transport options and minimised vehicle usage strategy including:
  - Minimising car parking spaces, provided in basement and limited on street parking.
  - Ferry wharf
  - Opportunity for buses to service through site link
  - Connections to the existing light rail
  - Access to a future Sydney Metro West Station in Pyrmont
- New parks and green space with 50% new public domain and 30% new open space
- An authentic, and world class new Sydney Fish Market at the heart of Blackwattle Bay
- An authentic place, by building on Indigenous and industrial stories and celebrating the local character.

Once the Study Area is rezoned and the new planning controls are in place, future development will need to seek development approval through the relevant approval pathway. This will include detailed development proposals and further associated environmental, social and economic assessments.

The proposal responds to the Study Requirements issued for Blackwattle Bay (formerly Bays Market District) by the Department of Planning and Environment in April 2017.

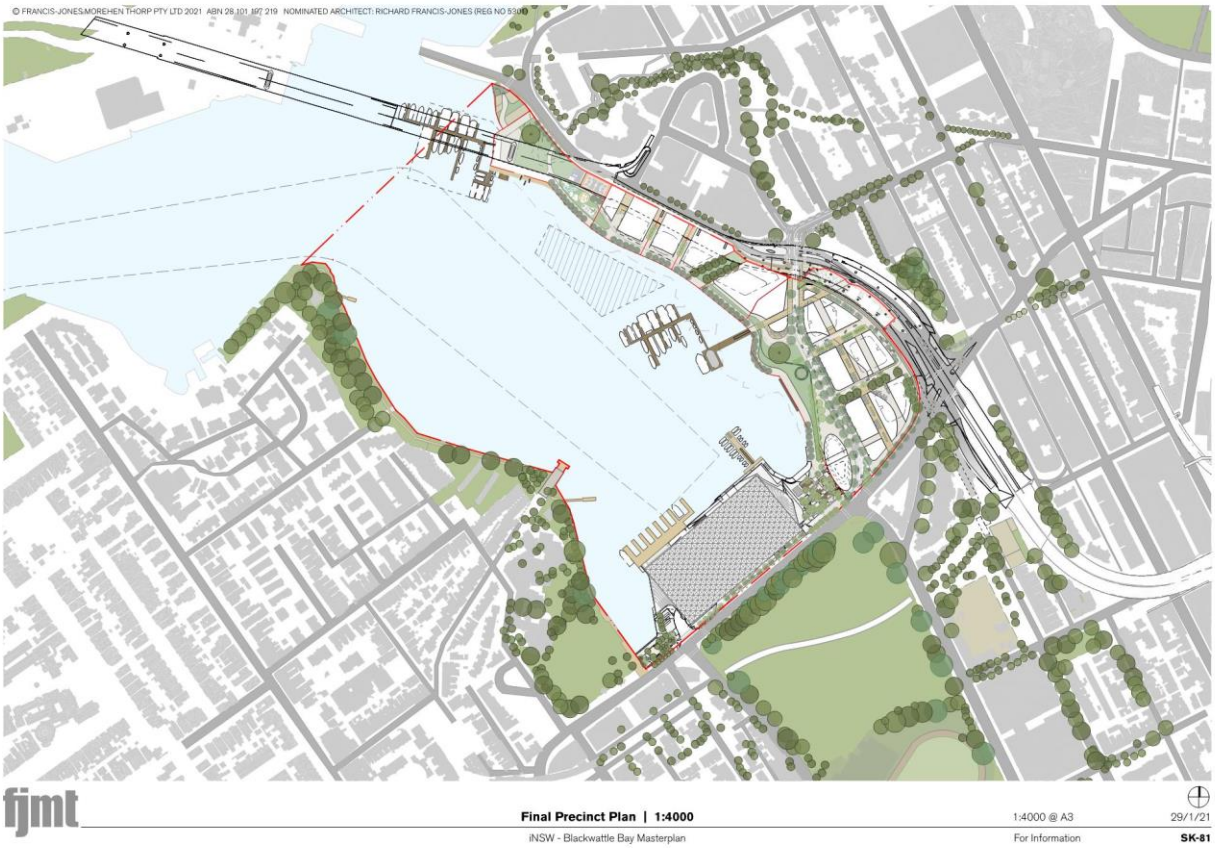


Figure 33: Blackwattle Bay Precinct Plan (Source: FJMT)

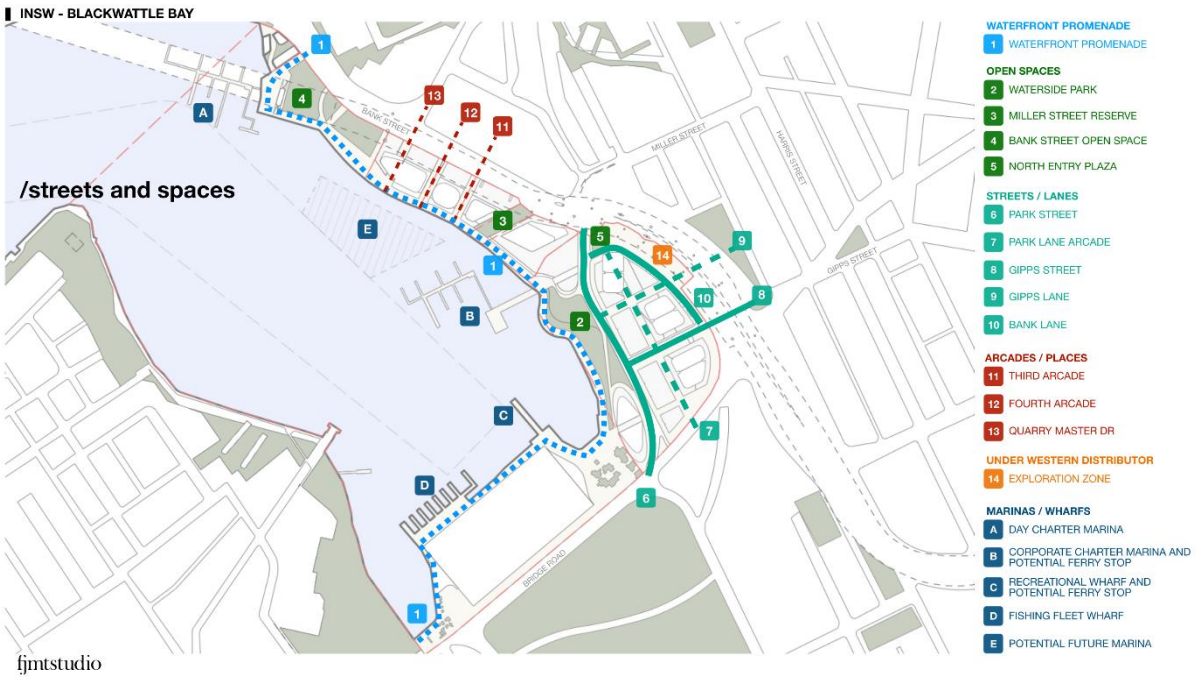


Figure 34: Blackwattle Bay Precinct Naming Plan (Source: FJMT)

3.3 Proposed Waterway Usage Zones

Several waterway usage zones have been defined within Blackwattle Bay to assist with planning of marine infrastructure and use of different areas within the precinct planning area. These zones are shown in **Figure 35** and comprise Working Harbour, Recreational Harbour and Ecological Harbour 'zones'.

Recreational Harbour zones are generated located around the perimeter of the waterway area and are positioned to retain existing waterway access points along the foreshore, including R1 Existing Dragonboat launch, R3 Existing Paddle craft launch (water access steps along western foreshore), R4 Existing Rowing craft launch (Glebe Rowing Club Pontoon). The waterway area on the eastern side of the new Sydney Fish Market development is designated R2 Proposed Paddle craft access to compliment the proposed public domain / urban park redevelopment along the foreshore. The existing rowing and paddling course (Zone R5) has been defined as a central zone through the middle of the waterway, though this zone also has a shared use due to powered vessels needing to navigate through this zone, to access wharves and marina berths within Blackwattle Bay.

Ecological Harbour zones are located along the foreshore areas of the waterway and generally adjacent to Recreational Harbour zones. These zones nominate potential features such as living seawalls, tidal pools, and detention ponds to enhance the local biodiversity and environmental value of foreshore and nearshore areas.

Several Working Harbour zones are defined to accommodate existing and proposed maritime infrastructure:

- Zone W4 defines the existing area of overnight swing moorings located along the western shoreline of Blackwattle Bay in the embayment between the headland at Blackwattle Bay Park and the rowing club facilities.
- Zone W3 defines the area of the proposed new Sydney Fish Market wharves.
- Zone W1 is positioned at the location of the Bank Street, Pyrmont marina, which has recently been constructed to accommodate relocated vessels from the demolition of the Blackwattle Bay Marina to make way for the new Sydney Fish Market development. The Bank Street marina is proposed to be a day charter marina in the precinct plan. Day charter vessel movements occur more frequently throughout the day, often during peak recreational (rowing and paddling) times. Locating day charter vessels in this area will minimise potential conflicts and increase water user safety.
- Zone W2 defines an area along the eastern foreshore between the existing dragon boat launching ramp and the recreational harbour zone adjacent to the new Sydney Fish Market. A corporate charter marina is proposed within this zone. Corporate charter vessel movements typically occur during the evenings and weekends and generally outside of the peak recreational times.

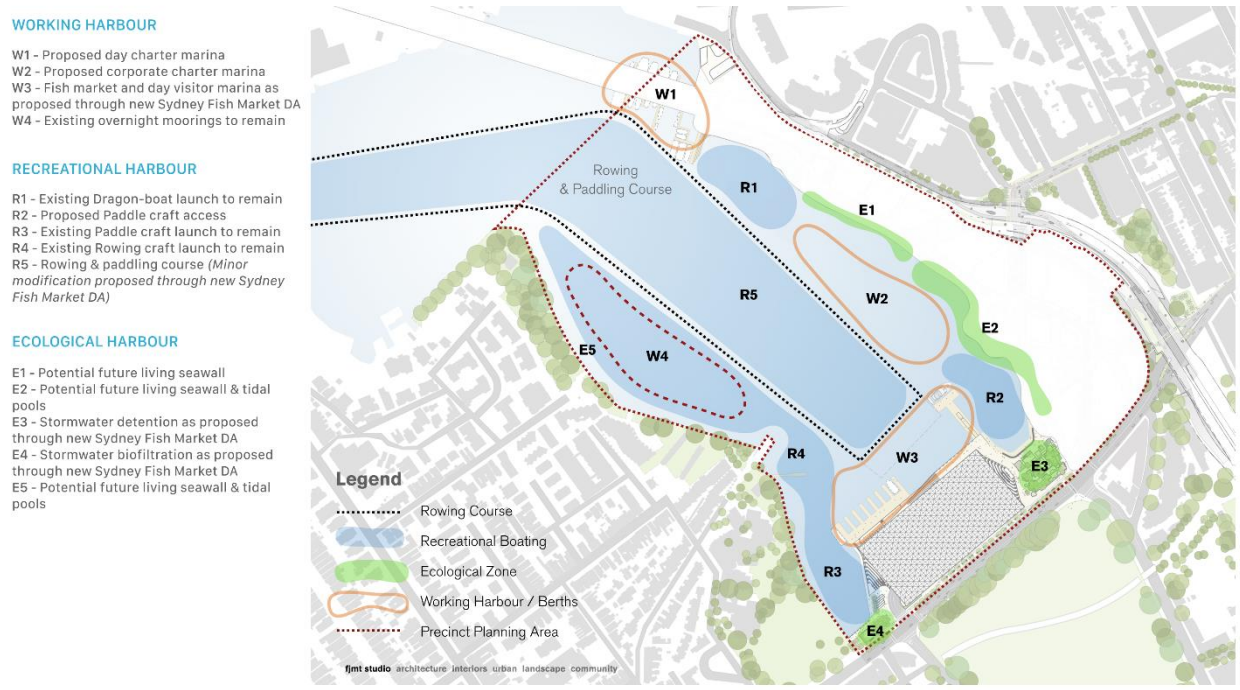


Figure 35: Proposed Precinct Waterway Usage Zones

3.4 Proposed Maritime Structures

3.4.1 New Sydney Fish Market

The new Sydney Fish Market development covers a footprint extending from Bridge Road at the head of Blackwattle Bay to approximately the existing quay line of the concrete batching plant. The new Sydney Fish Market comprises an enclosed building with several levels, including basement level, ground level, upper ground level and mezzanine level, and is surrounded by a perimeter promenade. The development includes demolition of the existing wharves and Blackwattle Bay Marina and the head of Blackwattle Bay, demolition of the existing Sydney Fish Market wharves (northern mooring jetty and main concrete jetty), and associated relocation of vessels.

On the northern (seaward) side of the development several wharfs are proposed, which cater for fishing industry operations, recreational craft access and a ferry service. These wharf facilities include:

- Fixed Loading & Unloading wharf, comprising 4 double-berth pens, 3 double berths facilitated by mooring piles on the western side of the wharf, and a single berth alongside the eastern side of the wharf (15 berths in total); and,
- Recreational Floating Wharf, with ramped gangway access to a long pontoon with 5 double berths (10 berths in total) provided on the western side with mooring piles for use by recreational craft (day visitors) and ferry pick up and drop off facilitated by provision of a line of fender piles across the head of the pontoon.

The Fixed Loading & Unloading wharf at the new Sydney Fish Market would cater for the existing fleet of fishing trawlers/boats. However, the day charter vessels (e.g. Manly Fast Ferries and Fusion Cruises) currently berthed at the Sydney Fish Market northern mooring jetty would need to be relocated elsewhere.

3.4.2 Blackwattle Bay Precinct Study Area

3.4.2.1 Day Charter Marina

The Day Charter Marina proposed in the precinct study area is located at the entry to Blackwattle Bay at the site of the recently built Bank Street marina. The current marina was designed to accommodate 22 vessels relocated from the demolished Blackwattle Bay Marina and comprises floating pontoon berths with foreshore access provided via a gangway. The indicative layout of the Day Charter Marina shown on the precinct plan maintains the current configuration of the Bank Street marina and includes an extension of the main walkway to accommodate 4 additional day charter vessels, resulting in a proposed future capacity of 26 vessels. The current marina operates under a 5-year temporary approval as a part of its conditions of consent.

3.4.2.2 Corporate Charter Marina

The Corporate Charter Marina is proposed along the eastern foreshore and is linked with a proposed public domain corridor leading to a ferry wharf. The indicative marina layout provides floating pontoon berthing for a range of vessel sizes, with an approximate capacity of 19 vessels. Under this scheme the existing Giddens Jetty (Blackwattle Bay Marine Operatives) would be demolished and vessels relocated to the Day Charter Marina, Corporate Charter Marina or elsewhere.

3.4.2.3 Ferry Wharves

As noted above, the proposed Recreational Floating Wharf at the new Sydney Fish Market includes fender piles for ferry pick up and drop off. A second ferry wharf is also proposed at the Corporate Charter Marina to service the surrounding foreshore redevelopment.

The nature of the potential future ferry service(s) provided within the precinct is currently unknown and requires further consultation with Transport for NSW and/or other private operators. The nature of the ferry service provided would be dependent on the future selection of a ferry operator and their specific requirements and will be scoped at the next stage.

3.5 Areas for Potential Future Growth

The waterway area between the dragon boat launching ramp and the proposed Corporate Charter Marina (refer hatched region indicated on the precinct plan in **Figure 34**) has been identified for potential future growth of vessel berth capacity. This could be facilitated by either expansion of the proposed Corporate Charter Marina or construction of a separate marina.

4 Key Considerations for Blackwattle Bay

Based on the understanding of existing waterway navigation and usage and the proposed precinct plan, the following key considerations should be addressed in the development of the SSP Study for Blackwattle Bay.

4.1 Future Needs of Waterway Users

There are several waterway user groups that require existing and future access to the Bays Precinct. The main user groups comprise commercial vessels, passive craft, fishing vessels and recreational motorised vessels. Their future needs in relation to safety, operational and recreational aspects are summarised below.

The future needs of commercial vessels include:

- access of corporate charter and day charter vessels to permanent berths at floating marina facilities;
- access to landside areas for transfer of staff and back-of-house servicing, including cleaning, provisioning and minor servicing;
- depending on the vessel operators' requirements, landside facilities could include vehicle access and/or parking, office facilities including bathroom/kitchen, onshore storage areas, waste management facilities (e.g. skip bins), water and gas storage, food storage or ice machines;
- safe passage of charter vessels through the waterway to navigate to other areas of Sydney Harbour for passenger pickup and dropoff in accordance with charter schedules during peak, shoulder and low season periods; and,
- access of future ferry service(s) to floating wharf facilities to pickup and dropoff of passengers.

The future needs of passive craft include:

- safe foreshore access to the waterway for launching of craft, including the retaining of the existing pontoon facilities, dragon boat launching ramp, water access steps and beach launching areas (i.e. Bicentennial Park, Rozelle Bay);
- a rowing route for safe transit of passive craft around the perimeter of the Bays Precinct, including appropriate offset of the rowing route from existing proposed wharf structures and vessel manoeuvring areas;
- maintenance of the existing 4 knot zone and no wash zones within the Bays Precinct; and,
- motorised vessels to keep a proper lookout for non-powered craft at all times and to give way to passive recreational craft (e.g. rowing boats, dragon boats and outrigger canoes).

The future needs of fishing vessels include:

- waterway access to dedicated fixed wharves adjacent to the New Sydney Fish Market with permanent berths for fishing trawlers/vessels;
- wharf and landside facilities to cater for unloading, reprovisioning, refuelling and maintenance of fishing vessels; and,
- safe passage of fishing vessels through the waterway to navigate to other areas of Sydney Harbour and offshore.

The future needs of recreational vessels include:

- waterway access to floating berths for day visitors to the New Sydney Fish Market, including all-ability access to adjacent foreshore areas; and,
- permanent marina berths to cater for boating storage demand from the surrounding residential development proposed on the eastern foreshore of the Bays Precinct.

4.2 Interaction Between Motorised Boats and Passive Craft

Rowing and dragon boating groups use the waterway on a regular basis for training activities, which is typically undertaken in the early morning, late afternoon and evening. Any intensification of existing boating traffic created by additional boating infrastructure (above the scale of existing boating facilities) would need to consider potential impacts on passive recreation, which may include increased interaction and risk of accidents occurring. Interactions could also be minimised by positioning relocated and proposed new boating facilities at a suitable distance away from the known launching and retrieval areas for passive craft within Blackwattle Bay, including the pontoon facilities used by Glebe Rowing Club and Sydney University Boat Club, water access steps in the south-western corner of the Bay, and the dragon boat launching ramp at Bank Street, Pyrmont.

The proposed Day Charter Marina (i.e. Bank Street, Pyrmont marina) shown on the precinct plan is located at the entry to Blackwattle Bay and close to the Eastern Channel beneath the Glebe Island Bridge. Locating day charter vessels (e.g. private ferries), that operate more frequently and at earlier times during the day, close to the entry of the Bay minimises interaction of marina vessels with early morning paddlers and rowers. It is also noted that the marina berths closest to the dragon boat launching ramp are configured such that manoeuvring of marina vessels is not completed in close proximity and that larger vessel berths are positioned furthest away from the dragon boat launching area.

In discussions with DBNSW as part of the Bank Street marina development application, it was suggested that the rowing route could be potentially modified in this area by relocating the apex of the turn adjacent to the proposed marina at a distance of 25m from a marker buoy positioned at the SW corner of the waterway lease area. This potential rowing route relocation is shown on the map provided within **Appendix 4** and was considered to be a workable option by DBNSW as rowers generally follow a similar travel path by taking a shortcut across this turn on their approach to Rozelle Bay. It is recommended that modification of the rowing route is considered as part of the precinct plan to further enhance segregation of non-powered and motorised craft. This will require further consultation with other stakeholders including rowing clubs and Transport for NSW - Maritime.

The proposed Corporate Charter Marina shown on the precinct plan is located further south inside the Bay, to be closer to a number of different public transport routes as well as key visitor and entertainment venues such as the new Sydney Fish Market. Corporate Charter vessels are less frequently utilised and typically operate in the afternoon and evening, and therefore would have less interaction with early morning paddlers and rowers.

