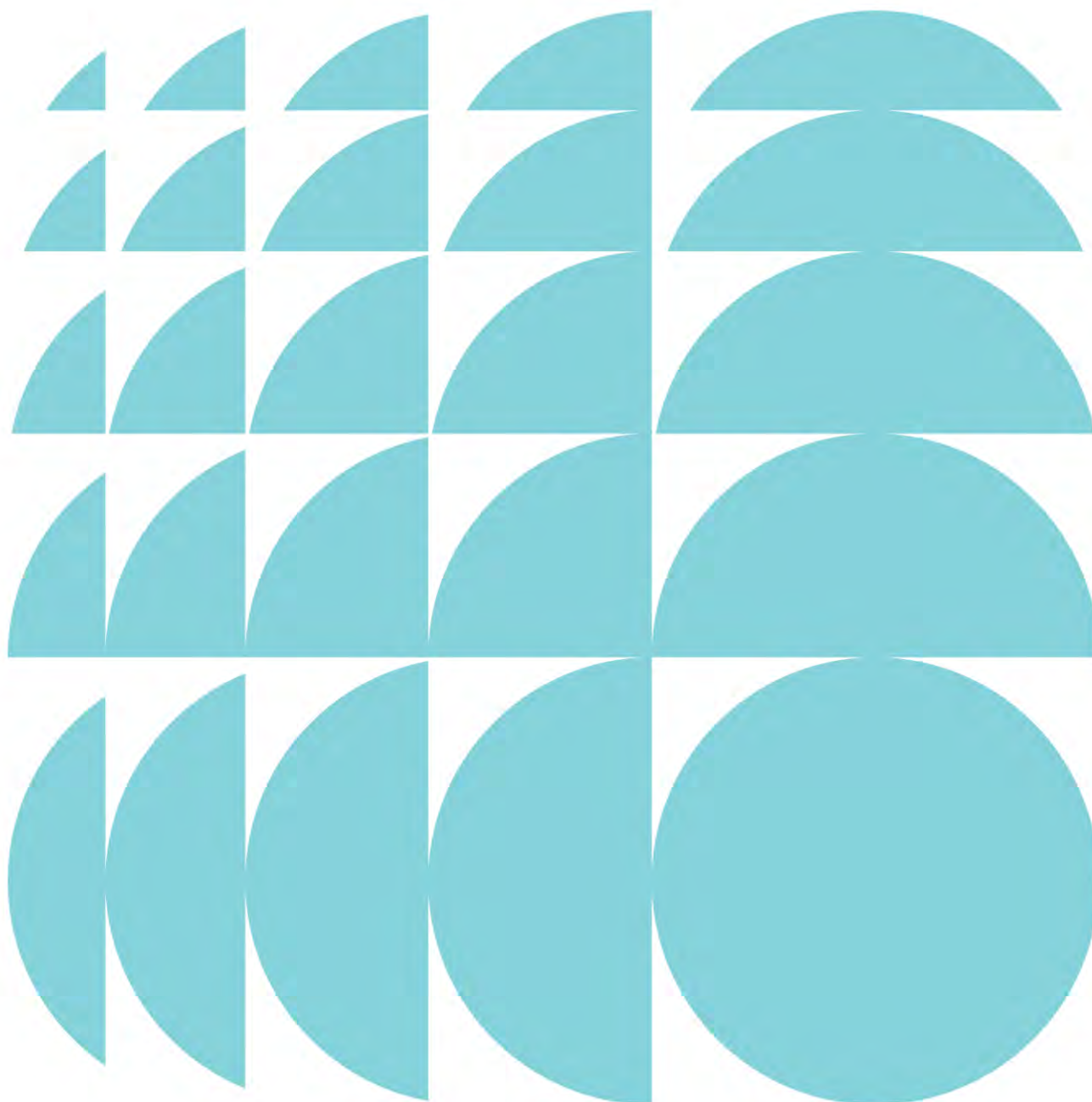




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This document has been prepared by:

This document has been reviewed by:

Chris Forrester/Claire Burdett 19/12/2019

Clare Swan 19/12/2019

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VERSION NO.	DATE OF ISSUE	REVISION BY	APPROVED BY
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H Supplementary Contamination Report

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Under Separate Cover

Permission to Lodge Ref: PTL 180901817
RMS

Quantity Surveyor Detailed Cost Report

Statement of Validity

Development Application Details

Applicant name	ENARES Pty Ltd (trading as the Gladesville Bridge Marina (GBM))
Applicant address	Suite 1, Rose Bay Marina, 594 New South Head Road, Rose Bay, Sydney, NSW
Land to be developed	380 Victoria Place, Drummoyne, Sydney, NSW (Lot 1 in DP 549352, Lot B in DP 401843, Lot 1 in DP 430123)
Proposed development	Alterations and additions to the existing Gladesville Bridge Marina, as described in Section 3.0 of this Environmental Impact Statement

Prepared by

Name	Claire Burdett
Qualifications	BSc (Hons), Dip TP, MRTPI
Address	173 Sussex Street, Sydney
In respect of	Designated Development Application

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Address	173 Sussex Street, Sydney
In respect of	Designated Development Application

Certification

We certify that we have prepared the content of this EIS and to the best of our knowledge:

It is in accordance with Schedule 2 of the Environmental Planning and Assessment Regulation 2000;

All available information that is relevant to the environmental assessment of the development to which the statement relates; and

The information contained in the statement is neither false nor misleading.