4.3 Encroachment of Structures into Waterway

A rowing route has been established for transit of passive craft within Blackwattle Bay, which follows the outside of the Bay with distance off from existing boating facilities. Relocated and proposed new boating facilities should consider the position of this rowing route and the potential impacts of narrowing the available waterway area for navigation. It is noted that the current rowing course (refer **Figure 21**) is generally based on setback distances of 25m to 40m from existing marina structures and moored vessels.

4.4 Glebe Island Bridge

Proposed boating facilities should consider the potential constraints imposed by the available clearance beneath of the Glebe Island Bridge. The air draught of a number of vessel types that currently navigate within the area would not be compatible with the existing clearance beneath the bridge in its closed position and may also be impacted if a future walkway was to be provided at a similar level to the existing road deck. This impact could be alleviated by repair/replacement of the swing span of the Bridge to enable it to be reopened at predetermined times or upon request. However, the report assessing options for Glebe Island Bridge prepared by Acil Allen (2013) states that if the bridge was opened no more than once per hour this would cause an average delay per vessel of 14.3 minutes[1] for larger vessels that would have to queue and wait for the Bridge to open.

The width of the eastern portal is also a constraint to navigation traffic, particularly for passage of large vessels with a wide beam. Any intensification of existing boating traffic created by additional boating infrastructure (above the scale of existing boating facilities) would need to consider the potential impacts on navigation through the Glebe Island Bridge from a safety, operational and travel time perspective.

4.5 Water Depth

Available water depth is a key consideration for any boating facility and should be matched with the size (draught) of vessels proposed to use the facility. Transport for NSW - Maritime requirements for water depth are outlined in Guidance Note 03 – Depths in Berths and Fairways. This states that the depth below Chart Datum for berths shall be not less than the sum of the following:

- draught of the largest vessel proposed to be accommodated;
- 0.5 x incident 50 year return interval significant wave height[2]; and,
- a clearance of 0.3m where the seabed consists of soft material (0.5m for rock).

For fairway access to berths, required water depths can be taken below a tide level of Mean Low Water Springs (MLWS, refer **Table 2**).

Relocated and proposed new boating facilities should be positioned in water depths that are adequate for their proposed use as dredging to create deeper water is likely to be costly and problematic due to potential elevated levels of contaminants within marine sediments, onshore dewatering and treatment requirements, and disposal costs.

For the largest corporate charter boats that are currently berthed within Blackwattle Bay (30m motor yacht with 2.4m draught) seabed levels of around 3m below Chart Datum would be required for permanent berthing. Areas of Blackwattle Bay where these water depths are not available in close proximity (e.g. within a 20m gangway length) to the shoreline include:

- the area in the vicinity of the Bank Street dragon boat ramp;
- shoreline between Giddens Jetty (Blackwattle Bay Marine Operatives) and the Sydney Fish Market main concrete jetty;
- in the southern corner of the Bay adjacent to the Hanson Australia concrete batching plant; and,
- within the embayment between Sydney University Boat Club and the headland at Bellevue House.

[1] Based on survey of maritime businesses in Blackwattle Bay and Rozelle Bay.
[2] Likely to be a relatively small component of the overall depth given the sheltered conditions within Blackwattle Bay.

Suitable seabed levels of around 2m-3m below Chart Datum for berthing of motor yachts (<2m draught) and smaller recreational vessels are generally available close to shore within most areas of Blackwattle Bay apart from:

- the area in the vicinity of the Bank Street dragon boat ramp;
- shoreline between Giddens Jetty (Blackwattle Bay Marine Operatives) and the main concrete jetty at Sydney Fish Market; and,
- the southern corner of the Bay adjacent to the Hanson Australia concrete batching plant.

Notwithstanding the above, marina proposals could be configured with extended walkways and smaller vessel berths closer to shore such that larger vessels are berthed further out into the Bay where relatively deep water depths exist with seabed levels of up of 6m below Chart Datum. It is considered that given the current waterway usage and location of existing and proposed maritime structures (i.e. Bank Street marina and new Sydney Fish Market) the proposed location of the Corporate Charter marina and future expansion area along the eastern shoreline of the Bay is appropriate for the precinct plan.

It is also noted that future marina proposals and allocation of vessels into berths at either the proposed Day Charter Marina or Corporate Charter Marina should also consider the landside requirements of vessel operators. For example, corporate charter vessels berths would typically facilitate the transfer of staff and back-of-house servicing, including cleaning, provisioning and minor servicing. Depending on the vessel operators' requirements, landside facilities could include vehicle access and/or parking, office facilities including bathroom/kitchen, onshore storage areas, waste management facilities (e.g. skip bins), water and gas storage, food storage or ice machines.

4.6 Ferry Service

A public or private ferry service is anticipated to be accommodated within Blackwattle Bay. The available navigation width through the Glebe Island Bridge access channels would be adequate for transit of ferry vessels, with existing Harbourcat vessels, First Fleet Class ferries and the new ferry fleet (e.g. the 'Catherine Hamlin') that service inner harbour routes having a beam (width) of 7.2m, 10m and 10.4m respectively. The available clearance beneath the Glebe Island Bridge in its closed position would be problematic for the air draught of ferries, particularly vessels that have several passenger decks and an elevated wheelhouse deck for the ferry crew.

Water depths required for ferry berthing are generally 2m below Chart Datum based on the criteria defined for the current Sydney Harbour ferry wharf upgrade program. This water depth is available in most areas of Blackwattle Bay.

The ferry wharves constructed under the current upgrade program typically comprise floating pontoons that are 18m long, 9m wide (e.g. Pyrmont Bay Ferry Wharf) and 2.5m deep (freeboard[3] of 1m) and are connected to the shore with a 2.4m wide aluminium gangway. The gangways are typically 18m long to provide a suitable gradient for disabled access[4]. The pontoons can be configured for ferry berthing on both sides with ferry fenders spaced at 6m centres along the length of the pontoon. Temporary berthing (pick up and drop off only) of recreational vessels can be facilitated at ferry wharves by provision of rubber arch fenders, mooring bollards and access ladders in between the 6m spans of the ferry fenders. The pontoons can also be configured for ferry berthing on one side and recreational vessel berthing on the other side.

[3] Height of pontoon above the water line.
[4] 1V:8H when the tide is at Lowest Astronomical Tide (LAT), and 1V:14H for more than 20% of the time (this equates to a maximum gradient of 1V:14H at a tide level of 0.55m CD).

To minimise ferry manoeuvring, the berthing face of the wharf pontoon can be aligned parallel to the approach direction of the ferry. If ferry vessels are required to swing around to berth, a turning circle diameter of 1.2 to 1.5 times the vessel length would be required depending on its manoeuvrability. The lengths of the Harbourcat vessels, First Fleet Class ferries and the new ferry fleet (e.g. the 'Catherine Hamlin') that service inner harbour routes are 27.1m, 25.4m and 35m respectively. As such, the required turning circle diameter could be up to 52.5m. A pile can be positioned off the end of the pontoon allow ferries to pivot (when in reverse) and complete their turning manoeuvre to exit the Bay. In this way the occupation of waterway area by ferry manoeuvring is minimised in comparison to a full turning circle.

4.7 New Sydney Fish Market

As noted previously, the Sydney Fish Market is proposed to be relocated to the head of Blackwattle Bay. The new Sydney Fish Market development is State Significant Development. As part of the supporting documentation for the concept development application, an assessment of navigation impacts was undertaken.

The footprint of the new Sydney Fish Market and proposed wharf structures along its water frontage extended into the head of the Bay such that it encroached over the existing alignment of the rowing route. It was recommended that the rowing route was shortened to provide a minimum distance of 45m to the proposed wharf structures as per the current offsets applied in the existing rowing route from the Blackwattle Bay Marina and existing Fish Market main concrete jetty (refer **Figure 21**). It was not considered that this rowing route modification would have any adverse impact on the safety of non-powered craft as the existing available waterway width across Blackwattle Bay would be maintained and only the length of the Blackwattle Bay leg of the rowing route would be reduced by 60 metres.

Mitigation measures recommended to minimise and mitigate potential navigation impacts from the proposed new Sydney Fish Market development included:

- Shortening of the rowing route at the head of Blackwattle Bay to provide a minimum distance of 45m to the proposed wharf structures and to maintain a buffer for vessel turning and ferry manoeuvring at the head of wharves (refer **Map 4** within **Appendix 1**).
- Approaching and departing vessels using the new Sydney Fish Market wharves would need to keep a proper lookout at all times and vessels other than ferries should give way to passive recreational crafts. These navigation requirements should be written into the 'berthing rules' and/or a Plan of Management and included as part of the berthing agreement and planning documentation for use of the wharf facilities.
- Safe navigation requirements should also be reinforced and made clearly visible to regular wharf users, visiting seasonal vessels and recreational vessels by installing signage in prominent locations throughout the wharf facilities to outline the following:
    - 4 knot speed limit and no wash zone;
    - no anchoring at the head of Blackwattle Bay;
    - keeping a proper lookout for non-powered craft at all times;
    - notification of peak times for passive recreation (e.g. dawn and dusk); and,
    - giving way to passive recreational craft including rowing boats, dragon boats and outrigger canoes.
- Preparation of a Vessel Traffic Management Plan (VTMP) for the new Sydney Fish Market to provide guidance to enhance marine safety and navigation for all vessels using the wharf facilities and the surrounding waterway area.
- Ongoing consultation with rowing stakeholders and the Sydney Fish Market to discuss vessel interactions and mitigation measures for potential impacts on rowers.

5 Recommendations

Based on the review of existing waterway navigation and usage, identification of key issues and challenges for Blackwattle Bay, and consideration of proposed future development such as the new Sydney Fish Market, the following recommendations are suggested to be carried forward into the precinct planning of marine infrastructure within Blackwattle Bay:

- AS3962 Guidelines for Design of Marinas are used for siting of marina facilities in appropriate wave climate and water depth, and with provision of adequate manoeuvring and berthing areas for safe navigation.

- The existing 4 knot speed limit and no wash zone within Blackwattle Bay should be maintained.

- Structures and berths are to be sited more than 25m from the existing rowing route to prevent narrowing of the available waterway area for vessel navigation.

- The rowing route map should be officially revised and formally re-issued to incorporate the new Sydney Fish Market development and precinct plan for Blackwattle Bay. This would be undertaken by Transport for NSW - Maritime in consultation with key stakeholders including Transport for NSW, Port Authority of NSW, Infrastructure NSW, Rowing NSW, Glebe Rowing Club, Sydney University Boat Club, Dragon Boats NSW, Sydney Secondary College, recreational boating groups, and marina operators.

- Vessel Traffic Management Plan is developed for Blackwattle Bay taking into account existing proposed development and the precinct plan. This would be undertaken in consultation with Transport for NSW, Roads and Maritime Services, and the Port Authority of NSW.

- Installation of prominent signage to promote safe navigation at marina and wharf facilities, including clear notification of:
    - 4 knot speed limit and no wash zone;
    - no anchoring at the head of Blackwattle Bay;
    - keeping a proper lookout for non-powered craft at all times;
    - notification of peak times for passive recreation (e.g. dawn and dusk); and,
    - giving way to passive recreational craft including rowing boats, dragon boats and outrigger canoes.

- Incorporation of safe navigation requirements into the ‘berthing rules’ and/or a Plan of Management and included as part of the berthing agreement and planning documentation for use for existing and proposed marina and wharf facilities.

- Similar to the above ‘berthing rules’, it is suggested that a ‘Blackwattle Bay Waterway User Group Agreement’ is drafted by Transport for NSW - Maritime in consultation with key stakeholders to document the rules and requirements that passive recreation groups (e.g. rowers, dragon boaters, kayak tour operators) are expected to abide by. This document could include the agreed rowing route map, required safety equipment, requirements for spotters in tinnies, the level of experience of vessel captains, waterway areas to avoid, and identification of risks and hazards within the Bay. The agreement document could be used to as means to register vessel captains with Transport for NSW - Maritime, with signing of the agreement being a prerequisite for waterway usage.

- Installation of appropriate navigation aids to provide night time visibility for the extent of marina and wharf structures in consultation with Transport for NSW - Maritime.
- Installation of prominent signage at the Glebe Island Bridge entrance advising that “non-powered vessels are using this area frequently” or words to this effect.
- Consideration of the available clearance beneath the Glebe Island Bridge in its closed position when selecting design vessels for public or private ferry services.
- A detailed navigation impact analysis would be completed at the development application stage of any proposed new maritime structures within the precinct.

6 References

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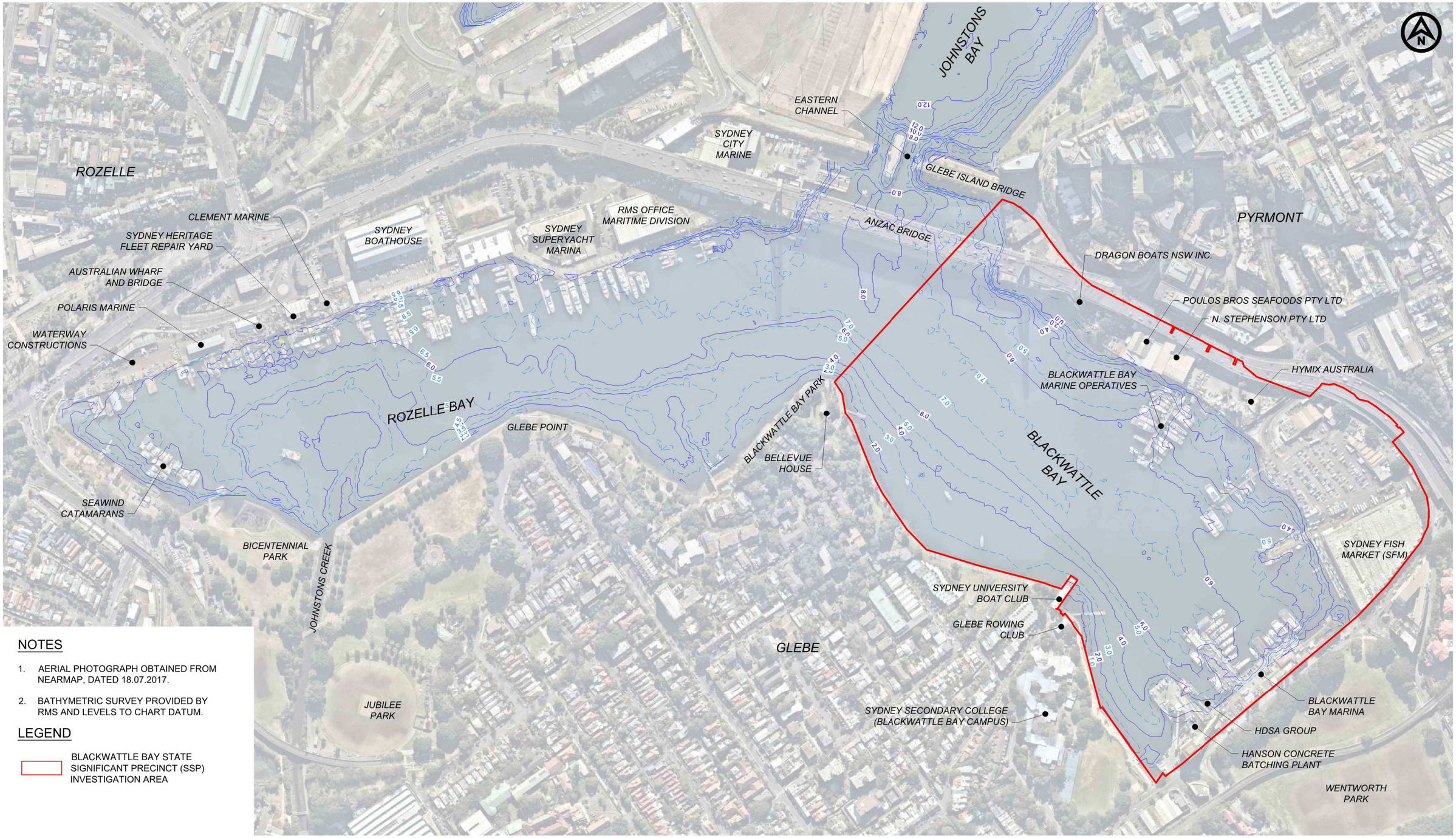
Appendix 1 – Maps

BLACKWATTLE BAY NAVIGATION STUDY

BATHYMETRIC LEVELS
MAP 1



NOTES

1. AERIAL PHOTOGRAPH OBTAINED FROM NEARMAP, DATED 18.07.2017.
2. BATHYMETRIC SURVEY PROVIDED BY RMS AND LEVELS TO CHART DATUM.

LEGEND

BLACKWATTLE BAY STATE SIGNIFICANT PRECINCT (SSP) INVESTIGATION AREA

CHART DATUM

50 0 50 100 150 200 250m
1:2500 (A1) 1:5000 (A3)

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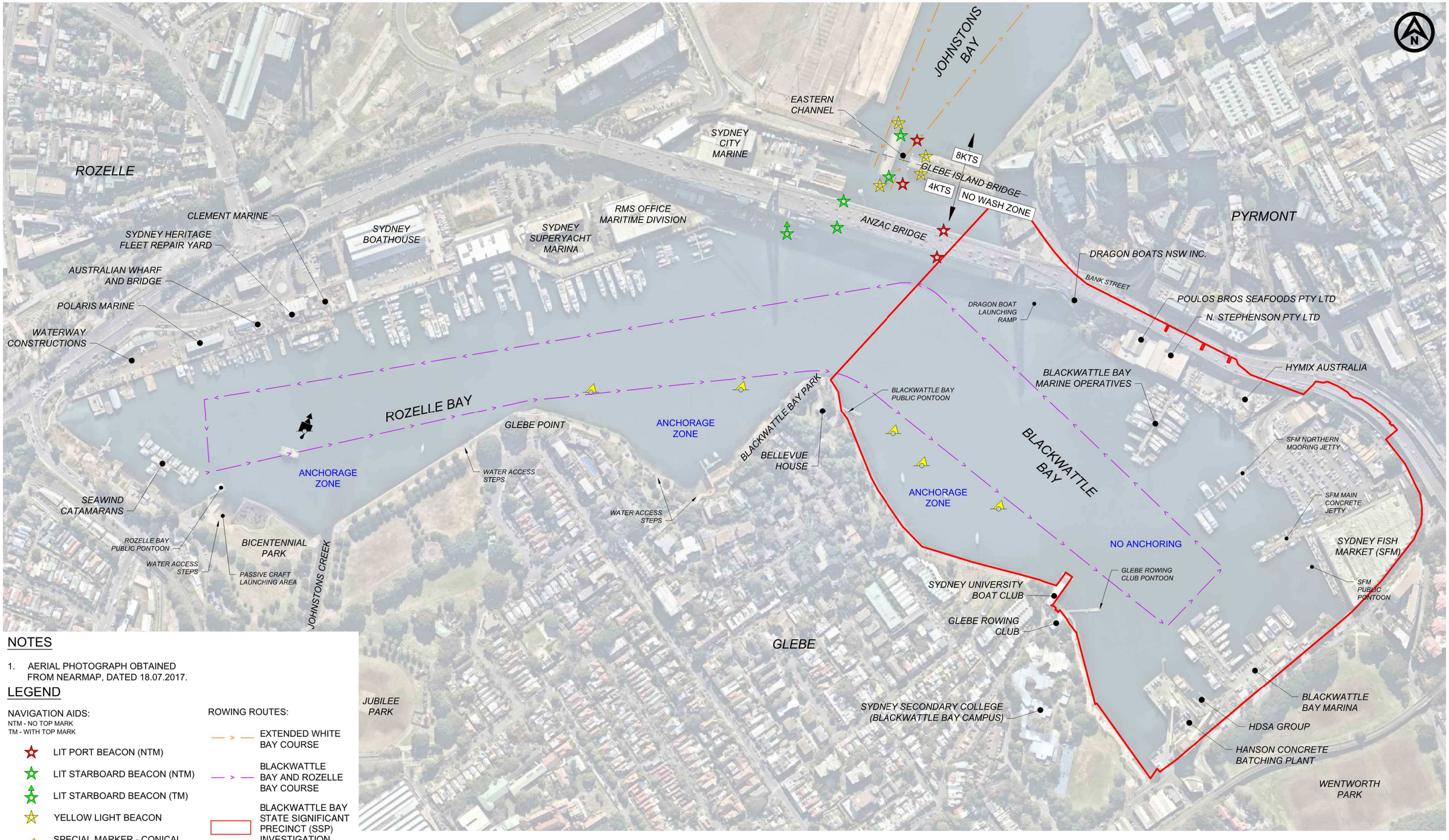
BLACKWATTLE BAY NAVIGATION STUDY

MARITIME AND NAVIGATION FEATURES
MAP 2



NOTES

1. AERIAL PHOTOGRAPH OBTAINED FROM NEARMAP, DATED 18.07.2017.

LEGEND

NAVIGATION AIDS:
NTM - NO TOP MARK
TM - WITH TOP MARK

- LIT PORT BEACON (NTM)
- LIT STARBOARD BEACON (NTM)
- LIT STARBOARD BEACON (TM)
- YELLOW LIGHT BEACON
- SPECIAL MARKER - CONICAL BUOY (NTM)
- LIT NORTH CARDINAL CAN BUOY

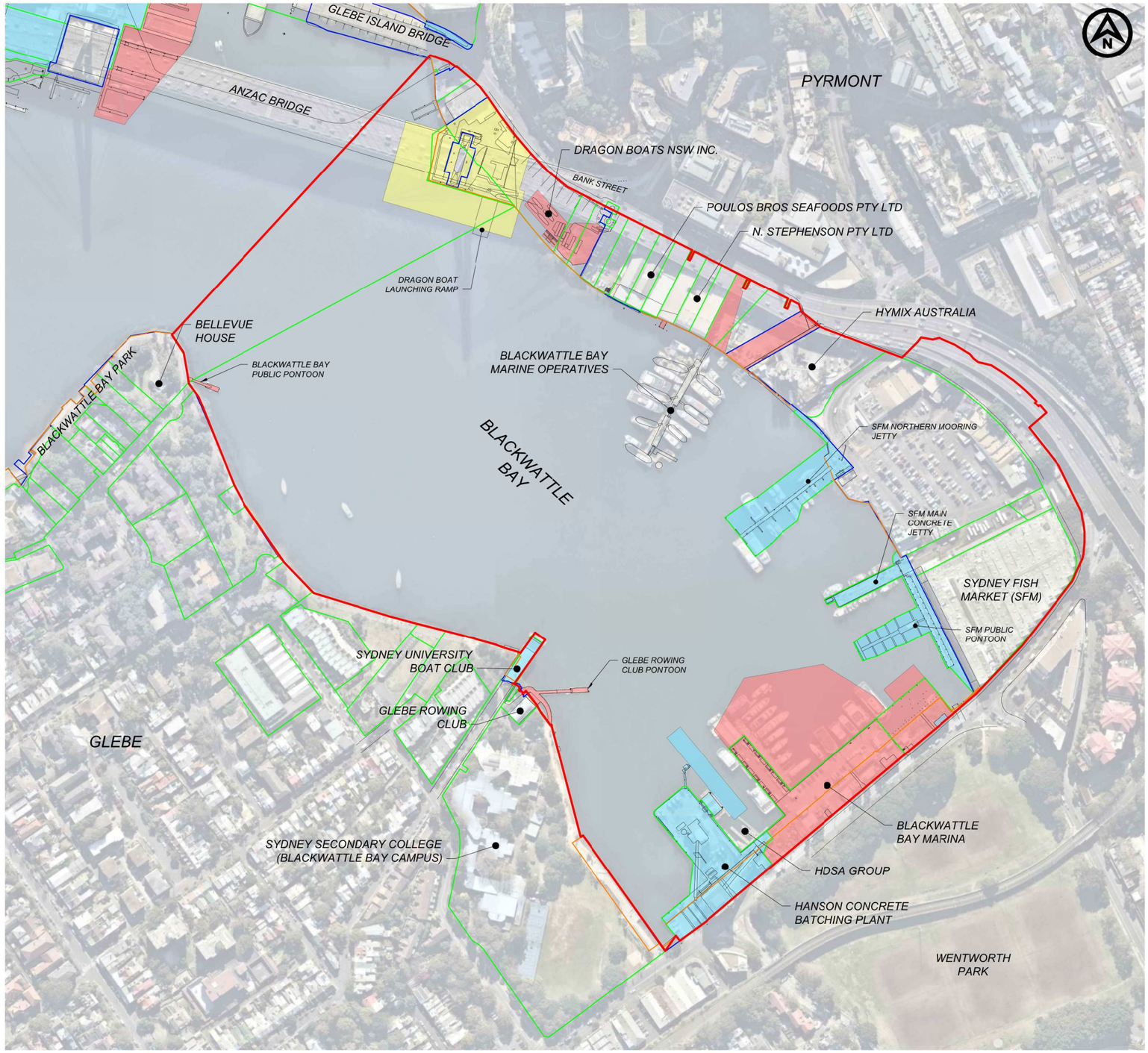
ROWING ROUTES:

- EXTENDED WHITE BAY COURSE
- BLACKWATTLE BAY AND ROZELLE BAY COURSE
- BLACKWATTLE BAY STATE SIGNIFICANT PRECINCT (SSP) INVESTIGATION AREA

50 0 50 100 150 200 250m
1:2500 (A1) 1:5000 (A3)

BLACKWATTLE BAY NAVIGATION STUDY

WATERWAY OCCUPATION AREAS
MAP 3



NOTES

1. AERIAL PHOTOGRAPH OBTAINED FROM NEARMAP, DATED 18.07.2017.

LEGEND

- CADASTRAL BOUNDARY
- RMS MARITIME BOUNDARY
- SEAWALL
- STRUCTURE
- BLACKWATTLE BAY STATE SIGNIFICANT PRECINCT (SSP) INVESTIGATION AREA

LEASE BOUNDARIES:

- AFL (AGREEMENT FOR LEASE)
- CAN_LET (CURRENT TENURES UNDER LEASE AGREEMENT)
- LICENCE (COMMERCIAL, COMMUNITY AND SHORT TERM OCCUPATIONS)
- SPT (STATUTORY PERIODIC TENURE)

40 0 40 80 120 160 200m
1:2000 (A1) 1:4000 (A3)

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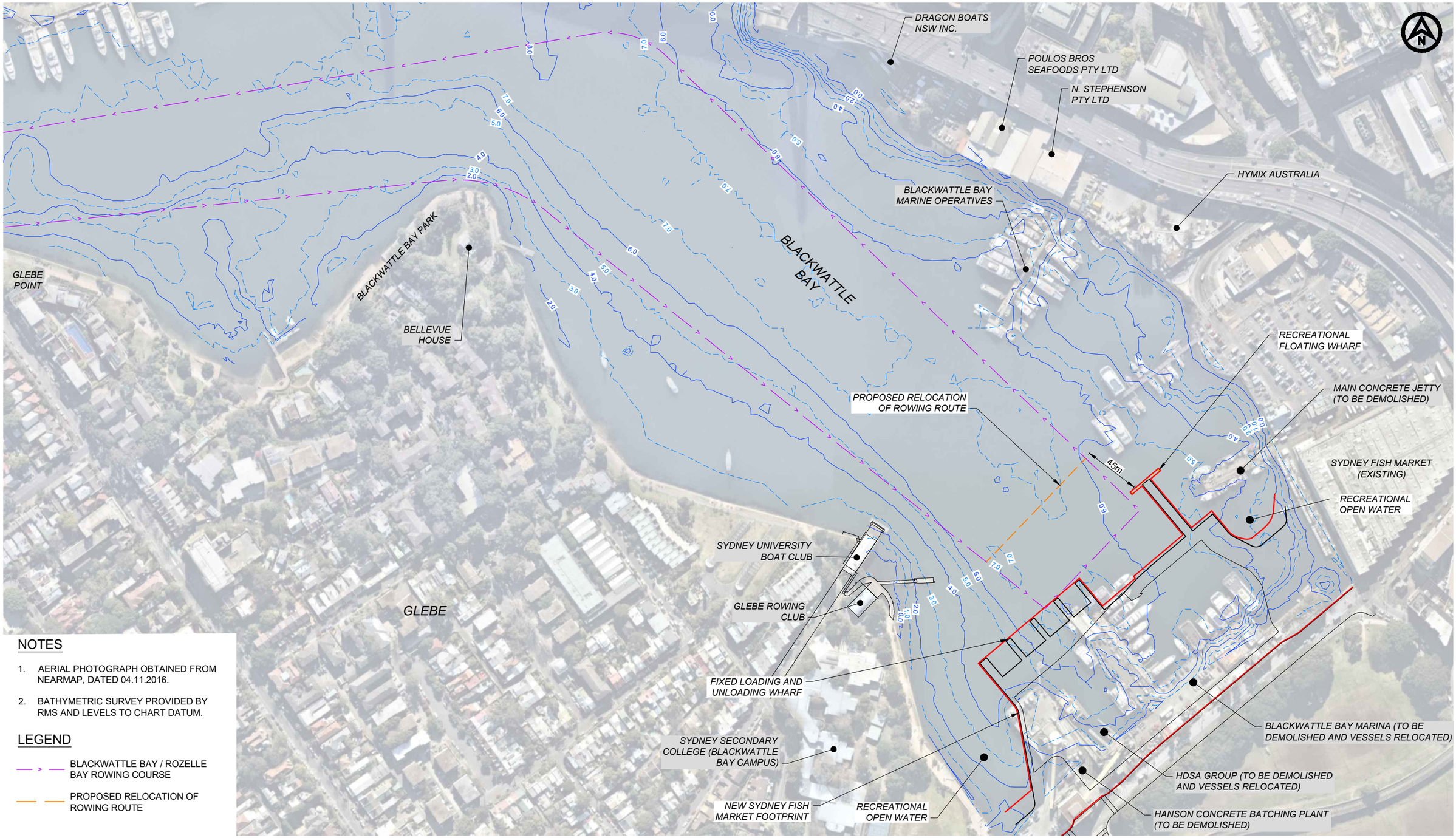
BLACKWATTLE BAY NAVIGATION STUDY

PROPOSED NEW SYDNEY FISH MARKET PLAN

MAP 4



NOTES

1. AERIAL PHOTOGRAPH OBTAINED FROM NEARMAP, DATED 04.11.2016.
2. BATHYMETRIC SURVEY PROVIDED BY RMS AND LEVELS TO CHART DATUM.

LEGEND

- BLACKWATTLE BAY / ROZELLE BAY ROWING COURSE
- PROPOSED RELOCATION OF ROWING ROUTE

CHART DATUM

30 0 30 60 90 120 150m

1:1500 (A1) 1:3000 (A3)

PA1665 - NAVIGATION IMPACT ASSESSMENT BAYS MARKET DISTRICT

C:\Users\220025\Box\PA1665 Navigation Impact Assessment for Bays Market\PA1665 Navigation Impact Assessment Bays Market District Team\PA1665 Technical Data\E11 Working Drawings\PA1665-MA-Civil Model[E].dwg

SAVED: 30-Sep-20

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Appendix 2 – NSW Boating Information

Safety on the water

46 Know the rules

Safe speed
Proper lookout
Bow riding
Giving way
Safe distance and speed
Mooring areas
Diving activities
Dredges
Vehicular ferries
Commercial fishing vessels

57 Navigation marks and signs

64 Night safety

Navigation lights checklist

70 Special areas

Open waters
Bar crossings
Inland waterways
Alpine waters
Sydney Harbour

78 Big ships and small boats

79 Go easy on the drink

KNOW THE RULES

All masters must be aware of the International Regulations for Preventing Collisions at Sea which are adopted in NSW and modified through the *Marine Safety Regulation 2016* and available on the Roads and Maritime website at **rms.nsw.gov.au/maritime**. A summary of these rules is given in this section.

SAFE SPEED

All vessels must travel at a safe speed at all times.

A safe speed cannot be expressed as a maximum or minimum number of knots because it varies with circumstances and conditions. The master (skipper) must continually assess the safety of the vessel's speed.

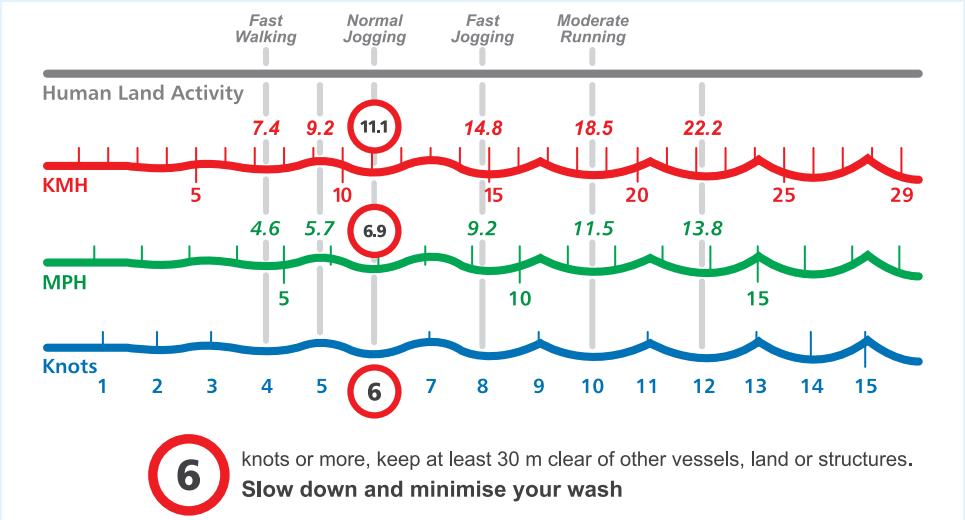
A safe speed is one at which the vessel can be stopped in time to avoid any danger which arises suddenly. In judging a safe speed the master must consider a number of issues including:

- **Visibility** – Drive slowly in rain, fog, mist, smoke or glare
- **Night** – Special caution is required between sunset and sunrise because many potential hazards may not be lit or may not be easily seen. Background shore lighting may confuse you
- **Other vessels** – Slow down on busy waterways and when near moored or anchored vessels, working vessels showing special signals and large vessels which have difficulties in manoeuvring
- **Navigation hazards** – Slow down in shallow areas or in unfamiliar waterways. Water depth can vary and change frequently. Not all hazards may be marked or lit and signs, buoys, marks or lights may have shifted or been vandalised
- **Wind, waves and currents** – May adversely affect the manoeuvrability of a vessel
- **Manoeuvrability of the vessel** – Stopping and turning ability depends on the speed travelled, wind and current and the boat's design, such as hull shape, engine and propeller type and number.

If your vessel does not have a speedometer, you must be able to determine if you are exceeding a local speed limit. For example, if your boat is planing in a restricted speed zone it is likely that you are exceeding the speed limit, so slow down.

WASH

Wash refers to the waves and turbulence created by a boat as it moves through the water. The size of a boat's wash and the effects it might have depend on how the boat is driven, its hull shape and how much load it is carrying.



PROPER LOOKOUT

The master is responsible at all times for keeping a lookout for dangers. A good lookout must be kept by sight and hearing.

The master must be fully aware of the boating environment, especially in bad weather, restricted visibility or darkness. Don't forget to look all around, even behind you.

Special care should be taken when operating your boat in areas where high speed vessels operate, such as Sydney Harbour. The situation can become dangerous very quickly due to rapid closing speeds, even if your vessel is travelling slowly.

For example a vessel going at 20 knots will cover more than 100 metres in less than 10 seconds and the speed of your boat may further decrease your time to react to avoid a collision.

Don't confuse the lookout duties of the master with those of the observer when the boat is towing a person on skis, tubes etc.

See page 82 for information on towing responsibilities.

BOW RIDING IS ILLEGAL

Bow riding means:

- Extending any part of your body outside the perimeter of a power-driven vessel that is making way, or
- Being on the bow in a position that increases the risk of falling overboard.

IMPORTANT NOTE

The offence relating to bow riding applies to both the operator of the vessel and the offending person. Fines apply.

'Bow riding' on a moving powerboat includes being on the bow in a position increasing the risk of falling overboard, or sitting or leaning out over any edge of the vessel.

GIVING WAY

The master must continuously assess the risk of collision with other vessels. Power vessels must give way to:

- Sailing vessels
- Vessels approaching head on, by altering course to starboard
- Vessels approaching from the right (starboard) hand side, ie crossing
- Vessels displaying the special lights and signals shown in this chapter
- Large vessels restricted in their manoeuvrability
- Any vessel being overtaken
- Vessels engaged in fishing activities and showing appropriate signals.

A vessel drifting is deemed to be underway and has no special right of way. It is required to comply with the International Regulations for Preventing Collisions at Sea.

Do not create a dangerous situation by forcing your right of way. Always keep a safe distance from other vessels so the vessel can be stopped or manoeuvred to avoid any sudden danger.

The faster the speed, the greater the safe distance must be.

When altering course make your intentions clear to others as early as possible.

IMPORTANT NOTE

In a collision, all masters involved can be held responsible even if the give-way vessel does not give way, because all masters are required to exercise caution and take avoiding action if the other vessel does not.

SOUND SIGNALS

Special sound signals exist for powered vessels to indicate their manoeuvring intentions when they are in sight of one another.

1 short blast
I am altering course to starboard (the right).

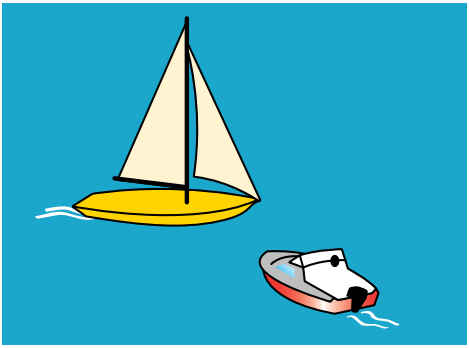
2 short blasts
I am altering course to port (the left).

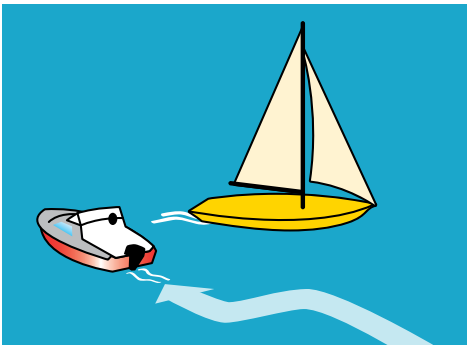
3 short blasts
I am operating engines astern (stopping/slowing or reversing).

5 short blasts
I am unsure of your intentions and I doubt whether you are taking sufficient action to avoid collision.

POWER GIVES WAY TO SAIL

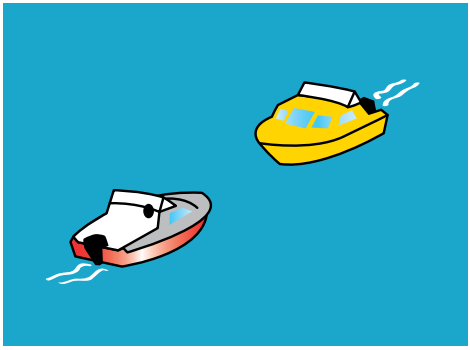
A power driven vessel must give way to a sailing vessel unless the sailing vessel is in the process of overtaking it.

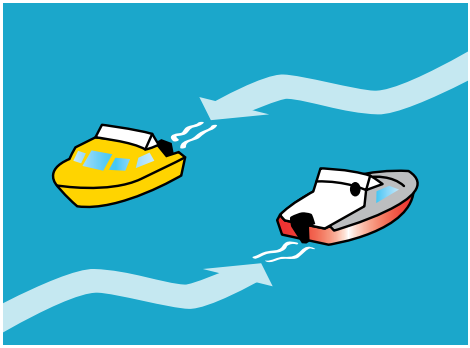




POWER DRIVEN VESSELS MEETING HEAD ON

When two power driven vessels meet head on, each must alter course to starboard (to the right) and pass at a safe distance.