Signature

Name Claire Burdett and Clare Swan

Date 19/12/2019

Executive Summary

Purpose of this Report

This Environmental Impact Statement (EIS) has been prepared on behalf of ENARES Pty Ltd, trading as the Gladesville Bridge Marina (GBM) and is submitted to Canada Bay Council (Council) in support of a Designated Development Application (DA) under *Part 4 of the Environmental Planning and Assessment Act 1979* (EP&A Act). The DA relates to the proposed alterations and additions to the existing Gladesville Bridge Marina located at 380 Victoria Place, Drummoyne (the site), on the southern foreshore of the Parramatta River.

Under Schedule 3, Clause 23 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) the proposed development constitutes a 'Marina', with an intended capacity of more than 15 vessels having a length of 20 metres or more and an intended capacity of more than 80 vessels of any size. It is therefore classified as 'designated development'.

Given the proposed development is classified as designated development, it is also considered to be Regionally Significant under the EP&A Act. This development application will therefore be determined by the Sydney Eastern City Planning Panel.

A request for the issue of Secretary's Environmental Assessment Requirements (SEARs) was sought on 16 October 2018. The SEARs (1268) were issued on 15 November 2018. This EIS has been prepared in accordance with the requirements of Part 4 of the EP&A Act, Schedule 2 of the EP&A Regulation, and addresses the SEARs. A Permission to Lodge (PTL) was granted by Roads and Maritime Services (RMS) on 22 January 2019. It is noted that Roads and Maritime are now part of Transport for NSW (TfNSW).

This EIS describes the site, its environs and the proposed development, and provides an assessment of the proposal in terms of the matters for consideration under Section 4.15(1) of the EP&A Act. This EIS should be read in conjunction with the supporting information and plans appended to and accompanying this report.

Structure of this Report

This EIS comprises the following sections:

- Section 1 – Introduction: provides an overview of the proposed development including background, objectives and analysis of alternatives; details the SEARs and statutory requirements and identifies the project team.
- Section 2 – Site analysis: provides a description of the local context, the site and surrounding development.
- Section 3 – Description of the development: provides a description of the proposal.
- Section 4 – Consultation: Outlines the consultation undertaken prior to and during the preparation of this EIS.
- Section 5 – Statutory and strategic context: provides a detailed review of the proposal against the relevant planning policies and controls.
- Section 6 – Environmental assessment: provides an in-depth assessment of the existing environment, potential impacts and the mitigation measures for each environmental consideration.
- Section 7 – Mitigation measures: provides a list of recommendations and mitigation measures based on the technical studies undertaken.
- Section 8 – Justification for the proposal: outlines the justification behind the proposal based on the assessment within this EIS.
- Section 9 – Conclusion.

The Site

The Gladesville Bridge Marina, which includes a land-based building and water-based structure, is located at 380 Victoria Place, Drummoyne within the Canada Bay Local Government Area (LGA). The site is located on the southern foreshore of the Parramatta River, to the south west of the Gladesville Bridge.

The land-based elements of the site are legally described as Lot 1 in DP 549352, Lot 1 in DP 430123 and Lot B in DP 401843, which are all owned by the Proponent. The land-based elements of the site are accessed from Victoria Place via an existing public access road located on Lot 7058 in DP 94083. Lot 7058 is owned by the Crown and licenced by the applicant. The water-based elements of the site are leased by the Proponent from the NSW Roads and Maritime Services (RMS).

The site is approximately 19,740m² in area, comprising an approximate 1,740m² land-based component and an approximate 18,000m² of lease area, which accommodates the water-based component.

The existing marina has a capacity for up to 99 vessels, providing 50 floating berths and 44 swing moorings, with approval for five onshore boat cradles. The current on-site facilities include a slipway, boat storage, boat repairs and maintenance workshops, offices, amenities and lounge area. A total of 11 car parking spaces are provided, 6 within the Crown lease area (Lot 7058) and 5 within the site area.

Background

The Gladesville Bridge Marina is one of Sydney Harbour's main boating destinations, particularly west of the Sydney Harbour Bridge. The Gladesville Bridge Marina has operated as a boatshed, boat repair and boat storage facility for around 100 years and for over 50 years as a marina. It currently offers a wide variety of services, including pump out, repair and maintenance and slipways services.

As the community and boating needs have evolved over the past few decades, there is a clear need and subsequent opportunity to expand the existing number of berths to meet current and future needs. This includes providing for a variety of boat sizes, particularly for vessels greater than 25 metres (Length Overall (LOA)), west of the Sydney Harbour Bridge. The proposed development reflects a contemporary and sustainable marina, with a modern land-water interface to reflect the trends in boating and the community.

Overview of the Project

This DA seeks approval for the alterations and additions to the marina berth layout to provide overall storage for 130 vessels comprising 15 swing moorings and 115 floating berths. The works include:

- removal of 29 existing swing moorings and retention of 15 existing swing moorings;
- construction of 65 new floating berth spaces of varying sizes, that increases the number of floating berths from 50 to 115;
- cessation of the slipway activities;
- demolition of the slipway rails and demolition of the internal office mezzanine structure within the covered slipway area; and
- provision of 8 new valet car parking spaces within the existing slipway area.

Planning Context

Section 5 of this EIS considers all applicable legislation in detail. The proposal is consistent with the requirements of all relevant environmental planning instruments (EPIs) including the applicable State Environmental Planning Policies (SEPPs).

Under the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005* (the SREP), the water-based component of the site, is zoned 'W1 – Maritime Waters'. Permissible uses within the W1 Maritime Waters zone includes 'Commercial marinas', as such the proposed development is permissible with consent in the zone. The proposal is permissible with consent and meets the objectives of the zone.