ACTION TO AVOID COLLISION

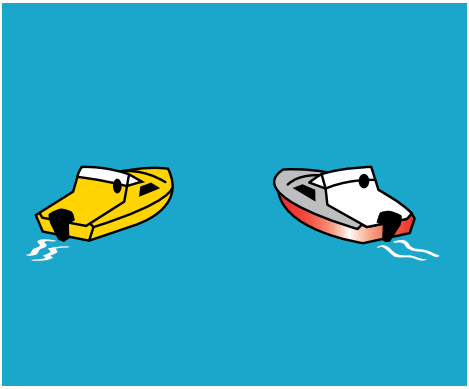
The give-way vessel must avoid a collision by changing course substantially, by slowing down, or stopping and allowing the vessel which has right of way to pass clear ahead. This must be done as early as possible.

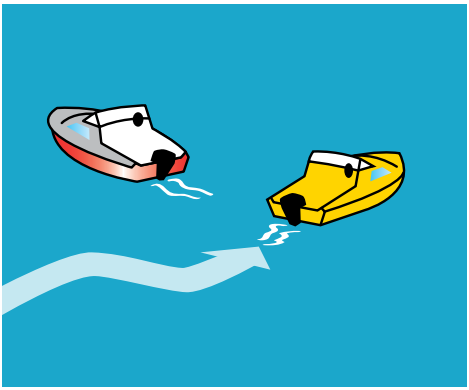
IMPORTANT NOTE

The master of the vessel which has right of way must maintain a lookout, maintain course and speed and be prepared to take action to avoid a collision if necessary.

POWER DRIVEN VESSELS CROSSING

In crossing situations, give way to the right.





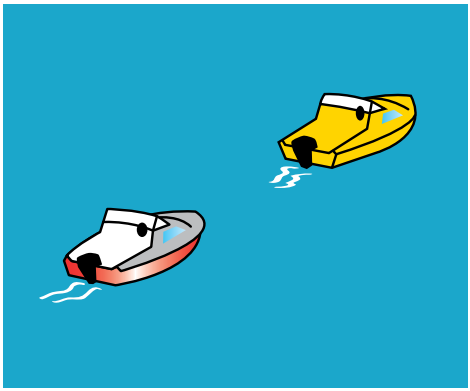
VESSELS OVERTAKING

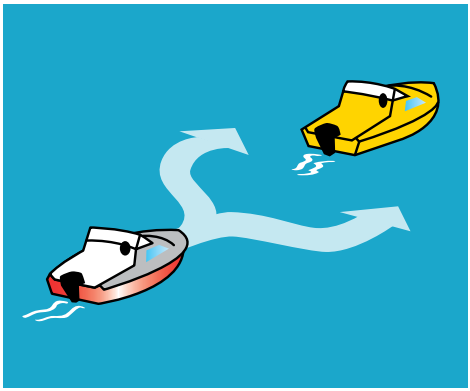
Any vessel (including a sailing boat) which is overtaking another vessel must keep well clear of the vessel being overtaken.

You can overtake another vessel on either side but only when it is safe and you must stay well clear.

In narrow channels you must be particularly careful when overtaking.

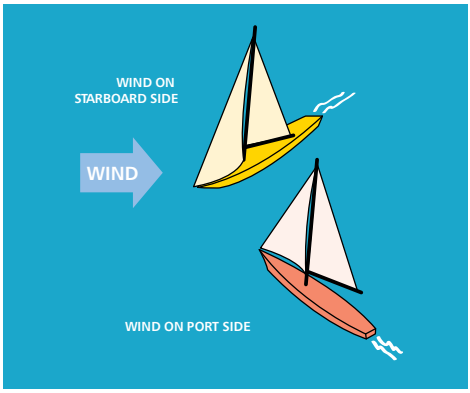
In all instances, make sure you do not cut in front of the vessel you have overtaken.

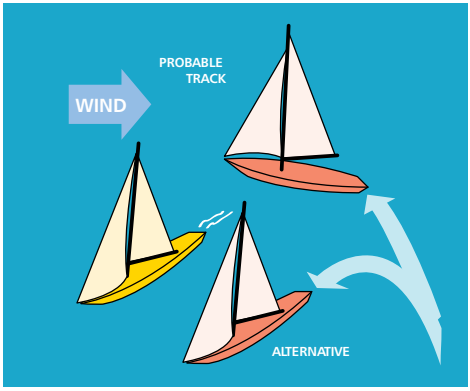




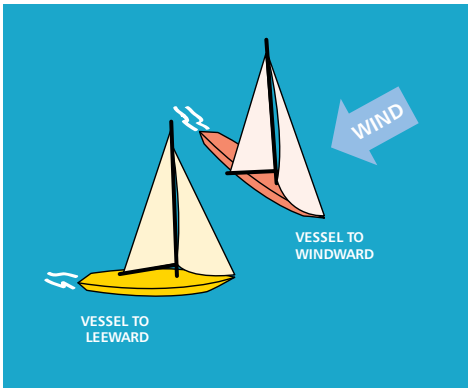
SAILING VESSELS AND SAILBOARDS

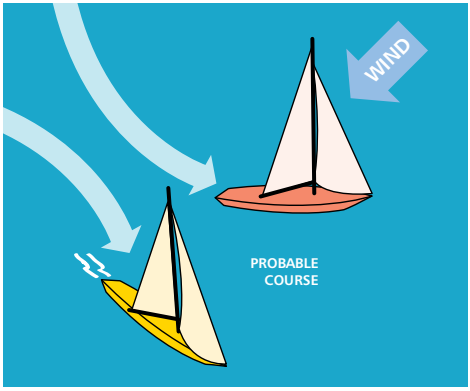
When two sailing vessels have wind on different sides, the vessel with wind on the port side gives way. In the following scenarios, the red vessel gives way.





When both craft have wind on the same side, the vessel which is to windward shall keep out of the way of the vessel which is to leeward.





IMPORTANT NOTE

If a collision appears inevitable, the skipper of each vessel must take proper action to avoid the collision.

SAFE DISTANCE AND SPEED

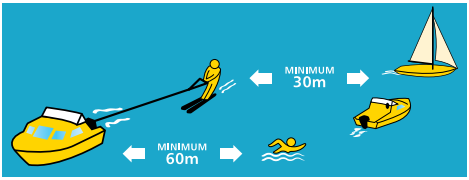
A **safe distance and speed** between a vessel and a person or thing (including another vessel) is a distance and speed that will ensure that the vessel will not cause danger or injury to the person or damage to the thing, having regard to all relevant safety factors including weather conditions at the time, visibility, speed of the vessel and obstructions to navigation that are present.

Changes have been made to the safe distance requirements (also known as 'distance off') from July 2016 by the introduction of the *Marine Safety Regulation 2016*. The revised rules are explained below.

When driving any vessel (including when towing a person or people) you must keep the vessel, any towing equipment and anyone being towed, a minimum distance of:

- **60 metres** from people in the water or if that is not possible, a safe distance and speed
- **60 metres** from a dive flag on the surface of the water or if that is not possible, a safe distance and speed.

Exceptions are when you are supporting swimmers or divers in the water; or your vessel is human-powered, eg a canoe, kayak, surf ski or rowboat; or it is a sailing vessel under 5.5 metres long without an auxiliary engine; or you are launching or removing it from the water taking care to avoid injuring people or damaging property.



When driving a power-driven vessel at a speed of six knots or more (including when towing a person or people) you must keep the vessel, any towing equipment and anyone being towed, a minimum distance of:

- **30 metres** from any other vessel, land, structures (including jetties, bridges and navigation markers), moored or anchored vessels, or if that it is not possible, a safe distance and safe speed.

Parasailing vessels, any towing equipment and anyone being towed, must maintain a distance of at least **200 metres** from any other vessel, bridge, cable, wire, pipeline or structure.

DESIGNATED SWIMMING AREAS

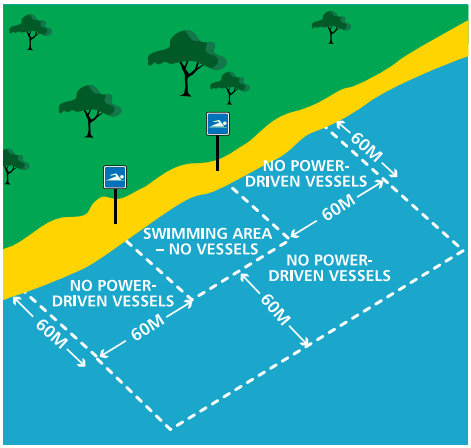
Vessels must not be operated in a swimming area, unless permitted to do so by signage.

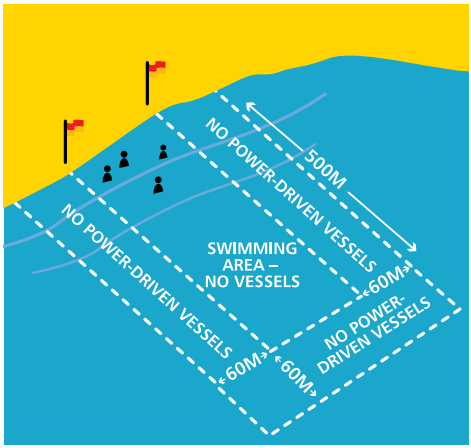
A designated swimming area in a surf zone is defined as the area extending 500 metres out from shore between surf patrol flags or signs.

In all other areas a swimming area is defined as the area extending 60 metres out from shore between signs for swimmers.

Power-driven vessels must not be operated within 60 metres of a swimming area and the flags or signs marking such zones, unless they are a vessel operated by Surf Life Saving NSW or Council lifeguards or unless permitted to do so by a sign.

Remember the same rules apply for PWC as other vessels operating near surf zones/ swimming areas.





All vessels must stay outside swimming areas and power-driven vessels must not come within 60 metres, unless permitted by signage.

MOORING AREAS

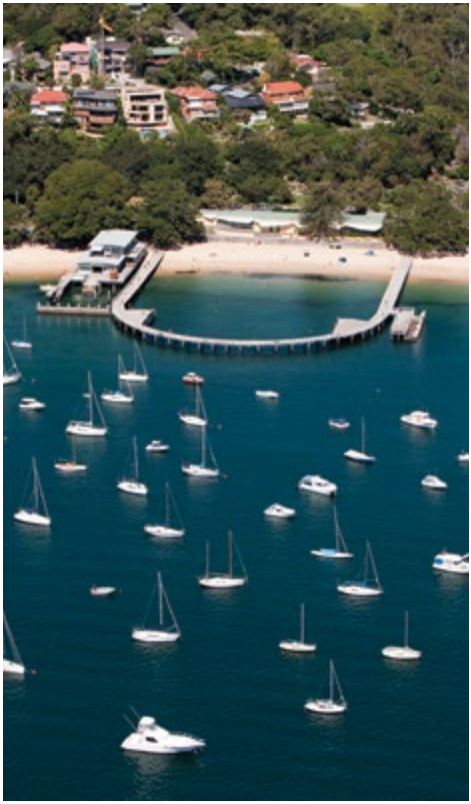
On many waterways in NSW, areas are set aside for the mooring of vessels. These vessels are not required to be lit at night and the masters of other vessels must be aware of the location of such moorings.

Check local maps or charts, or contact your local Roads and Maritime centre for details of mooring areas.

REMEMBER

When navigating near, in or through a mooring area:

- Drive slowly and keep wash to a minimum
- Keep a lookout for people in the water, small dinghies, and trailing ropes
- When travelling at 6 knots or more in a power-driven vessel, you must stay at least 30 metres from any moored vessel.



Special rules apply when navigating through and near mooring areas.

DIVING ACTIVITIES

Always keep a good lookout for people in the water, including divers, snorkellers, spearfishers and swimmers. Keep an eye out for the 'Alpha' flag, which means divers, snorkellers or spearfishers are in the water nearby.

Divers may be present in a variety of areas: Headlands, rocky reefs, bomboras and sheltered coves. Check your local boating map for likely areas before going out on the water.

Navigate with caution whenever within 200 metres of the shore where divers may be present. Be particularly careful when visibility is poor, such as in fog, glare, low light and surface chop.

The blue and white Alpha flag must be displayed whenever divers, spearfishers or snorkellers are operating from the vessel. It should measure at least 40 centimetres x 40 centimetres in size, be rigid, and be flown in a vertical position at least one metre above the vessel's superstructure and visible through 360 degrees. In addition, it is a good idea to attach a high visibility fluorescent yellow/green flag to draw attention to the Alpha flag, whether it is displayed from a vessel, buoy or personal float.

Alternatively the Alpha flag can be flown off a nearby float/buoy, in which case it must be at least two metres above the water level. It is also strongly recommended that a personal float and an Alpha flag be towed by snorkellers or spearfishers who venture more than 60 metres away from their vessel or who are operating from shore. For even greater visibility, it is a good idea to use a float that displays the high visibility colours.

If you see any Alpha flags, brightly coloured flags or brightly coloured floats, slow down and keep well clear. Remember, you must stay at least 60 metres away from anyone in the water, or a safe distance and speed if that is not practicable.

Divers can be up to 100 metres from their float/ flag. You must stay at least 60 metres away from anyone in the water.

Fluorescent floats and/or flags are recommended to draw attention to the Alpha flag.

If you suddenly find yourself close to divers' flags and/or floats, cut the engine immediately, look around and match people to floats before slowly motoring clear. Remember that spearfishers may be up to 100 metres from their float and flag.

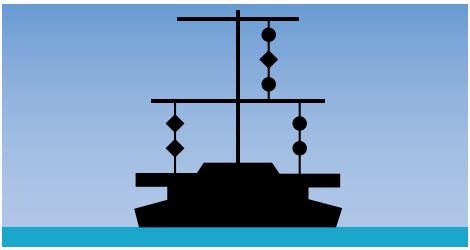
Avoid passing between a diving vessel and the shore, pass well clear to the seaward side. Be aware that spearfishing and snorkelling vessels are not always at anchor, and often move about picking up and dropping off divers.

If picking up or dropping off snorkellers or divers, always be prop aware. For more information on propeller strikes, see page 92. Preferably switch off the engine first and always choose a safe position well clear of rocks or breaking waves so you don't have to rush.

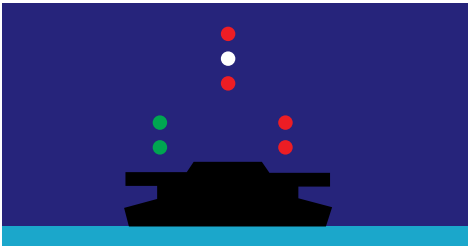
The blue and white 'Alpha' flag means divers, snorkellers or spearfishers are in the water nearby.

DREDGES

When driving your vessel you must not create wash that may damage or unreasonably impact on a dredge or work barge.



Safe side to pass (Diamonds) **Obstruction this side (Balls)**

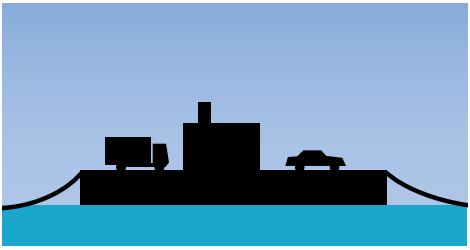


Safe side to pass (Green – Go) **Obstruction this side (Red – Danger)**

VEHICULAR FERRIES

In some areas vehicular ferries drag themselves across channels using wires or chains. Because these wires/chains are often below the water you may not see the danger.

You must slow down to four knots or less when within 100 metres of the wires or chains of a vehicular ferry when it is underway and disengage power when crossing the wires or chains.



Always pass astern of the ferry. Preferably wait until it has reached the shore to avoid becoming entangled in the wires.

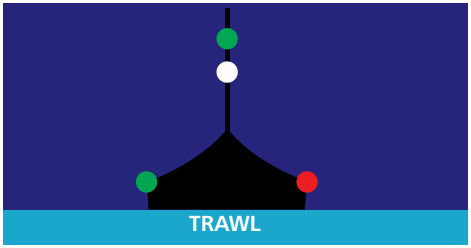
A vehicular ferry underway will display an all-round flashing light. You should give way, as it is significantly restricted in its ability to manoeuvre.

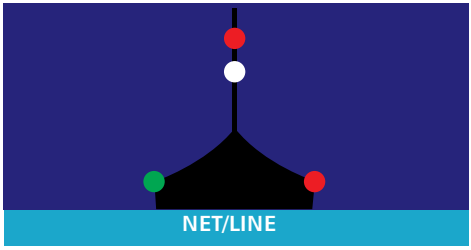
COMMERCIAL FISHING VESSELS

Licensed fishing vessels (LFB) display special shapes and lights when their manoeuvrability is restricted by their fishing apparatus.

You should keep clear of these vessels when you see such shapes or lights or notice they are working with nets and lines.

Contact your local NSW Department of Primary Industries (NSW DPI) Fisheries office for more details about the rights of commercial fishing vessels.





NAVIGATION MARKS AND SIGNS

A system of buoys, poles and lights is used to assist safe navigation. Each type of mark has a unique combination of colour, shape, topmark and light. You must be able to identify these marks and pass them safely on the correct side.

An interactive guide to safe navigation, including marks and signs as well as vessel lights, is available online at **rms.nsw.gov.au/maritime**.

LATERAL MARKS

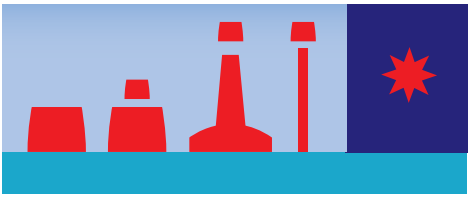
Port and starboard marks are referred to as lateral marks.

Port hand markers

Port markers are red and have a can shaped topmark or buoy.

If lit, a port hand mark shows a flashing red light.

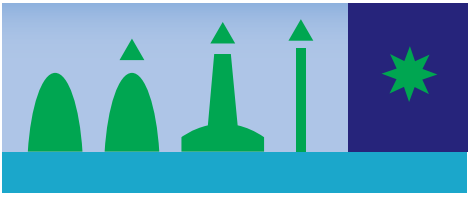
Port markers may be any of the shapes shown below.



Starboard hand markers

Starboard markers are green and have a cone shaped topmark or buoy. If lit, a starboard hand mark shows a flashing green light.

Starboard markers may be any of the shapes shown below.



IMPORTANT NOTE

When port and starboard marks are placed near each other, you travel between the two.

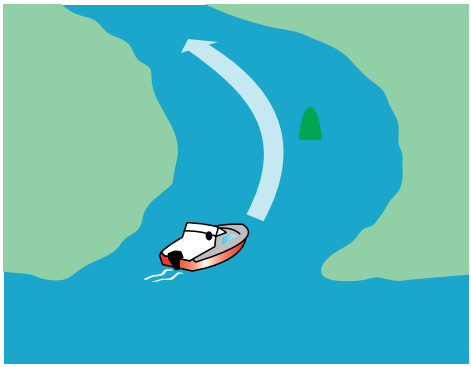
Single lateral marks

Often lateral marks are not placed in pairs, so you will need to decide on the safe side to pass.

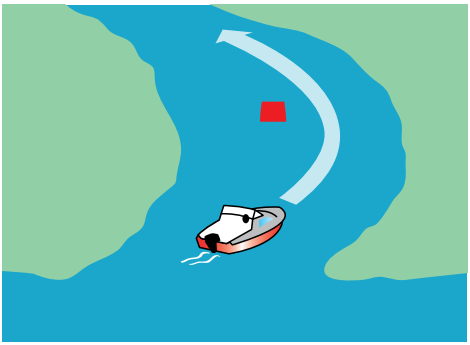
The safe side to pass a lateral navigation marker is determined by your direction of travel to or from the sea.

IMPORTANT NOTE

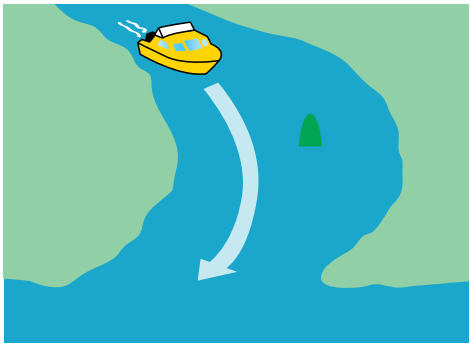
Heading upstream means in a direction away from the sea. Heading downstream means in a direction towards the sea.