Under the *Canada Bay Local Environmental Plan 2013* (CBLEP 2013), the land-based part of the site is zoned 'R3 – Medium Density Residential'. Clause 10 of Schedule 1 Additional Permitted Uses applies to 'certain land at 380 Victoria Place, Drummoyne' and allows development for the purpose of marinas to be permitted with development consent. As such, the proposed development is permissible with consent and meets the objectives of the zone.

Environmental Impacts and Mitigation Measures

This EIS provides an assessment of the environmental impacts of the project in accordance with the SEARs and sets out the undertakings made by ENARES Pty Ltd and the Gladesville Bridge Marina operation to manage and minimise potential impacts arising from the development.

Conclusion and Justification

The EIS addresses the SEARs, and the proposal provides for alterations and additions to the existing Gladesville Bridge Marina. The proposed development will facilitate the provision of a contemporary and sustainable public marina, with a modern land-water interface to reflect the current and future trends in boating and the community.

The potential impacts of the development can be managed as outlined within the safeguard and mitigation measures contained within this EIS and its appended technical reports. Given the planning merits of the proposal, the proposed development warrants approval by the Sydney Eastern City Planning Panel.

1.0 Introduction

This Environmental Impact Statement (EIS) has been prepared on behalf of ENARES Pty Ltd (the Proponent), trading as the Gladesville Bridge Marina and is submitted to Canada Bay Council (Council) in support of a Designated Development Application (DA) under *Part 4 of the Environmental Planning and Assessment Act 1979* (EP&A Act).

Under Schedule 3, Clause 23 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) the proposed development constitutes a 'Marina', with an intended capacity of more than 15 vessels having a length of 20 metres or more and an intended capacity of more than 80 vessels of any size and is therefore declared as 'Designated Development'.

A request for the issue of Secretary's Environmental Assessment Requirements (SEARs) was sought on 16 October 2018 and SEARs were issued on 15 November 2018 (refer to **Appendix A**). Accordingly, this EIS has been prepared in accordance with the requirements of Part 4 of the EP&A Act and Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) and addresses the SEARs. A Permission to Lodge (PTL) was granted by Roads and Maritime Services (RMS) on 22 January 2019 (submitted under separate cover).

This EIS should be read in conjunction with the supporting information and plans appended to and accompanying this report.

1.1 Overview of the Proposed Development

This DA seeks approval for the alterations and additions to the marina berth layout to provide overall storage for 130 vessels comprising 15 swing moorings and 115 floating berths. The works include:

- removal of 29 existing swing moorings and retention of 15 existing swing moorings;
- construction of 65 new floating berth spaces of varying sizes, that increases the number of floating berths from 50 to 115;
- cessation of the slipway activities;
- demolition of the slipway rails and demolition of the internal office mezzanine structure within the covered slipway area; and
- provision of 8 new valet car parking spaces within the existing slipway area.

1.2 Background to the Development

The Gladesville Bridge Marina is one of Sydney Harbour's main boating destinations, particularly west of the Sydney Harbour Bridge. The Marina has operated as a boatshed, boat repair and boat storage facility for around 100 years and for over 50 years as a marina. It currently provides 50 floating berth spaces of varying sizes, 44 swing moorings, and 5 onshore cradles. In addition, the marina provides a wide variety of services including, pump out, repair and maintenance and slipways services. Since 2015, the Marina has been offering one of the few safe landing venues to its customers and the wider boating community in NSW, through the Boating Destinations Plan (RMS).

The Marina continues to play a vital part in developing and promoting sailing and safe boating usage in the Inner West and North Sydney region, as well as supporting local and national sailing initiatives. As part of its commitment to safety, the Marina has provided complimentary boat license safety courses in the past, both for customers and locals. The Gladesville Bridge Marina is a long-standing member of both the Boating Industry and Marina Industries Associations.

Since the acquisition of the Marina in 2008, ENARES Pty Ltd has had the goal of improving and modernising the amenities offered to boaters and the local community. Works have previously been undertaken to the external façade and interiors of the land-based building including the offices, services and amenities areas.

However, as the community and boating needs have evolved over the past few decades, there is a clear demand and subsequent opportunity to upgrade the operations of the Gladesville Bridge Marina to meet current and future needs.

The Ninequard strategic review (**Appendix E**) indicates that the proposal strongly aligns with the strategic vision of the NSW state government in improving boat storage on Sydney Harbour and facilitating efficient and safe public access. Though State government proposed government/industry solutions have not yet emerged, this proposal makes a small but significant improvement to the problems identified by government. The Demand Study notes that since 2003, there has been negligible growth in both commercial marina berth and private mooring capacity in Sydney Harbour – particularly in the waters west of Sydney Harbour Bridge. Considering the lower than State-average vessel registration statistics for the Sydney Harbour sector, there is very likely to be a strong latent demand for marina berths. The ability to facilitate future growth in the recreational boating sector on Sydney Harbour is highly reliant on the provision of adequate land–water interface amenities, and in particular, boat storage facilities.

The provision of infrastructure for boaters including the local recreational boating community relies upon privately owned and commercially operated marina assets. The Sydney Harbour Boat Storage Strategy 2013 identifies the need for marinas capable of accommodating an increased demand for wet berths and a variety of vessel sizes, particularly for vessels greater than 25 metres Length Overall (LOA), west of the Sydney Harbour Bridge.

The proposed development therefore provides the opportunity to improve boating access and boat storage for the community in this location into the long-term future, contribute to a working harbour and the broader Government goals related to the Harbour and boating recreation, through the provision of a contemporary and sustainable public marina.

1.2.1 Previous Development Applications on the Site

Table 1 provides a list of previous development applications that relate to the site. It is noted however that none of the previous development applications limit the scope of works included within the proposed application.