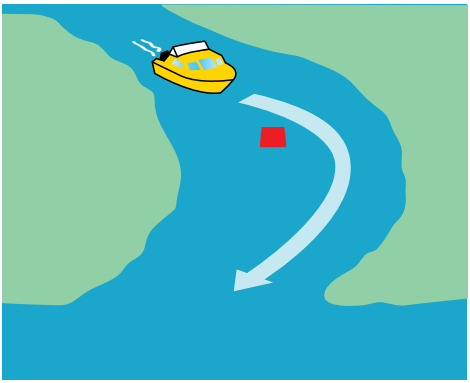
Keep **green** (starboard hand marks) on your **right hand side** (to starboard) when going upstream.



Keep **red** (port hand marks) on your **left hand side** (to port) when going upstream.



Keep **green** (starboard hand marks) on your **left hand side** (to port) when going downstream.



Keep **red** (port hand marks) on your **right hand side** (to starboard) when going downstream.

✓ **GREEN** to **GREEN** when going upstream

✓ **GREEN** to **RED** when seas are ahead

CHANNELS AND RIVERS

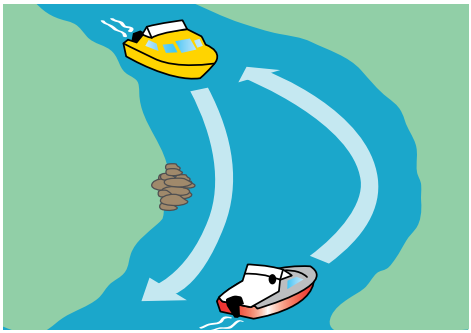
In NSW, the term 'channel' means an area of navigable waters that, whether or not indicated by navigation marks, provides a passage for vessels. This means that the term channel extends to bays and sounds as well as the more traditional marked channels, fairways, passages and rivers. Generally speaking, best practice is to keep to starboard (right hand side) in all waterways. However, in narrow channels a vessel **must** keep to starboard.

When driving a boat on rivers and estuaries, extreme caution should be exercised because not all shallow areas and navigation hazards may be marked and shallow areas may shift.

Be careful at bends. Keep a good lookout for boats coming the opposite way. Do not cut corners.

In channels or narrow stretches of water all regulations for avoiding collision apply. Remember:

- Keep to the starboard side (right-hand side) of the channel
- Do not get in the way of larger vessels operating in the channel and watch for unexpected alterations of course as they try to follow the deepest water route
- Do not anchor or fish in channels where you may obstruct other vessels.

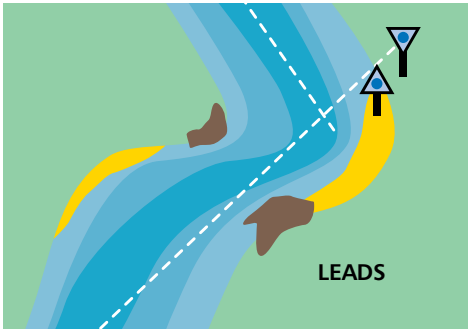


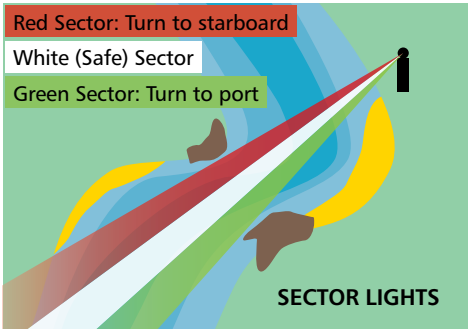
LEADS AND SECTOR LIGHTS

Leads are often used to guide vessels into a port or through sections of a waterway. By moving your vessel to a position so that both leads are lined up, the course should be a safe one.

At night, major leads are lit. Move your vessel to ensure that the lights are vertically above each other. All leads are shown on maps and charts, so it is essential to consult your chart for relevant leads and other navigation aids before entering unfamiliar waters.

The leads at major ports are usually highly visible blue triangular or vertical lights mounted on bright orange or red triangular boards.





Sector lights vary from port to port and a chart should be referred to before using them. Where sector lights mark the entrance to a port, be aware that the white sector is the shipping channel. Do not impede the passage of seagoing ships. See page 78 for more information on large vessels.

CARDINAL MARKS

Cardinal marks are used to indicate that deeper water lies in a compass direction away from a danger such as a reef, shallow areas, etc. They are painted in combinations of yellow and black as shown.

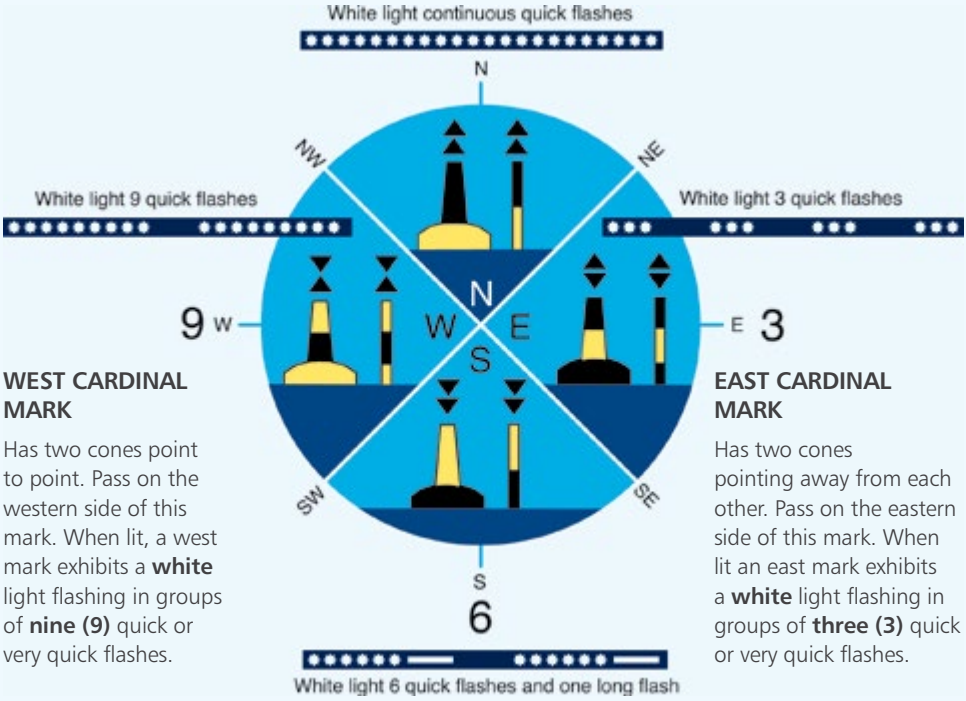
REMEMBER

Think of a clock face when remembering the lights on cardinal marks.

Three flashes = East.
Six flashes and one long flash = South.
Nine flashes = West.
Continuous flashes = North.

NORTH CARDINAL MARK

Has two cones pointing up. Pass on the northern side of this mark.
When lit, a north marker exhibits a **continuous** (very) quick **flashing white** light.



WEST CARDINAL MARK

Has two cones point to point. Pass on the western side of this mark. When lit, a west mark exhibits a **white** light flashing in groups of **nine (9)** quick or very quick flashes.

EAST CARDINAL MARK

Has two cones pointing away from each other. Pass on the eastern side of this mark. When lit an east mark exhibits a **white** light flashing in groups of **three (3)** quick or very quick flashes.

SOUTH CARDINAL MARK

Has two cones both pointing down. Pass on the southern side of this mark. When lit a south mark exhibits a **white** light flashing in groups of **six (6)** quick or very quick flashes followed by a long flash

SPEED SIGNS

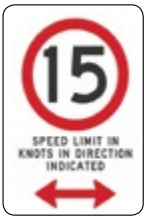
In some areas, speed restriction signs are used for safety reasons in NSW. These usually show four or eight knots, but can also show six, 10 and 15 knots. Penalties apply for travelling in excess of the speed restriction.

4 knots

About 7 km/h or a fast walking speed

6 knots

About 11 km/h or a jogging speed



15 knots

About 28 km/h or a fast running speed. Used in the Sydney Harbour Transit Zone. See page 76 for additional details.

WASH

The operator of a vessel must not cause wash that damages or impacts unreasonably on:

- Any dredge or floating plant
- Any construction or other works in progress
- Any bank, shore or waterside structure
- Any other vessel, including a vessel that is moored.

'Wash' is the wave effect created by a vessel moving through the water. 'No Wash' and 'Reduce Wash' signs are placed in some areas where the wash from a vessel is likely to cause damage to the foreshore or vessels, or injury or annoyance to people.

Be aware that vessel wash can travel for hundreds of metres, and you can be held legally responsible for damage caused by wash from your vessel.

Travel at a speed which creates minimal wash when you see this sign and when near moored or anchored vessels. Look behind occasionally to see if your boat is creating wash that affects other boats or the shore. Adjust your speed if necessary.

Regardless of signs, you should not navigate your vessel in such a way as to produce wash that damages other vessels or impacts unreasonably. This is an offence.

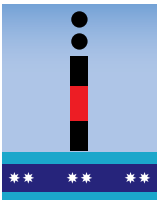
IMPORTANT NOTE

On the spot fines are issued for creating excessive wash.

Travelling at the speed shown on a speed restriction sign does not guarantee you are not creating excessive wash.

OTHER BUOYS AND SIGNS

Isolated danger



Indicates specific dangers with generally safe waters all around (eg a wreck). You can pass them on any side but do not pass too close. If lit, it shows a white light flashing in groups of two.

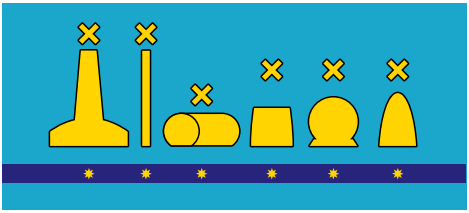
Special marks

Indicates special features or areas such as:

- Tide poles
- Spoil grounds
- Underwater pipes.

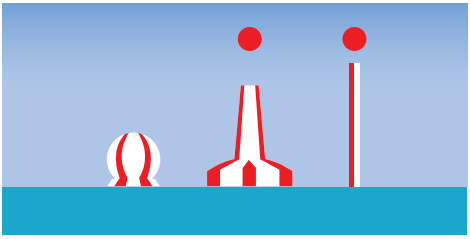
They can be utilised as lateral marks by using can or conical shaped buoys. If so they must be passed as lateral marks: can (port hand) or conical (starboard hand). See page 57 for more information.

These marks, if lit, show a yellow light at night which may flash in any rhythm.



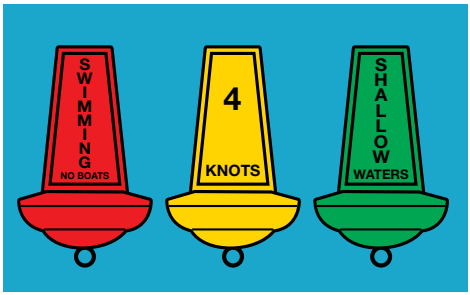
Safe water marks

These are not common in NSW. They may be used to mark the division of large shipping channels. They may show a white flashing light at night. Where the mark is used to identify a turning point or centre line it should be kept on your left hand (port) side.



Aquamark minibuoys

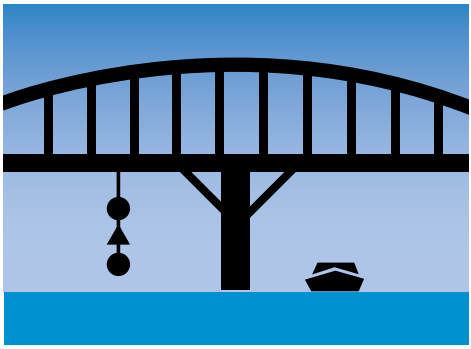
Used in some areas as alternatives to conventional buoyage. They often have advisory messages on them and penalties may apply for breaching the requirement displayed.

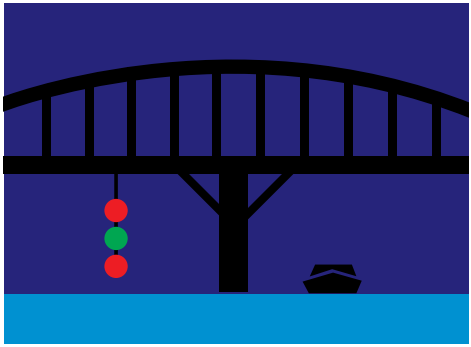


Channel blocked/closed

These signals mean vessels should not navigate in that part of the channel.

- Bridge span blocked
- Channel is blocked
- Port closed.





Submarine cables

Submarine cables carry electrical power or telecommunication signals under the water. Anchoring is prohibited within 200 metres of a submarine cable. If your anchor becomes snagged in this area, it should not be retrieved. Cut the anchor line as close as you can to the anchor.

Overhead power lines

As clearance height can vary according to water levels, it is most important that masters know the heights of their masts and understand the height level given on any sign.

Most of the existing signs on the water give the clearance of the power lines as the clearance above Mean High Water Springs or the average of very high tides. It is important to know that this clearance height may be reduced during king tides or floods.

A new crossings signage system is progressively being introduced on NSW waterways. The new signage advises the maximum vessel height which can be navigated under an overhead crossing. It is important to note that clearances may be reduced during floods.

Roads and Maritime offers a free sticker which you can use to help remember the height of your vessel above the water line. You are encouraged to place the sticker close to the steering position of your vessel.

Extra caution is required during the changeover period from the old to the new system and when launching/retrieving vessels with a mast on shore. Always keep a lookout for overhead power lines.

Bridges

Bridge heights on maps are measured at the Mean High Water mark, so you should allow for higher than average tides at certain times of the year. Also consider your vessel may require more room when unloaded.

Understanding the system of navigation buoys, poles and lights is an essential element of safe boating.

NIGHT SAFETY

BE BRIGHT – BE SAFE AT NIGHT

When night falls it is a completely different world on the water and so vessels that operate from sunset to sunrise, whether at anchor or underway, must carry and exhibit the correct lights.

IMPORTANT NOTE

Boating at Night

Go slow, be seen, keep a lookout and be bright.

GO SLOW

When fog, glare, smoke or darkness restricts your visibility, you must slow down to a safe speed. A safe speed is one at which you can stop and avoid a collision, considering the circumstances and conditions at the time.

You wouldn't drive fast on a dark road without headlights, the same applies on dark waterways. Be bright!

Remember, the faster you go, the faster you approach hazards and the less time you have to react. Hitting a hazard at speed can have a greater impact on you, your passengers and your boat.

Check all your navigation lights are working before heading out on the water, switch them on and slow down to a safe speed when night falls.

BE SEEN

You may be able to see others but can they see you? At night, every type of craft on the water needs lights in order to be seen. Whether you are paddling, rowing, sailing or motoring, everyone needs to be able to recognise where you are and what you are doing.

Make sure you have the correct lights for your craft and that they work properly. Use them as soon as the sun goes down or when visibility is poor. Your lights should be mounted in a position that gives you optimum night vision and allow others to see you from every direction.

You must carry a working waterproof floating torch. It may help others see you if you shine your torch on your sails or superstructure.

Make sure you don't adversely affect your night vision or the vision of other boat skippers.

Vessels at anchor displaying all round white lights. Photo courtesy of City of Sydney.

NAVIGATION LIGHTS CHECKLIST

Check your lights before heading out. When boating at night or in times of restricted visibility:

- Check switches are on
- Check navigation lights are on and working
- Physically check each light is on
- Turn off cabin lights as they may reduce your ability to see
- If the vessel has a flybridge and weather permits, it is generally preferable to drive from there as you will have a better all round view
- If you anchor at night, show an all round white light clearly visible through an arc of 360 degrees, where it can best be seen.

KEEP A LOOKOUT

Navigating at night requires special care, it can be like looking into a black hole. Look and listen at all times, as a number of hazards such as logs, moored boats or sandbanks are unlit.

Navigation lights may not be as bright as other lights and background lights may hide something that is closer. If it is a large ship, the lights might be high and you may not realise that you are looking at the sides of a black hull.

If you have the slightest doubt, stop, ensure you are lit and have a good look around you.

KNOW YOUR WATERWAY

Navigation markers can aid you in safe passage of a waterway. These aids to navigation can indicate where prominent hazards are, but should be coupled with reference to a map or chart and use of local knowledge of the area, particularly in the dark.

DIFFERENT LIGHTS

All round white light: A white light showing an unbroken light over an arc of the horizon of 360 degrees.

Masthead light: A white light placed over the fore and aft centreline of a vessel, showing an unbroken light over an arc of the horizon of 225 degrees and fixed to show from anywhere ahead, to just behind the beams of the vessel.

Sidelights: A green light on the starboard (right) side, and a red light on the port (left) side of a vessel. Each shows an unbroken light over an arc of the horizon of 112.5 degrees, and is fixed to show from ahead to just behind the beam of the vessel on its respective side.

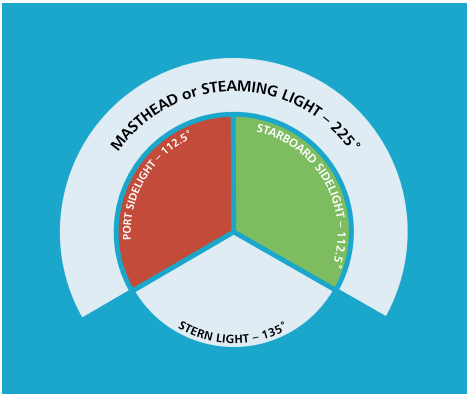
On a vessel of less than 20 metres in length, the sidelights may be combined in one light unit, carried on the fore and aft centreline of the vessel.

Sternlight: A white light placed near the stern, showing an unbroken light over an arc of the horizon of 135 degrees, fixed to show from behind the vessel.

REMEMBER

Look out at night

- Is that a vessel(s)?
- How big is it?
- What direction is it travelling in?
- How fast is it moving?
- How far away is it?
- Does it have priority?
- What is our relative position?



RANGE OF VISIBILITY

Vessels under 12 metres

- Masthead light – 2 nautical miles (nm)
- Sidelight – 1nm
- Stern light – 2nm
- All round lights – 2nm.

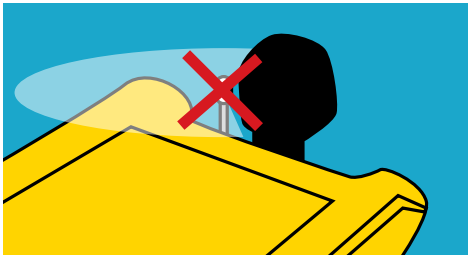
Vessels 12 metres to 20 metres

- Masthead light – 3nm
- Sidelight and stern light – 2nm
- All round lights – 2nm.

PLACEMENT OF LIGHTS

Incorrectly installed navigation lights

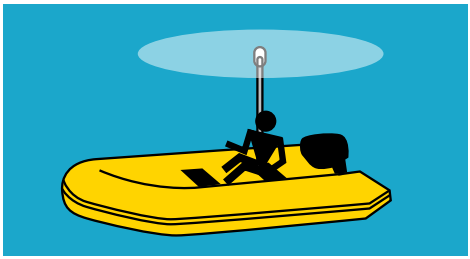
Navigation lights should be installed correctly so they show the appropriate arc of light and are not obscured by the vessel's superstructure as shown in the diagram below, or interfered with by deck lights. This reduces the vessel's visibility and is dangerous.



The diagram above shows incorrectly installed sidelights. Don't install them so they point only forward or straight up. They need to point out across the water as described and illustrated on the opposite page.

Masthead

The masthead and/or all round white light must be fitted (if practical) on the centreline (bow to stern) of the vessel.



POWER VESSELS UNDERWAY

Power vessels under seven metres and less than seven knots

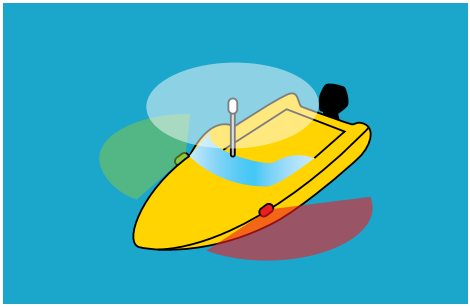
Powered vessels of less than seven metres in length, capable of a maximum speed of seven knots or less, shall exhibit a white light visible all round and if possible, separate and/or combined sidelights.