Table 1 Previous Development Consents that relate to the Site

DA Reference	Description	Approved Date
DA 117/93	Provision of 5 additional car parking spaces.	7 January 1994
DA 43/99	Conversion of forty (40) swing moorings to forty (40) pontoon moorings at to allow for the continued storage of 99 vessels.	21 December 1999 (approved by the NSW Land and Environment Court)
DA 86/2006	Alterations and additions to the existing marina building including signage which included a food facility in the reception area.	17 October 2006
DA 749/2009	Alterations and additions to existing marina building.	1 June 2010
DA468/2014	Internal alterations to create a café, alterations to existing building, provision of signage and installation of two flagpoles	7 August 2015

1.3 Applicant

ENARES Pty Ltd is the applicant for the purposes of this designated development application.

1.4 Objectives of the Development

The objectives of the proposed development are to:

- provide a safe and accessible land / water interface to encourage the use of the Sydney Harbour foreshore and improve public access;
- address the increased demand for marina berths, of varying sizes, in Sydney Harbour, particularly west of the Sydney Harbour Bridge;
- improve the marina configuration and design to accommodate a wider variety of vessels;
- manage marina practices adjacent the waterway to minimise industrial noise and potential impact on the waterways, and support improved amenity for surrounding properties; and

continue to operate as an International Clean Marina¹, a Fish Friendly Marina² and Sydney Harbour Boating Destination marina³.

1.5 Analysis of Alternatives

1.5.1 Strategic Need for the Proposal

Numerous strategies and programs in the past decade, including the development of the Regional Boating Plans (2015), NSW Boating Now (2014) and the Sydney Harbour Boat Storage Strategy (2013) identify the NSW Government's strong interest in improving the boating experience in NSW.

The Government recognises the shortage of suitable maritime facilities for the existing and future boating community, and the role of privately owned and commercially operated marinas, like the Gladesville Bridge Marina, have in delivering these facilities. The Sydney Harbour Boat Strategy (2013) reflects the need for marinas capable of accommodating this increased demand for wet berths and larger vessels. The Strategy noted that *"in order to keep pace with growth and to ensure a mix of facilities best suited to the characteristics of vessels in the region"* there was a need to have an additional:

- 1000-1200 new spaces in dry-stack storage facilities;
- 600-800 new commercial marina berths;
- 150-250 new berths at private marinas and domestic facilities; and
- 300 new mooring spaces.

The Strategy also emphasises the need for better-organised moorings and the conversion to berths to maximise the number of waterway areas that are accessible to all boaters.

Using the Strategy, the Australian Marina Management Pty Ltd has undertaken a Marina Berth Demand Assessment (refer to **Attachment D**). The Demand Assessment report demonstrates that there is demand for on-water boat storage in Sydney Harbour for 659 vessels and a likely latest demand for marina berth and other on-water boat storage in Sydney Harbour of between 91 and 234 vessels. Furthermore, the Demand Assessment reports also confirms that there is insufficient storage in Sydney Harbour, for a variety of boat sizes, specifically for vessels greater than 25 metres LOA, particularly west of the Sydney Harbour Bridge.

¹ The International Clean marina Program is a voluntary, incentive-based education and outreach program that encourages environmental compliance and the use of best management practises for marinas. It is owned and managed by the Marina Industries Association <https://www.marinas.net.au/industryprograms/international-clean-marina-program>

² Fish Friendly Marina Certification is provided through the Marina Industries Association and has been developed to inform marina managers on how to maximise the benefits for fish and recognise those operators actively working to improve fish habitat. <https://www.marinas.net.au/industryprograms/fish-friendly-marinas>

³ To get the most out of a day boating on Sydney Harbour, Roads and Maritime Services has partnered with 19 exclusive marinas to improve access to quality services and amenities for boaters on the harbour. <https://www.rms.nsw.gov.au/maritime/using-waterways/boating-destinations-plan/index.html>

In addition to the Marina Demand Study, Ninesquared has undertaken a Strategic Review (**Appendix E**) of the proposal's alignment with the State Government's strategic vision for the use of Sydney Harbour and improving boat storage and access to this important asset. The Strategic Review concludes that whilst government/industry solutions have not yet emerged to issues relating to insufficient boat storage for Sydney Harbour, that the proposal makes a small but significant improvement to supply. In particular, the target of most relevance to this development proposal is the storage of vessels over 6m where an additional 2,300 vessels were forecast as requiring in water or dry stock storage by 2021. Options to accommodate storage for vessels over 12m are limited as they generally cannot be stored on land and rely on the provision of wet berths, the provision of which must be carefully considered against other competing interests such as the protection of navigation corridors and other waterway users.

Through the consolidation of existing facilities and the delivery of new berths in varying sizes, the proposed development seeks to provide water access and storage facilities to a larger percentage of the local and visitor boating communities.

1.5.2 Alternative Options

Limited options are available to the Gladesville Bridge Marina to maintain the ongoing operation of the Marina and respond to the identified need for increased commercial marina facilities in Sydney Harbour.

Option 1: Do nothing

The 'do nothing' option would result in the Marina continuing to operate in its current configuration and capacity, with minimal investment. Whilst the Marina would provide for the existing boating members, it would not contribute to the identified shortage of suitable additional maritime facilities in Sydney Harbour.

Further, the water-based elements of the site are leased by the Proponent from Roads and Maritime Services. The current lease expires in 2020. To ensure the viable operation and improvement of the Marina into the future, significant investment and redevelopment is required. It is noted that the provision of new boat storage facilities on Sydney Harbour to address the existing shortfall is consistent with State Government policy (refer to Strategic Review at **Appendix E**).