All other power vessels under 12 metres

Shall exhibit one of the following:

- Separate or combined sidelights; a masthead light and a stern light
- Separate or combined sidelights and an all round white light.

The masthead or white all round light shall be carried at least one metre above the sidelights.

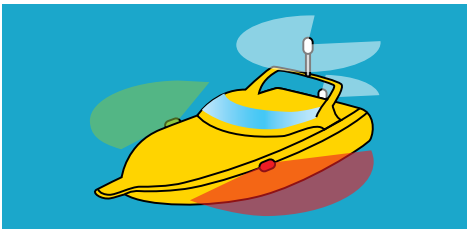


Power vessels 12 metres to 20 metres

Shall exhibit one of the following:

- A masthead light, separate sidelights and stern light
- A masthead light, combined sidelights and stern light.

The masthead light shall be carried at least 2.5 metres above the gunwale. Combined sidelights shall be carried at least one metre below the masthead light.



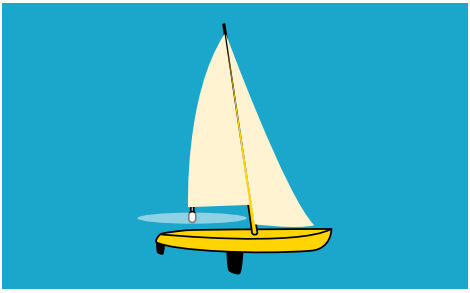
SAILING VESSELS UNDERWAY

Sailing vessels while underway (being motor driven) under power shall exhibit navigation lights applicable to power driven vessels.

Sailing vessels under seven metres

Sailing vessels of less than seven metres in length, or vessels being rowed, should if practicable exhibit the lights required for sailing vessels over seven metres.

If not they should have ready use of a torch or lantern showing a white light which shall be exhibited in sufficient time to prevent collision.



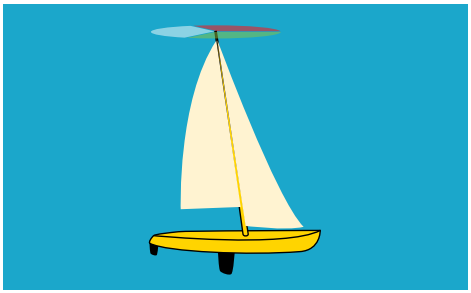
IMPORTANT NOTE

The use of tricoloured lights alone in areas affected by backlighting is not recommended eg Sydney Harbour. In these cases it is recommended to use deck level navigation lights to make your vessel as visible as possible.

Sailing vessels seven metres to 20 metres

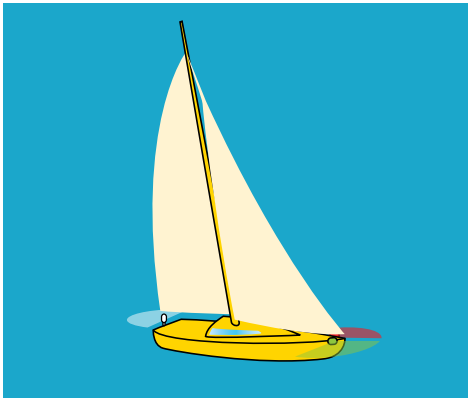
Shall exhibit one of the following:

- A combined lantern, that is at or near the top of the mast and incorporates sidelights and stern light
- Separate sidelights and stern light.



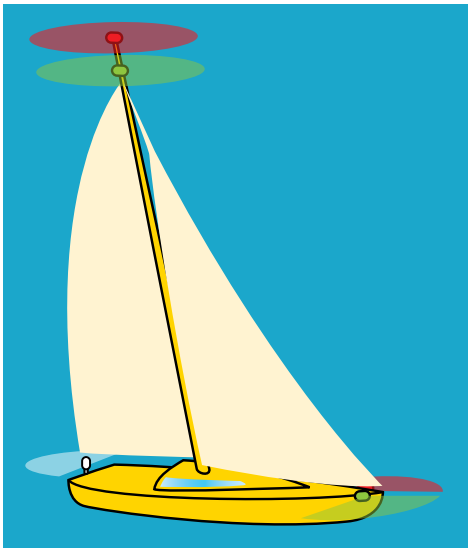
Sailing vessels over 20 metres

Must exhibit sidelights and stern light and may carry the optional red and green all round lights. However, these vessels may not carry a combined lantern.



Optional lights for sailing vessels

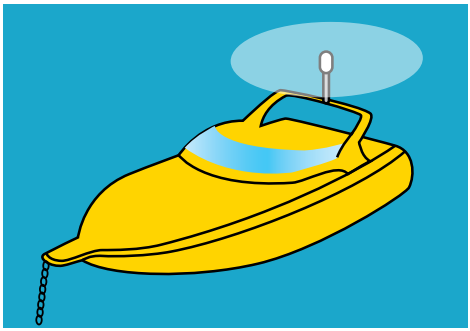
A sailing vessel of any length which is fitted with sidelights and a stern light (but not a combined lantern) may, in addition, carry two all round lights in a vertical line at or near the top of the mast. The upper light shall be red and the lower green.



Power and sailing vessels at anchor

Vessels less than 50 metres in length at anchor shall exhibit an all round white light, placed where it may be well seen.

Anchor lights must always be shown from sunset to sunrise. If you are at anchor in a busy area, then show additional lights such as deck lights or cabin lights to ensure you are seen and keep a good watch.



ROWING/PADDLE VESSELS

Such craft must have a torch or lantern ready to display in time to prevent a collision. Craft that are more than four metres long should exhibit two all-round lights, either continuous or a combination of continuous and flashing white lights, positioned at either end, in accordance with the Code of Conduct for Rowing.

IMPORTANT NOTE

There are many other combinations of lights used on vessels. The lights shown relate to the activity the vessel is engaged in, ie fishing, dredging, not under command.

A simple rule of thumb for a small power boat is to stay clear of any vessels exhibiting additional lights.

SPECIAL AREAS

OPEN WATERS

Handling a vessel at sea

The way a boat handles at sea will depend on:

- Its hull design and strength
- The amount of power used to propel it
- Wave direction
- The way the boat is steered
- The distribution of weight on board.

Bomboras

When boating along the coastline, particularly when close to a shoreline, be aware of bomboras. Bomboras are shallow areas such as those created by rocks or reefs that cause waves to break.

It is advisable to check maps and charts, talk to experienced locals and be aware of the existence of bomboras. The danger posed by these formations can be higher in good weather, as a bombora may not be identifiable because it may not always have breaking waves.

Boaters need to be cautious anywhere bomboras may exist.

Head seas

Generally, the best way to tackle bigger waves is to take them bow on or up to about 30 degrees off each bow.

Too much power will result in the boat leaping over the crests and crashing down into troughs. This slamming action is not good for either the boat or the people on board.

Too little power may mean that the waves break onto or over the vessel.

Control the speed and direction steered to achieve the most comfortable and safest ride.

Beam seas

The danger from travelling beam on to waves is that rolling is increased. The amount of rolling can be reduced by varying the angle to the seas.

The bow is the strongest part for taking on waves and is typically designed to take the initial impact of chop and waves. Vessel design however is extremely varied and it is essential you know the limits of your boat's capability.

Watch out for waves that are larger than others and consider changing course or speed to ride over or with it.

Following seas

Travelling with a following sea has the greatest potential for disaster, with broaching sideways and swamping/capsize a real possibility. Steering power is reduced by following seas and judicial use of the throttle controls is critical.

As in crossing a bar (see page 72), you should attempt to maintain a position on the back of waves, using throttle to keep ahead of waves breaking behind the boat.

Remember when conditions worsen

- Ensure all persons are wearing lifejackets
- Ensure the boat is as watertight as possible
- Use throttle control and steering to reduce the impact of waves
- The bow of a boat is the strongest part for taking on waves
- If caught in rough weather, report your situation to rescue authorities
- Secure all moveable items in the boat so that they do not become missiles
- Ensure all people are holding on firmly
- Have an EPIRB ready for use in case of capsize
- Stay with the capsized boat unless you are very close to shore.

Handling a vessel in rough weather/ hazards

Like other hazards on the water, rough weather can generally be avoided by obtaining a weather forecast prior to setting out.

A sudden unpredicted squall, however, can catch even the most careful boater, so you should always prepare and plan for the worst and keep a good lookout for tell-tale clouds and white cap waves.

IMPORTANT NOTE

If you doubt your chances of safely running back to harbour you may prefer to ride out the initial onslaught by keeping your bow into the wind and waves.

If you are close enough, run for the shore, a safe harbour or the lee of an island, where the wind cannot generate large waves.

Sudden squalls usually only last for a short period and sometimes precede a change in wind direction, usually blowing at much stronger speeds than the wind that will follow.

The main thing is to keep a speed sufficient to allow you to steer the vessel, but no faster. Without power to maintain steerage, a vessel will drift side on or beam on to the sea and be vulnerable to capsize.

A sea anchor or a strong bucket tied to the bows will help to keep you pointing into the waves should your engine fail.

IMPORTANT NOTE

Always wear your lifejacket at times of heightened risk.

SEAPLANES

When on the water, seaplanes are just like any other vessel. They are subject to all the restrictions and privileges of other boats and must conduct their operations accordingly.

Don't be alarmed if a small seaplane alights or takes off in the waterways near you. Seaplane pilots are specially trained and qualified to operate upon the water. Like other boat operators, they hold marine boating licences to operate a vessel at speeds in excess of 10 knots.

Avoid making sudden changes of direction which might confuse the pilot or obstruct the seaplane's path.

Check the conditions before you cross ... this skipper made it, just!

BAR CROSSINGS

Shallow sand bars which can form at the point where rivers, creeks, lakes or harbours meet the sea are locations for experienced vessel drivers only. Any channel through such bars can change frequently. Even in apparently calm conditions vessels can be swamped, damaged or wrecked on bars and lives have been lost.

Avoid crossing a bar on a run-out tide as this is when dangerous waves are most likely to occur.

Knowledge and experience

If in doubt, don't go out.
Do not attempt to cross any bar without experience and local knowledge. You should:

- Spend considerable time watching the bar conditions in all combinations of weather and tide
- Cross the bar with other experienced skippers before trying it yourself
- Obtain and read a copy of the bar crossing brochure from Roads and Maritime.

Preparation and planning

Prior to crossing any bar it is recommended that the following checks should be made.

- Know the times of the tide and obtain an up to-date weather forecast, especially expected wind and sea conditions
- Observe the bar conditions, either in person or via the online network of web cameras, and be prepared to cancel or delay the crossing
- If unfamiliar with the bar, obtain advice from experienced locals, eg from the local Marine Rescue NSW unit
- Check the vessel, especially steering and throttle controls, watertight hatches and drains. The vessel must be seaworthy, suitable for the conditions and able to take some impact from waves
- Ensure that all loose items can be stowed away in lockers or tied down to prevent movement
- Check that all watertight hatches can be closed and sealed properly, drain holes are free and bilge pumps work.

On the water prior to crossing

- Secure all loose gear and equipment
- Brief your passengers/crew about the dangers
- Make sure all people onboard have their Level 100+ lifejacket on
- Check all watertight hatches are closed and secured but not locked
- Assess the bar conditions, have they changed since your last inspection?
- When crossing coastal bars, you should not lose your nerve in the white water. Once committed, keep going
- Trying to turn around in the middle of a bar entrance can be disastrous. Try to take waves as close to head on as possible.

Going out

The outgoing vessel must meet the incoming wave energy. Do not hit waves at high speed as an airborne vessel is out of control and can cause damage and injury. Do not allow waves to break onto your vessel.

As a guide:

- Idle towards the breaking waves watching for any lulls
- If a flat spot occurs speed up and run through it
- If the waves keep rolling in, motor to the break zone
- Gently accelerate over the first part of broken water
- Apply more power and run to the next wave, heading for the lowest part (the saddle) if possible because this is the last part to break
- Back off the power just before meeting the next swell
- Pass slowly through the wave and accelerate again to the next wave
- Repeat the process until through the break zone.

Coming in

Be aware the conditions may have changed.

If dangerous, consider alternatives:

- Wait for conditions to abate
- Wait for change of tide
- Seek alternate safe harbour.

The vessel should travel at the same speed as the waves. The aim is to travel in on the back of a swell, staying ahead of waves breaking behind the vessel.

You should:

- Approach the break zone and try to pick the spot with the least activity
- Keep any leads in transit as breakers may obscure your vision of the entrance
- Choose a set of waves suitable for your entry
- Position the vessel on the back of a swell and maintain speed, ensuring that:
  - You do not overtake the wave and run down its face
  - You stay ahead of any wave behind you
  - When the wave ahead of you has broken, accelerate through the white water
  - Beware of steep pressure waves bouncing back off the entrance or shore
  - Adjust speed to counter any pressure waves or any outgoing current.

Roads and Maritime has a number of initiatives on bar crossings including the brochure *Bars 'n' Boats – A Safety Guide*, a list of coastal bars and a bar crossing safety checklist sticker.

Roads and Maritime also has a network of web cameras to assist in trip preparation. Check the Roads and Maritime website for up-to-date information and live vision of 19 locations along the NSW coast and in the alpine area.

INLAND WATERWAYS

Boating on inland waterways such as rivers, creeks and dams demands special care. Many of these areas present issues not encountered in coastal waters, including submerged trees and other snags.

Inland waterways are often murky and constantly changing; if you don't have a depth finder play it safe and reduce speed.

Familiarise yourself with the area using maps and wherever you can, talk to local operators. They can often provide valuable knowledge such as how the current runs after rain and water depth following drought.

Keep a good lookout for objects ahead or above you, such as overhead powerlines and low level bridges.

Strong currents in major rivers and creeks can flow at fast rates and affect the manoeuvrability of vessels. Never underestimate the power of even a moderate current, which can exert a strong force that may trap vessels such as canoes against rocks. Extra caution is required following heavy rain or flooding.

Be careful in dams subject to water releases and stay well clear of spillways. These can be extremely dangerous due to turbulence as the water flows through spillway gates. Boats can easily become caught in the turbulence and trapped.

Also remember that during release periods the foreshore can become soft, trapping vehicles during launch and retrieval.

Rivers and dams may look peaceful, but low water temperature and remote locations could prove risky should trouble occur.

Remember not to overload your vessel.

Wind and waves

The surface of the water in shallow dams and storage areas can become extremely rough in windy conditions. Waves are generally short and steep, and can be as high as those encountered in coastal areas.

Submerged trees and other snags can pose danger on inland waterways.

Always get a wind/weather report before boating and once out on the water, keep a constant lookout for signs of:

- Changing weather
- White caps/disturbance on the water
- Cloud development.

If the conditions deteriorate, put on your lifejacket and head for shore. Remember it is better to be on the shore a long way from home, than a long way from shore in such conditions.

Communication

If you are going to go boating in remote locations, have a good reporting plan in place. Always tell someone where you will be launching from and going, how many people are with you and when you intend to return.

Phone or radio coverage is not always possible, making assistance difficult if problems occur.

ALPINE WATERS

Alpine waters refers to:

- Lake Burrinjuck
- Lake Eucumbene
- Lake Jindabyne
- Khancoban Pondage
- Swampy Plains River
- Mannus Lake
- Googong Reservoir
- Blowering Reservoir
- Pejar Dam
- Yass River
- Lake Oberon
- All navigable waters within the boundaries of Kosciuszko National Park.

Alpine waters present their own unique boating challenges. As with other inland waters, many hazards are not marked and as water levels fluctuate, more hazards may develop just under the surface.

The most common vessel operated in these areas is the small open runabout which is reasonably inexpensive to buy, easy to tow and used as a fishing platform. The majority of these vessels, however, are designed for calm water conditions only.

Wearing a lifejacket is compulsory in most situations on alpine waters. For full details refer to pages 22-23.

Alpine weather

Alpine lakes are often subject to very cold and windy weather. Many of these lakes commonly experience snow in winter. The higher altitude means weather often changes quickly, so proper trip preparation and continuous monitoring of the weather when you are out are essential. Watch for any warnings and be prepared to change your plans if necessary.

When boating in alpine waters check the weather with the Bureau of Meteorology's graphical forecasts **bom.gov.au/australia/meteye/** and zoom into your location. You can also use **m.bom.gov.au** on your mobile device and type in the nearest location.

Cold water

Winter brings a greater risk of hypothermia to boaters exposed to the elements. Capsizing in cold water can also be life-threatening. 'Cold shock' can incapacitate almost instantly. So plan and prepare to avoid cold shock and hypothermia.

- Minimise your capsize risk
- Check the weather. If in doubt, don't go out
- Wear warm and wet weather gear
- Wear a lifejacket
- In the water, don't swim unless extremely close to the shore. Remain with your craft in the 'HELP' or 'Huddle' position
- Remember, alcohol increases the body's heat loss.

See page 94 for more information.

SYDNEY HARBOUR

Sydney Harbour is a unique waterway that is used extensively by a diverse range of recreational and commercial boats including large ships, ferries, charter boats, cruisers, yachts, runabouts, sailing skiffs, dinghies, sailboards, rowing shells, kayaks and dragon boats.

The harbour is an extremely busy waterway that requires you to be aware of your responsibilities and to take care when boating, especially in busy navigational channels, and make allowances for commercial activity.

There is a need to consider paddlers, rowers and sailors as well as accommodating the needs of commercial operators and those wishing to cruise, ski and fish on the Harbour.

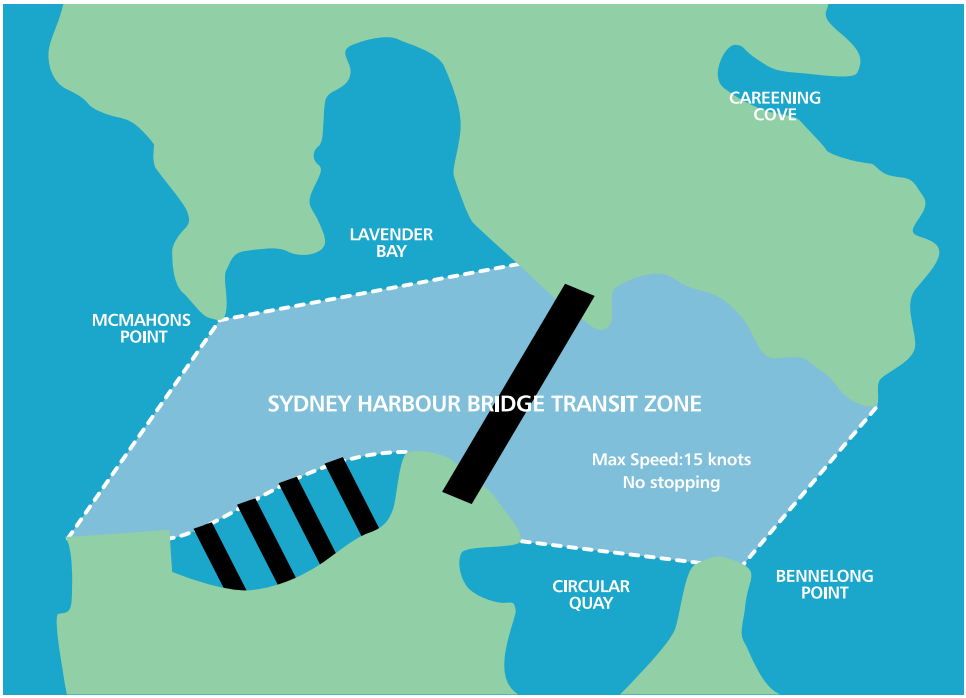
The number of vessels on the Harbour is increasing each year, providing a greater challenge in managing the potential for additional conflict and incidents to ensure safety on the waterway.

There is a continuing need for an understanding and commitment to water safety by all people using the harbour. The different types of boating may not always be compatible and can lead to potential conflicts eg people sailing in organised events and commercial vessels operating to timetables.

Sydney Harbour Bridge Transit Zone

Roads and Maritime has established the Sydney Harbour Bridge Transit Zone. The transit zone has a 15 knot maximum speed limit in the vicinity of the Harbour Bridge, between a line drawn between Bennelong Point and Kirribilli Point to Millers Point and Blues Point, but does not include Walsh Bay, Sydney Cove or Lavender Bay north of a line between Blues Point and the southern extremity of Milsons Point ferry wharf.

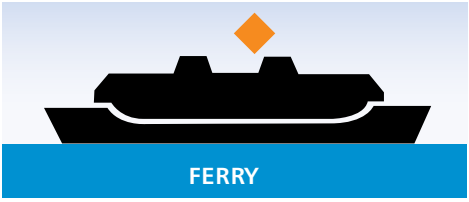
Within this zone, anchoring or drifting are prohibited other than in an emergency. This means that vessels may only travel through this area to reach an area alongside or outside of the transit zone.



Priority over sail

Some ferries on Sydney Harbour display an orange diamond shape. The shape is called the priority over sail signal. This shape removes the usual 'power gives way to sail' rule - meaning a sailing vessel is required to keep out of the way of any ferry displaying an orange diamond. The only exception is if the ferry is overtaking the sailing vessel.

For general safety and courtesy, skippers of sailing vessels should stay at least 200 metres from the bow, and at least 30 metres from the sides or stern of a ferry displaying the priority over sail signal.

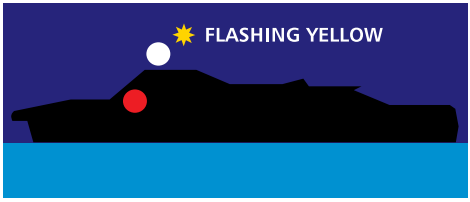


IMPORTANT NOTE

The use of a PWC is prohibited in Sydney Harbour, including all tributaries such as Parramatta River.

High speed ferries (on Sydney Harbour)

These craft carry the normal lights for a power driven vessel underway and, in addition, they exhibit an all-round flashing yellow light when they are travelling at speed.



Sydney Harbour Control

Channel 16/13 (24 hours). Details of large vessel movements, navigation warnings and meteorological forecasts are broadcast on VHF Channel 13 from approximately 1.05am, every second hour. Unless otherwise directed, sailing vessels and motor vessels are not to impede the passage of commercial shipping/naval vessels inside the shipping channels. See pages 78-79 for more information.

BIG SHIPS AND SMALL BOATS

Large vessels are restricted to particular channels and cannot deviate from their set course. These vessels are restricted in their ability to alter their course due to their size and need a large area to turn and stop. Their stern swings out wide when negotiating a turn and they lose steerage if they travel too slowly.

The main safety tips for small boats around shipping and ferry channels are:

- Recreational boats, both power and sail, should keep well clear of large vessels and ferries
- Do not cross ahead of large vessels or ferries unless well clear. Even when hundreds of metres away, your boat may disappear from the ship master's view from the bridge
- Remember, large vessels tend to travel much faster than they appear to be. Give yourself plenty of room
- Do not cross close astern of a large vessel or ferry
- Always keep to the starboard side of a channel
- Do not cross a channel if you are going to impede a vessel which has to use the channel
- Roads and Maritime provides more information regarding big ships and small boats on its website, including map sections within the local boating map showing the shipping channels. Visit **rms.nsw.gov.au/maritime**.

Active radar reflectors (ARR)

Active radio reflectors emit a signal to nearby radar receivers. The signal is amplified and returned to the transmitting vessel.

This makes vessels more visible on radar receivers from greater distances and may reduce the chance of being involved in an incident. It may also assist rescue operations in the event of an incident.

ARR need to be mounted high enough on a vessel to be effective (eg up the mast) and they require a power source. Consequently they may not be suitable for some smaller vessels.

While ARR are not mandatory on NSW navigable waters, they may be a good inclusion to improve your visibility to other vessel operators.

Large vessels are restricted in their ability to alter course and cannot stop quickly. Always keep well clear of them.

Recreational boat users beware

- Always keep a proper lookout for big ships and steer clear of them
- Make your intentions clear to an approaching vessel well in advance. For the master of a large ship who is unclear of your intentions, you should indicate that you are getting out of the way of a large vessel at least one kilometre in advance of that vessel
- Do not anchor in a navigation channel
- Ensure you can be seen clearly at all times. Dull aluminium tinnies can be difficult to see, especially in overcast and poor conditions. Wear bright clothing and be seen
- After sunset and in restricted visibility, ensure you have the correct navigation lights fitted and they are in proper working order. Your lights must be bright and must be visible for a distance of kilometres. Lights not only tell the other vessel what sort of vessel you have, but also what you are doing and where you are going. Make sure that if someone 'interprets' your lights, they are getting the right message.

Do not risk crossing ahead of large vessels unless well clear.

GO EASY ON THE DRINK

When afloat, your coordination, judgement, vision, balance and reaction time can decline up to three times faster after consuming alcohol. The boating environment with the waves, motion, vibration, engine noise, weather, wind and spray multiply the effects of alcohol. Driving under the influence of alcohol or drugs is an offence.

Everyone aboard needs to take care. Studies have shown that boat passengers are just as likely as operators to be involved in incidents such as capsizing the vessel or falling overboard as a result of drinking alcohol.

Operators of vessels that are underway may be subject to random breath testing and subject to heavy penalties if found to be over the limit. The 'operator' of a vessel includes anyone steering or exercising control over its course or direction and includes the observer in a vessel which is towing people, as well as anyone being towed.

See page 107 for further information about drug and alcohol offences and random breath/ drug testing.

WEATHER

Always check the weather before and during boating. If it looks dicey, don't go out. If it starts to turn bad, head straight for shelter. A marine radio helps you keep in touch with weather updates. Learn to understand and read weather patterns, the wind, waves and the limits of your craft.

GOING OFFSHORE

A good skipper will always treat the ocean with respect, so it's essential to plan and prepare when going offshore. Check the weather forecast and your safety gear.

Plan for any change of conditions by anticipating wind, waves, tides and safe havens.

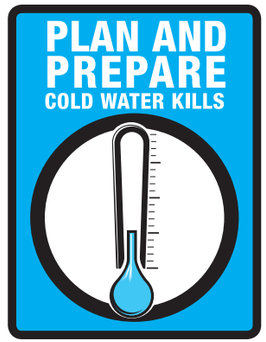
You must have a marine radio and a 406 MHz EPIRB distress beacon when more than two (2) miles offshore. And, always let someone know where you're going and when you plan to return.

BE PROP AWARE

Boat propellers pose a risk that is easily ignored because they are under the water, 'out of sight and out of mind.' But a strike from a spinning propeller can cause serious injury or even death.

- Ensure the prop area is all clear before starting the engine
- Keep all arms and legs inside the boat
- Keep a proper lookout, especially when near swimmers, observe 'distance off' rules and stay out of designated swimming areas
- Wear a kill-switch lanyard when boating alone.

HYPOTHERMIA



Boating in cooler weather increases the risk of developing hypothermia from wind-chill, capsize, and damp and wet clothes.

Hypothermia is the effect of heat loss from the body. Immersion in cold water causes the body to lose heat up to 25 times faster than normal and the shock of sudden immersion in cold water can be a serious threat to survivors of accidents.

- Plan and prepare to avoid hypothermia. Minimise the risk of capsize or swamping, keep an eye on the weather and if in doubt, don't go out
- Wear warm thermal clothing, including a beanie and add wet weather gear over your warm clothes to provide wind proofing. Foul weather gear or waders may help keep you warm but are extremely difficult to swim in. So, if you wear this sort of gear in a boat – put on a lifejacket
- Wear a lifejacket at all times of heightened risk
- In the water, don't swim. Remain with your craft in the "huddle" position
- If hypothermia is suspected, try to reduce any further heat loss and commence rewarming slowly.

NAVIGATION LIGHTS

When night falls, it is a completely different world on the water. Vessels that operate from sunset to sunrise, whether at anchor or underway, must carry and exhibit the correct lights. When boating at night – go slow, be seen, keep a lookout and be bright. Make sure you have the right lights for your craft, they are working properly and mounted in a position that gives you optimum night vision and allows others to see you from every direction.

Carry a working waterproof torch. It may help others see you if you shine your torch on your sails or superstructure. Make sure you don't affect your night vision, or the vision of other boat skippers.

If you anchor at night, show an all-round white light where it can best be seen.

Navigating at night requires special care – look and listen at all times, as a number of hazards are unlit such as logs, moored boats or sandbanks.

If you have the slightest doubt, stop, ensure you are lit and have a good look around you.

For more information, visit **www.maritime.nsw.gov.au** or call the info line **13 12 56.**
Maritime is a division of Roads and Maritime Services.

**YOU'RE THE SKIPPER
YOU'RE RESPONSIBLE!**

Printed on recycled stock

MAR0303/UC 02/12

NSW Transport Maritime

NSW Transport Maritime

SAFE AND RESPONSIBLE BOATING

The skipper of every boat is responsible for the safety of their vessel and the people on board.

While that responsibility presents some challenges, a seaworthy and well-prepared vessel in good hands can provide an immense amount of enjoyment for you, your friends and your family.

Preparation and awareness are two of the most important elements of safe and responsible boating.

As skipper, take time to ensure the boat is ready and also spend time to consider the safety issues highlighted in this brochure.

More information on these and other boating safety issues is available at **www.maritime.nsw.gov.au**

LIFEJACKET – WEAR IT

Lifejackets save lives. But a lifejacket will not save your life if you are not wearing it.

You must carry a lifejacket for every person on board. But don't just have lifejackets on board, make sure you and your passengers wear them.

New rules apply in NSW and you must wear a lifejacket in situations including if you are:

- Under 12 years of age
- In a small vessel up to 4.8m long when boating alone, at night, on open (ocean) waters and on alpine waters
- On a PWC
- Being towed
- When wearing waders on alpine waters
- Instructed to by the skipper.

For more information, visit **www.lifejacketwearit.com.au** or call the info line **13 12 56.**

GO EASY ON THE DRINK

The blood alcohol limit on the water is the same as on land, 0.05, but that's where the similarities end. Drinking on the water isn't the same as drinking on land. Wind, waves and the sun can increase the effects of alcohol on your body. You are more likely to get drunk quicker and get disorientated, increasing the chance of a boating accident or drowning.

Be aware that random breath testing applies to the skipper of any vessel while underway.

KEEP A PROPER LOOKOUT

It may seem obvious, but you must keep an eye on what's going on around you. The skipper must be in a good lookout position at all times to watch and listen carefully, especially in bad weather, restricted visibility or darkness.

- Don't forget to look all around – even behind you
- Take special care in areas where higher speed vessels operate
- Keep watch for smaller vessels that can be difficult to see, especially kayaks and dinghies
- Watch for swimmers, floating debris and whitewater that may indicate submerged reefs and rocks
- Even when you have an observer while towing a person on skis or tubes, the skipper is always responsible for keeping a proper lookout
- Keep safe, keep to the right, especially when entering a narrow passage or on a sharp bend.

CARBON MONOXIDE

Carbon monoxide is a colourless and odourless gas produced when carbon-based fuel burns. Exposure to this gas can cause death or serious injury.

Carbon monoxide is normally at the back of the boat when engines and generators are running. If you have a headache, feel nauseous, dizzy or drowsy, move to fresh air.

To keep these gas levels under control and prevent poisoning, regular boat and engine maintenance and proper operation are important.

SPEEDING

Speeding on the water is the same as speeding on the road. It can kill. A skipper is responsible for taking a number of things into account.

CONDITIONS

Conditions on the water can change in the blink of an eye. The wind might pick up, wave size might increase and the current may change. The skipper is responsible for making sure a boat travels at a safe speed. If in doubt, slow down to suit the conditions.

VISIBILITY

You must slow down in heavy rain, thick fog, dense mist and intense glare when you're on the water. If you are travelling at night you are responsible for displaying navigation lights. Not all hazards are lit, so special caution is needed at night.

OTHER VESSELS

You must not speed close to other vessels. Slow down and take care in busy waterways and when you're near moored or anchored vessels and smaller craft. Extra caution is needed around working vessels or large boats that find it hard to manoeuvre.

NAVIGATION HAZARDS

Waterways are filled with hazards. Keep an eye on your speed in shallow or unfamiliar waters. Not all hazards are marked or lit, signs and buoys can be damaged, and lights can be out of action. You can report damage to nav markers to the info line **13 12 56.**

YOUR VESSEL

All boats are different. The size of your hull, engine and propeller type can affect your manoeuvrability. You are responsible for knowing your vessel's limitations. How quickly can you stop and turn?

CHILDREN

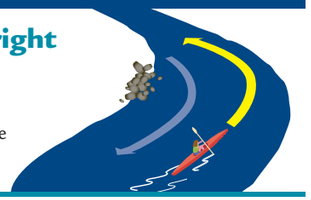
Children need to be carefully watched. Be especially careful not to allow children to be on the bow or to sit with legs dangling over the side while under power.

Paddle Smart

When Paddling You MUST

Keep safe, stay right

- Where possible paddle outside the channel
- Don't paddle in the centre of the channel or river

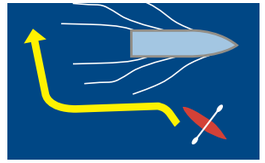


Keep a proper lookout

- Use your eyes and ears to keep a good lookout
- Take care when entering or crossing channels

Keep clear of larger vessels

- Cross behind, not in front
- Remember powerboat wash can capsize small craft



Wear a lifejacket

- When more than 100m from shore or on open (ocean) or alpine waters

ALL REGULATIONS FOR AVOIDING COLLISIONS APPLY.
SHOW REQUIRED LIGHTS AT NIGHT.

NSW Maritime

Info line **13 12 56**
www.maritime.nsw.gov.au

WAT0879_7/11

Sydney Harbour with its connected bays and tributaries is one of the world's premier waterways, providing unmatched opportunities for all forms of boating, from powerboats and yachts to canoes and kayaks.

It is also one of the world's busiest harbours, with canoes and kayaks sharing the water with large commercial ships and ferries.

An understanding of the safe boating rules that apply to all vessels, as well as the specific rules for canoes and kayaks, will help paddlers to enjoy their sport in safety.

Lifejacket wear requirements

Lifejackets must be worn when paddling more than 100 metres from the nearest shore on enclosed waters, and at all times on open waters. It is strongly recommended that you wear an approved lifejacket at all times when enjoying Sydney Harbour.

Navigation lights

Between sunset and sunrise a torch is a minimum requirement, but it is strongly recommended that the craft has an all-round white light visible in every direction.

General safety and traffic flow

Conflict between canoes and kayaks and larger craft can occur in confined waterways which are often busy with powerboat traffic, as is the case around Sydney Cove, Walsh Bay and Darling Harbour. When using these areas, paddlers need to be alert and keep a good lookout at all times, as the areas listed are all very busy with commercial traffic.

To alleviate potential conflict when paddling in these areas, it is recommended that you stay on the northern shore of Sydney Harbour. This will reduce the possibility of further conflict with larger vessels, while also raising general awareness of paddlers operating along the northern shore.

The map of Sydney Harbour in this brochure shows orange shaded areas which are prohibited to paddlers. The yellow and pink shaded areas are commercial and high traffic shipping channels, where paddlers must operate with extreme caution. The blue shaded areas should be entered only for the purpose of crossing from one side of the shipping channel to the other. When crossing these channels, paddle as nearly as practicable at right angles to the general direction of the traffic flow.

It is important to be clearly visible while on the water. Suggested precautions are to:

- Dress brightly
- Paddle in tight formation
- Keep a proper lookout
- Paddle during daylight hours or adhere to the night lighting requirements for canoes and kayaks
- Stay close to the shore line
- Keep to the starboard (right-hand) side of the channel.

Conduct a safety check before heading out:

- Check the latest weather and wave report, and plan your trip accordingly
- Check your equipment is in working order
- Advise friends or family of your time of departure, return and proposed route
- Carry a mobile phone in a waterproof pouch
- Carry sufficient drinking water and sun protection
- Dress appropriately for the conditions
- Use a paddle or leg leash in windy conditions
- Find out as much information as possible about the area you are going to paddle.

To learn more about the boating rules and lifejacket requirements, and for links to paddling organisations, visit **www.maritime.nsw.gov.au** **www.boatforlife.com.au** and **www.paddleNSW.org.au**

SAFETY PARTNER paddle nsw

PADDLE SAFETY ON SYDNEY HARBOUR

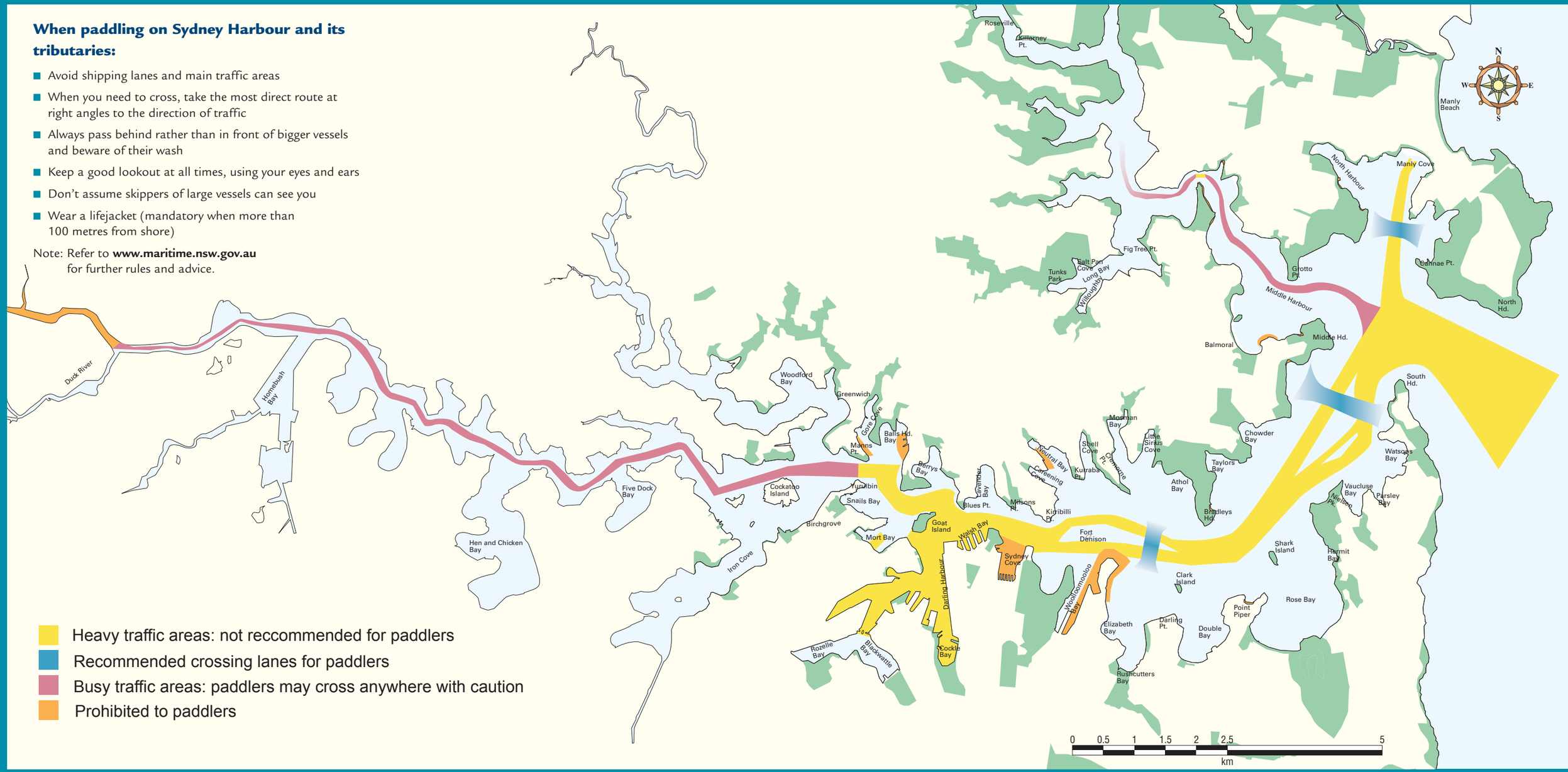
NSW Maritime

PADDLE SAFETY ON SYDNEY HARBOUR

When paddling on Sydney Harbour and its tributaries:

- Avoid shipping lanes and main traffic areas
- When you need to cross, take the most direct route at right angles to the direction of traffic
- Always pass behind rather than in front of bigger vessels and beware of their wash
- Keep a good lookout at all times, using your eyes and ears
- Don't assume skippers of large vessels can see you
- Wear a lifejacket (mandatory when more than 100 metres from shore)

Note: Refer to **www.maritime.nsw.gov.au** for further rules and advice.