Option 2: Provide a new marina in another location

Opportunities to establish new commercial marinas are extremely limited in Sydney Harbour, with a range of factors influencing feasibility, including the availability of waterfront land, ownership and lease requirements, and environmental constraints. Indeed, the Demand Assessment confirmed that in the last 10 years there has been no net growth in available commercial marina facilities within the western section of Sydney Harbour.

Development of a new marina in another location is therefore an unfavourable and unviable option when compared with the proposed option of utilising the existing marina as an expansion space.

Option 3: Expand a nearby marina

As noted above, there are limited opportunities available to expand any nearby commercial marinas. This option is also influenced by ownership and lease requirements which restrict the favourability and viability of this option when compared with the proposed option.

Option 4: Alternative designs

The current design of the marina expansion is a result of extensive technical assessment to respond to the opportunities and constraints of the site in relation to environmental, social and economic factors. The design is also based on the outcomes of consultation with key stakeholders, including the local community, over the past since October 2018 and industry, consultants and boaters for longer, which has resulted in amendments during the design process. Specifically, the following key amendments have occurred since the original proposal:

- Revisions to the layout of berths and boat sizes in response to navigation issues raised by stakeholders, including replacing a 25m boat that was closer to the foreshore near the Gladesville Bridge, with two smaller 12m boats (E51 and E52) and also making E50 an 8m boat space instead of a 12m boat space (**Figure 1**). It is also noted that positive visual impacts were a significant consideration of the changes to E51 and E52.
- Moving the northern marina arm south by 28m to ensure the protection of the existing rowing course on the northern side of the marina.

- Modifications to the design of the gangway to allow kayakers and other small passive craft to navigate close to the shore near the marina.
- Amendments to car parking layout to increase capacity of spaces, provide an accessible parking space and remove the need for a car stacker.
- Numerous revisions to the design in accordance with the on-going examination of potential visual impacts and the principles derived to maximise the availability of water views and to minimise impacts from the new extension (refer to Visual Impact Assessment at **Appendix W**).

A floating berthing system is preferred to fixed jetties in order to align with the existing marina, to provide greater convenience to users (including people who are less able) and minimise visual impacts, particularly at low tide. Most modern marinas are floating structures and this form of construction is also preferred by regulatory authorities, largely due to reduced visual impact as the structure rises and lowers with the tide.

Accordingly, the proposed design is considered to be the most appropriate outcome for the development based on the extensive technical assessment and consultation undertaken to date.

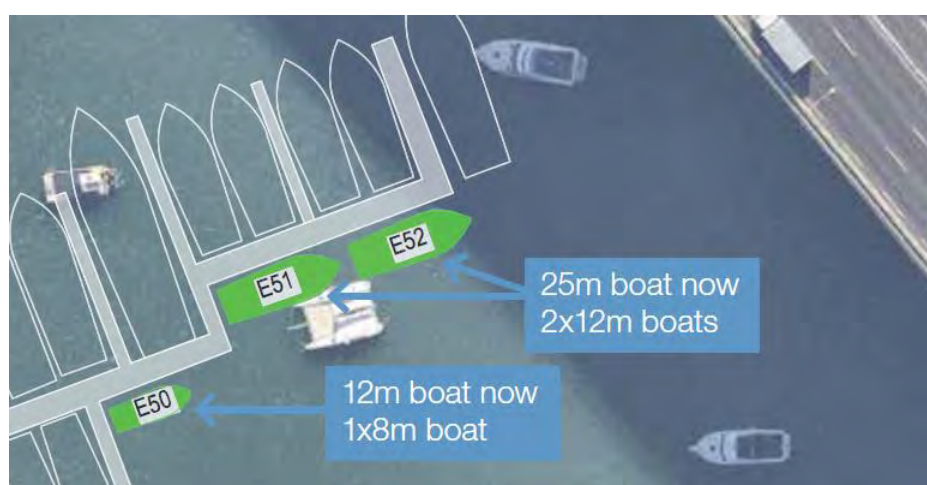


Figure 1 Amendment to berth design

Source: GHD

Option 5: The proposal

The proposed development, as outlined in this EIS, provides an opportunity for the viable extension of the Gladesville Bridge Marina, providing the necessary investment required to secure a further long-term lease as well as catering to the existing and future boating population. The proposed development will result in:

- Continued use of and access to the harbour foreshore;
- Increased access to storage for a wider variety of vessel sizes for the boating community;
- Alignment with State Government policy objectives in relation to access to the Harbour and the provision of additional boat storage facilities;
- Improved design and accessibility through use of the latest best practice marina design and technology;
- Continued operation of the Marina as an International Clean Marina, Sydney Harbour Boating Destination Marina and a Fish Friendly Marina; and
- Ongoing viability of the Marina operation.

1.6 Secretary's Environmental Assessment Requirements (SEARs 1268)

In accordance with section 4.39 of the EP&A Act, the Secretary of the (then) Department of Planning and Environment issued the requirements for the preparation of the EIS on 15 November 2018. A copy of the Secretary's Environmental Assessment Requirements (SEARs) is included at **Appendix A**.

Table 2 provides a detailed summary of the individual matters listed in the SEARs and identifies where each of these requirements has been addressed in this report and the accompanying technical studies.

Table 2 Secretary's Environmental Assessment Requirements

Requirement	Location in Environmental Assessment	
General		
The Environmental Impact Statement (EIS) must address the <i>Environmental Planning and Assessment Act 1979</i> and meet the minimum form and content requirements in clauses 6 and 7 of Schedule 2 the Environmental Planning and Assessment Regulation 2000.	Environmental Impact Statement	
Key Issues		
The EIS must include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts if necessary) and develop appropriate measures to avoid, minimise, mitigate and/or manage these potential impacts. As part of the EIS assessment, the following matters must also be addressed:	-	-
Strategic Context	Section	Appendix
a detailed justification for the proposal and suitability of the site for the development;	Section 8.0	-
a demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), or justification for any inconsistencies;	Section 5.0	Marina Strategic Review – Appendix E
a list of any approvals that must be obtained under any other Act or law before the development may lawfully be carried out.	Section 5.0	Marina Strategic Review – Appendix E
a description of how the proposed expansion integrates with existing on site operations; and	Section 3.0	-
a description of any additional licence(s) or approval(s) required to carry out the proposed development.	Section 5.0	Marina Strategic Review – Appendix E
Marine Safety and Navigation	Section	Appendix
details of the commuter ferry routes and an assessment of the impact of the construction and operation of the marina on these services	Section 6.0	Marine Safety and Navigation Report – Appendix F
an assessment of the impacts on water-based traffic and the existing users of the Parramatta River in the vicinity of the marina; and	Section 6.0	Marine Safety and Navigation Report – Appendix F
details of private boat moorings surrounding the site and an assessment of the impact of the construction and operation of the marina on these moorings.	Section 3.2.1	Marine Safety and Navigation Report – Appendix F
Contamination	Section	Appendix
a detailed assessment of the extent and nature of any contamination of the soil, groundwater and marine sediments;	Section 6.1	Contamination Investigation Report - Appendix G Ecology Assessment – Appendix J
an assessment of potential risks to human health and the environmental receptors in the vicinity of the site; and	Section 6.1	Contamination Investigation Report -

Requirement	Location in Environmental Assessment	
		Appendix G and Remedial Action Plan – Appendix H
a description and appraisal of mitigation and monitoring measures.	Section 6.1	Remedial Action Plan – Appendix H
Biodiversity	Section	Appendix
accurate predictions of any vegetation clearing on site, including marine vegetation;	Section 6.2	Ecology Assessment – Appendix J
a detailed assessment of the potential impacts on any critical habitats, protected species, threatened species, populations, endangered ecological communities or their habitats;	Section 6.2	Ecology Assessment – Appendix J
a biodiversity assessment in accordance with the Office of Environment and Heritage guidelines;	Section 6.2	Ecology Assessment – Appendix J
an aquatic habitat assessment in accordance with the Department of Primary Industries guidelines; and	Section 6.2	Ecology Assessment – Appendix J
a detailed description of the measures to avoid, minimise, mitigate and offset biodiversity impacts.	Section 6.2	Ecology Assessment – Appendix J
Soil and Water	Section	Appendix
a description of local soils, topography, drainage and landscapes;	Section 6.1	Geotechnical Report – Appendix I
an assessment of potential impacts on the quality and quantity of surface and groundwater resources;	Section 6.5	Water Management Report – Appendix O
details of sediment and erosion controls;	Section 6.5	Sediment Management Report – Appendix N
details of the proposed stormwater and wastewater management systems (including sewerage), water monitoring program and other measures to mitigate surface and groundwater impacts	Section 6.5	Water Management Report – Appendix O
benthic morphology, water flow in and around the development, flushing, and wave bounce;	Section 6.3	Foreshore Geomorphology Report – Appendix F
details of construction methodology and any proposed dredging, including measures to manage and minimise disturbance of the shoreline, substrate stability and potentially contaminated sediments; and	Section 6.5	Construction Management Plan – Appendix S
a description and appraisal of mitigation and monitoring measures.	Section 7.0	Construction Management Plan – Appendix S
Water Resources	Section	Appendix
details of any licensing requirements or other approvals under the <i>Water Act 1912</i> and/or <i>Water Management Act 2000</i>;	Section 5.0	Marina Strategic Review – Appendix E

Requirement	Location in Environmental Assessment	
an assessment of potential impacts on floodplain and stormwater management and any impact to flooding in the catchment; and	Section 6.4	Stormwater Management Report – Appendix M
a description of the measures to proposed to ensure development can operate in accordance with the requirements of any relevant Water Sharing Plan or water source embargo.	n/a	n/a
Noise and Vibration	Section	Appendix
a description of all potential noise and vibration sources during construction and operation, including road traffic noise;	Section 6.13	Noise and Vibration Report – Appendix P
a noise and vibration assessment in accordance with the relevant Environment Protection Authority guidelines; and	Section 6.13	Noise and Vibration Report – Appendix P
a description and appraisal of noise and vibration mitigation, management and monitoring measures.	Section 6.13	Noise and Vibration Report – Appendix P
Air Quality and Odour	Section	Appendix
a description of all potential sources of air and odour emissions;	Section 6.10	Air Quality Assessment Report – Appendix Q
an air quality impact assessment in accordance with relevant Environment Protection Authority guidelines; and	Section 6.10	Air Quality Assessment Report – Appendix Q
a description and appraisal of air quality impact mitigation, management and monitoring measures.	Section 6.10	Air Quality Assessment Report – Appendix Q
Traffic and Transport	Section	Appendix
details of road transport routes and access to the site;	Section 6.9	Traffic and Transport Study – Appendix U
road traffic predictions for the development during construction and operation;	Section 6.9	Traffic and Transport Study – Appendix U
an assessment of impacts to the safety and function of the road network; a description of carpark arrangement for the development.	Section 6.9	Traffic and Transport Study – Appendix U
Waste Management	Section	Appendix
details of waste handling including, transport, identification, receipt, stockpiling and quality control including off-site reuse and disposal; and	Section 6.16	Waste Management Plan, Appendix V
the measures that would be implemented to ensure that the proposed development is consistent with the aims, objectives and guidelines in the <i>NSW Waste Avoidance and Resource Recovery Strategy 2014-21</i>.	Section 6.16	Waste Management Plan, Appendix V
Visual	Section	Appendix
- Including an impact assessment of buildings and berthed vessels, particularly when viewed from: - properties along the foreshore areas; - waterway users; and - public and other significant land-based vantage points.	Section 6.8	Visual Impact Assessment – Appendix W