Heavy traffic areas: not reccommended for paddlers

Recommended crossing lanes for paddlers

Busy traffic areas: paddlers may cross anywhere with caution

Prohibited to paddlers

NSW MARITIME

0 9 JAN 2008

Mr Murray Clarke
22 Murray Street
RUSSELL LEA NSW 2046

W01/00528
CEC07/868

Dear Mr Clarke

I refer to your correspondence of 24 October 2007 regarding the conditions of approval for the dry boat store in Rozelle Bay.

The issue of Development Application conditions for the dry boat storage facility is a matter for the Minister for Planning as the consent authority.

In relation to rowing coach vessels, when the 4 knot speed limit is introduced in Rozelle and Blackwattle Bays, I have approved NSW Rowing Association's request for an exemption from the 4 knot speed limit while rowing supervision is being conducted. At all other times, the 4 knot speed limit must be observed. An aquatic licence for the purpose of rowing training will not be required.

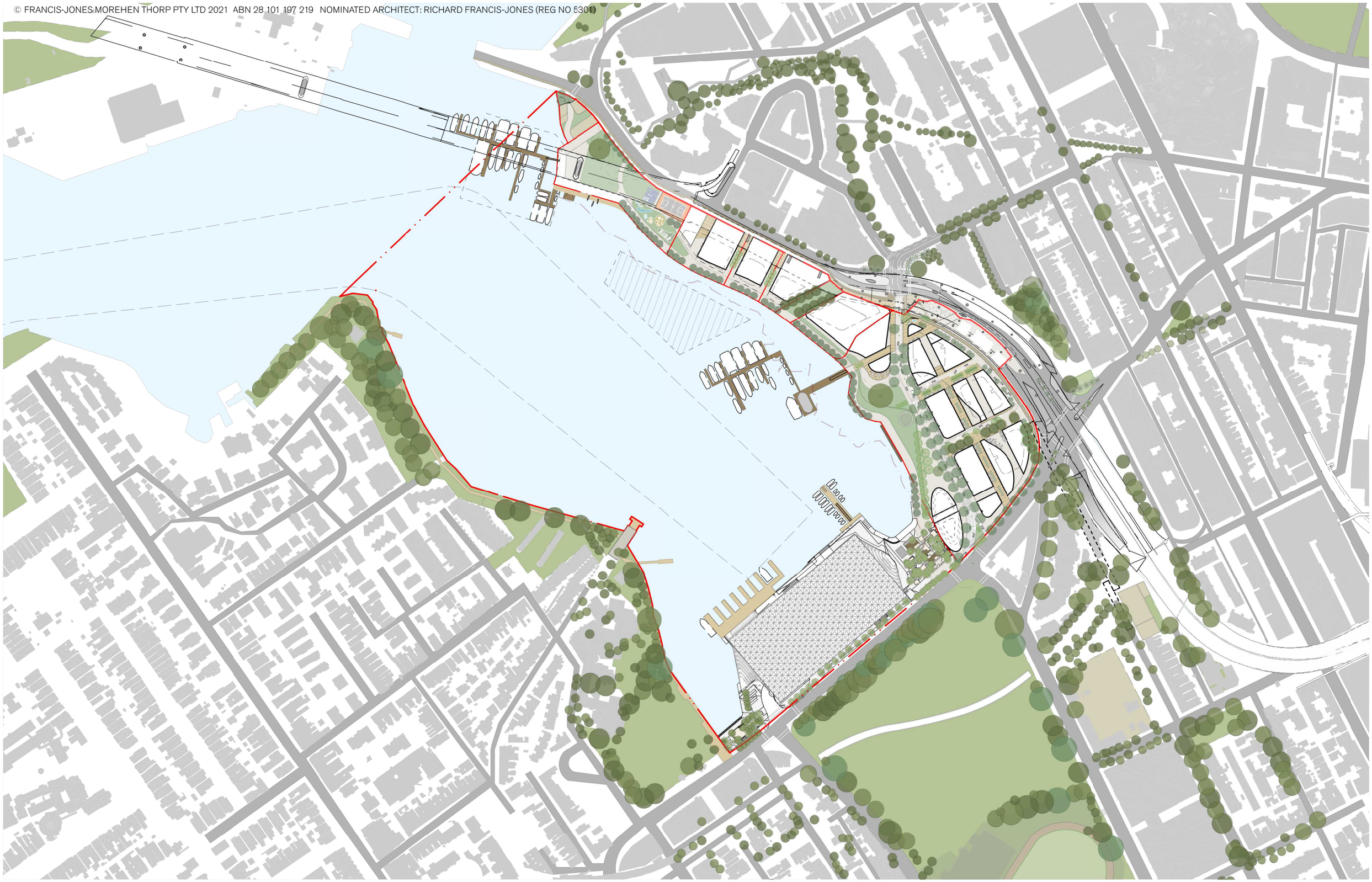
If you require any further information please do not hesitate to contact NSW Maritime's General Manager Recreational Boating, Mr Brett Moore on 9563 8660.

Yours sincerely

Chris Oxenbould AO
Chief Executive

NSW MARITIME
James Craig Road Rozelle NSW 2039
Locked Bag 5100 Camperdown NSW 1450
T 02 9563 8511 F 02 9563 8530 www.maritime.nsw.gov.au

Appendix 3 – Precinct Plan Drawings



fjmt

Final Precinct Plan | 1:4000

iNSW - Blackwattle Bay Masterplan

1:4000 @ A3

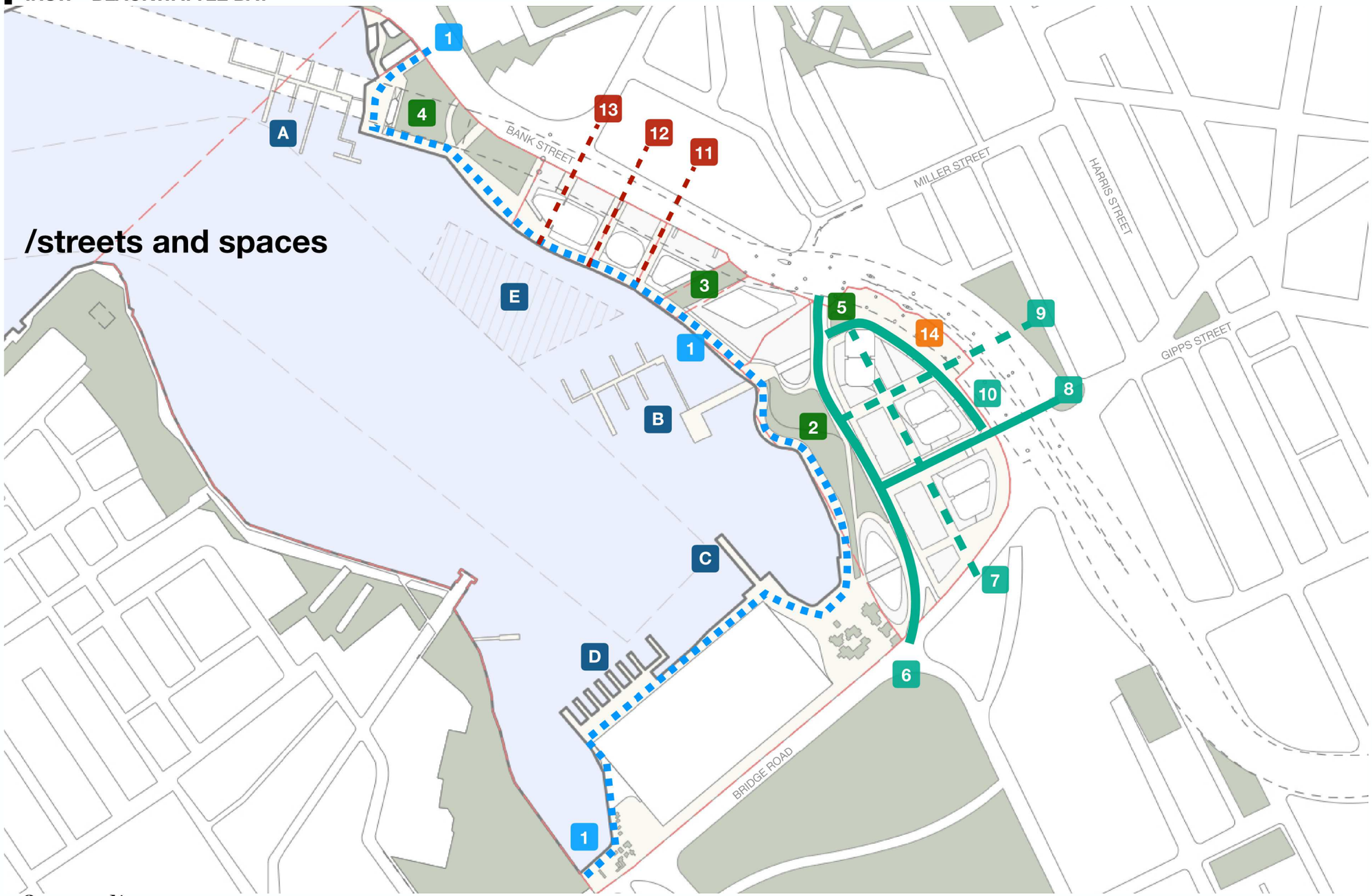
For Information

29/1/21

SK-81

INSW - BLACKWATTLE BAY

/streets and spaces



WATERFRONT PROMENADE

1 WATERFRONT PROMENADE

OPEN SPACES

2 WATERSIDE PARK

3 MILLER STREET RESERVE

4 BANK STREET OPEN SPACE

5 NORTH ENTRY PLAZA

STREETS / LANES

6 PARK STREET

7 PARK LANE ARCADE

8 GIPPS STREET

9 GIPPS LANE

10 BANK LANE

ARCADES / PLACES

11 THIRD ARCADE

12 FOURTH ARCADE

13 QUARRY MASTER DR

UNDER WESTERN DISTRIBUTOR

14 EXPLORATION ZONE

MARINAS / WHARFS

A DAY CHARTER MARINA

B CORPORATE CHARTER MARINA AND POTENTIAL FERRY STOP

C RECREATIONAL WHARF AND POTENTIAL FERRY STOP

D FISHING FLEET WHARF

E POTENTIAL FUTURE MARINA

fjmtstudio

WORKING HARBOUR

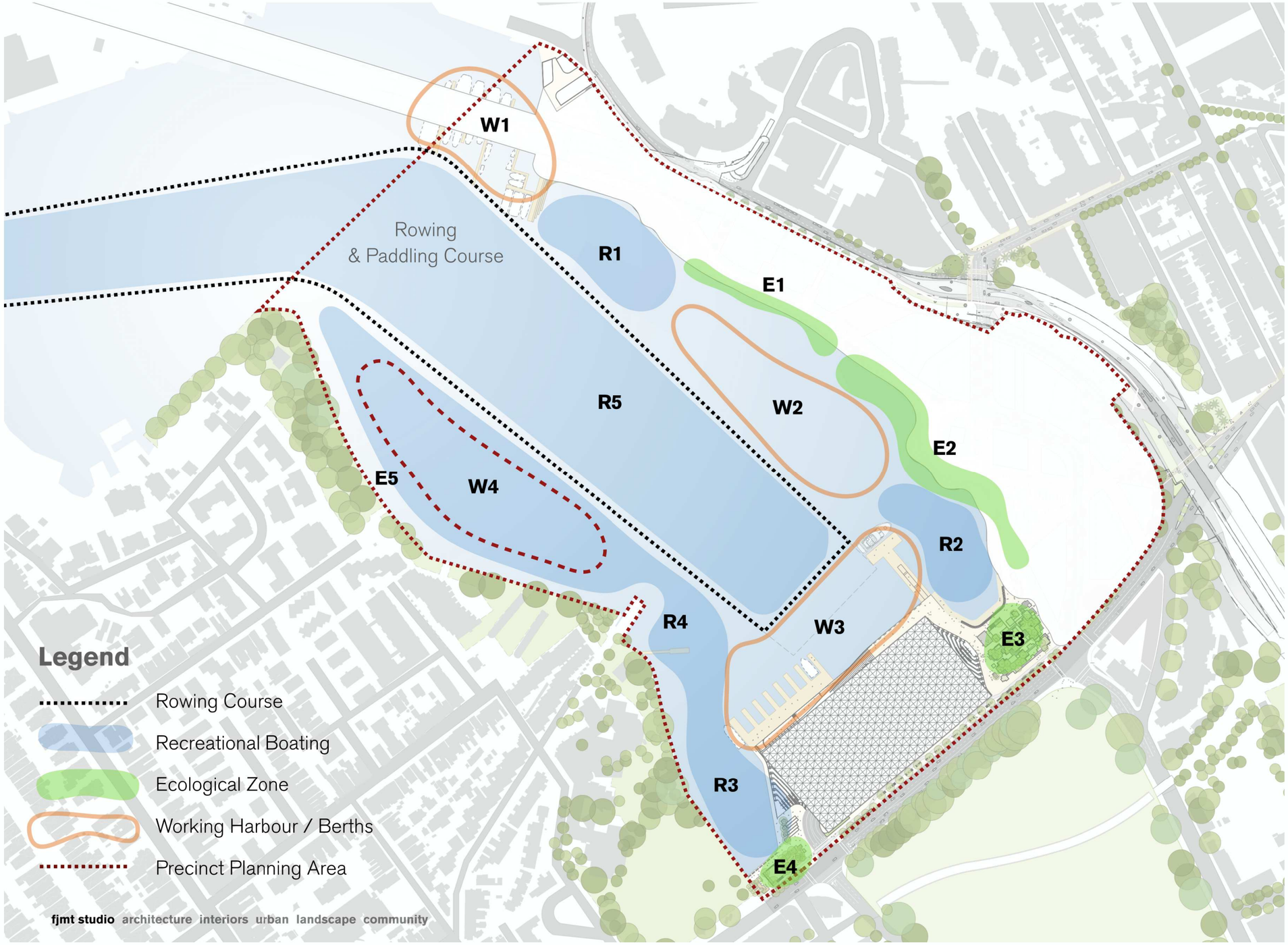
W1 - Proposed day charter marina
W2 - Proposed corporate charter marina
W3 - Fish market and day visitor marina as proposed through new Sydney Fish Market DA
W4 - Existing overnight moorings to remain

RECREATIONAL HARBOUR

R1 - Existing Dragon-boat launch to remain
R2 - Proposed Paddle craft access
R3 - Existing Paddle craft launch to remain
R4 - Existing Rowing craft launch to remain
R5 - Rowing & paddling course *(Minor modification proposed through new Sydney Fish Market DA)*

ECOLOGICAL HARBOUR

E1 - Potential future living seawall
E2 - Potential future living seawall & tidal pools
E3 - Stormwater detention as proposed through new Sydney Fish Market DA
E4 - Stormwater biofiltration as proposed through new Sydney Fish Market DA
E5 - Potential future living seawall & tidal pools

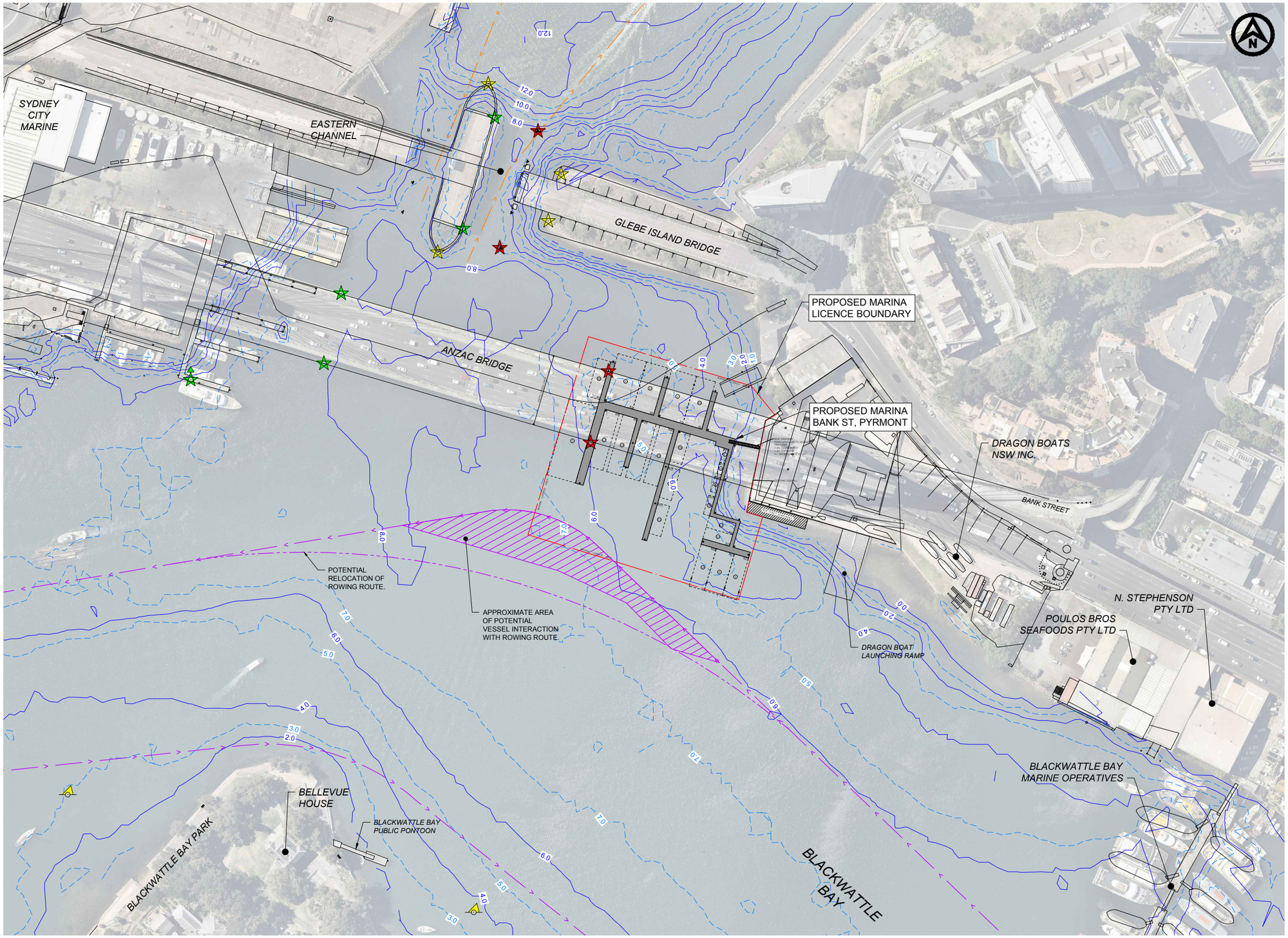


Appendix 4 – Bank Street Marina Navigation Impact Assessment Map

BANK ST, PYRMONT NAVIGATION IMPACT ASSESSMENT

PROPOSED MARINA DETAIL PLAN

MAP 3



NOTES

1. AERIAL PHOTOGRAPH OBTAINED FROM NEARMAP, DATED 04.11.2016.
2. BATHYMETRIC SURVEY PROVIDED BY RMS AND LEVELS TO CHART DATUM.

LEGEND

NAVIGATION AIDS:
NTM - NO TOP MARK
TM - WITH TOP MARK

- LIT PORT BEACON (NTM)
- LIT STARBOARD BEACON (NTM)
- LIT STARBOARD BEACON (TM)
- YELLOW LIGHT BEACON
- SPECIAL MARKER - CONICAL BUOY (NTM)

ROWING ROUTES:

- EXTENDED WHITE BAY COURSE
- BLACKWATTLE BAY AND ROZELLE BAY COURSE
- APPROXIMATE AREA OF POTENTIAL VESSEL INTERACTION WITH ROWING ROUTE
- POTENTIAL RELOCATION OF ROWING ROUTE

CHART DATUM

20 0 20 40 60 80 100m

1:1000 (A1) 1:2000 (A3)