Requirement	Location in Environmental Assessment	
Heritage	Section	Appendix
Including Aboriginal and non-Aboriginal cultural heritage.	Section 6.14	Heritage Impact Assessment – Appendix Y
Environmental Planning Instruments and Other Policies	Section	Appendix
The EIS must assess the proposal against the relevant environmental planning instruments, including but not limited to: - State Environmental Planning Policy (Infrastructure) 2007; - State Environmental Planning Policy No 33-Hazardous and Offensive Development; - State Environmental Planning Policy No 55 Remediation of Land; - State Environmental Planning Policy (Coastal Management) 2018; - Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005; - Canada Bay Local Environmental Plan 2013; and - Relevant development control plans and section 94 plans.	Section 5.0	-
Guidelines		
During the preparation of the EIS you should consult the Department's Register of Development Assessment Guidelines which is available on the Department's website at planning.nsw.gov.au under Development Proposals/Register of Development Assessment Guidelines. Whilst not exhaustive, this Register contains some of the guidelines, policies, and plans that must be taken into account in the environmental assessment of the proposed development.	-	-
Consultation	Section	Appendix
During the preparation of the EIS, you must consult the relevant local, State and Commonwealth government authorities, service providers and community groups, and address any issues they may raise in the EIS. In particular, you should consult with the: - Environment Protection Authority; - Office of Environment and Heritage; - Department of Primary Industries; - Roads and Maritime Services - Maritime Division; - Transport for NSW; - Canada Bay Council; and - The surrounding landowners and occupiers that are likely to be impacted by the proposal. Details of the consultation carried out and issues raised must be included in the EIS.	Section 4.0	Community Consultation Report – Appendix AA
If you do not lodge an application under Section 4.12(8) of the <i>Environmental Planning and Assessment Act 1979</i> within 2 years of the issue date of these SEARs, you must consult with the Secretary in relation to any further requirements for lodgement.	-	-

1.7 Designated and Integrated Development

The proposed development is permissible and subject to assessment and determination under Part 4 of the EP&A Act.

1.7.1 Designated Development

The proposed development is classified as 'Designated Development' under Schedule 3, Clause 23 of the EP&A Regulation as it constitutes a 'Marina', with an intended capacity of more than 15 vessels having a length of 20 metres or more and an intended capacity of more than 80 vessels of any size.

1.7.2 Integrated Development

In addition to being designated development, the proposed development will be Integrated Development pursuant to Section 4.46 of the EP&A Act, and will require approvals under:

- Schedule 1 of the *Protection of the Environment Operations Act 1997* as the marina will increase its capacity to over 79 berths and provide storage for vessels over 25m in length;
- the *Water Management Act 2000* to undertake controlled activities on waterfront land.

1.8 Consent Authority

Schedule 7 of the *State Environmental Planning Policy (State and Regional Development) 2011*, lists types of development that are classified as 'Regionally Significant Development'. Part 7 of Schedule 7 states that 'marinas' which meet the requirements for designated development under clause 23 of Schedule 3 of the EP&A Regulations 2000.

Given the proposed development is a 'marina' development that is classified as designated development under clause 23 of Schedule 3 of the EP&A Regulation 2000, the proposed development is declared to be 'Regionally Significant' Development for the purposes of the EP&A Act.

Under the EP&A Act (clause 4.5), the 'consent authority' for regionally significant development is the relevant Sydney district or regional planning panel. As such, the Sydney Eastern City Planning Panel is the consent authority for this development application, with lodgement of the application with Canada Bay Council (CBC), and assessment by the CBC planning officers.

1.9 Approvals and Licences

The Gladesville Bridge Marina Expansion Strategic Review prepared by Nine Squared (**Appendix E**) identifies all applicable approvals and licences required for the development in addition to consent under Part 4 of the EP&A Act. In addition to the key approvals and licences identified above, the development will require a Section 73 compliance certificate issued by Sydney Water to ensure that the development receives appropriate water, water waste and drainage.

It is also noted that Roads and Maritime should be supplied with both a copy of the 'Notice of Determination' of development consent and a copy of the plans of the development, stamped as approved by the consent authority once determined.

1.9.1 Permission to Lodge

On 11 October 2018, the Proponent submitted an application to the (then) Roads and Maritime Services (RMS) seeking landowners' consent and a Permission to lodge a Development Application. Consent to the lodgement of the development application was subsequently granted on 22 January 2019 (Ref: PTL 180901817). The terms of consent stated that it was valid for 12 months from the date of the letter and requested that should the nature, extent or specific location of the proposal change prior to lodgement, that the Proponent is to notify the RMS.

Accordingly, on 5 June 2019, GHD on behalf of the Proponent, advised the Roads and Maritime (and issued an updated marina layout drawing) that minor amendments to the berth layout had been made. The changes comprised:

- Removal of 1 x 25m boat and replacement by 2 x 12m boat spaces (Berth E51 became E51 and E52);
- Conversion of berth E50 from a 12m boat space to an 8m boat space;
- An increase in the number of berths from 114 (as proposed in October 2018) to 115;
- Total number of boats stored in the marina increased from 129 (as proposed in October 2018) to 130; and
- Adjustment to the layout of boats on the A arm and B arm to meet navigation requirements of the 15m rowing course clearance prior to approval of the Permission to Lodge.

Therefore, in accordance with the Roads and Maritime Permission to Lodge Factsheet and the terms of the Permission to Lodge consent, ENARES Pty Ltd notified the RMS of the proposed minor modifications to the extent of the proposed development.

1.10 The Project Team

An expert project team has been formed to deliver the project and includes the consultants listed in **Table 3** below.

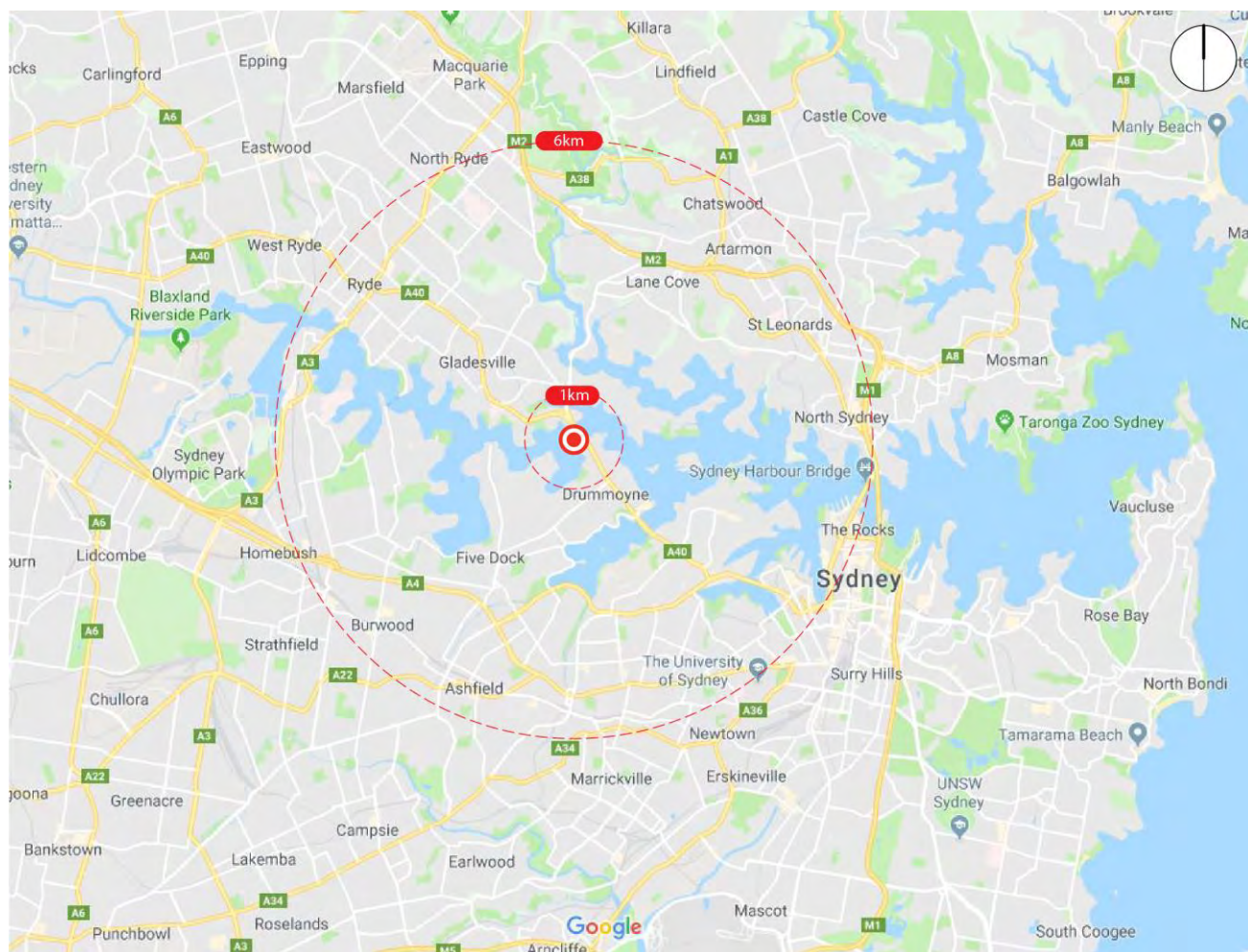
Table 3 Project Team

Consultant	Role
GHD	Project management Architectural Plans Marina Drawings Community and stakeholder engagement Geotechnical Water Management Air Quality Assessment Hazardous and Offensive Development Social Impact Accessibility
Ethos Urban	Urban Planning/EIS author
Marina Management	Marina Demand
Nine Squared	Maritime Strategic Needs
Brett Moore	Marine Safety and Navigation
Zoic	Contamination
Marine Pollution Control	Marine Ecology Flora and Fauna Contamination
Metoccean	Wave Climate
Royal Haskoning DHV	Civil Infrastructure Erosion and Sediment Management
Pulse Acoustic	Noise and Vibration
SLR	Construction Management Waste Management
Colston, Budd, Rogers and Kafes	Traffic and Transport
ARPL	Visual Impact
NBRS Architecture	Heritage Impact

2.0 Site Analysis

2.1 Site Location and Context

The Gladesville Bridge Marina is located at 380 Victoria Place, Drummoyne, on the southern foreshore of the Parramatta River and is approximately six kilometres west of the Sydney Central Business District (CBD). The site forms part of the Canada Bay Local Government Area (LGA). The site's locational context is shown in **Figure 2**.



 The Gladesville Bridge Marina

Figure 2 Location Plan

Source: Google Maps / Ethos Urban

The site area comprises land located at 380 Victoria Place, Drummoyne and also two areas of the Parramatta River, located on the eastern and western sides of the Gladesville Bridge, as illustrated in **Figure 3**.



Figure 3 Existing Site

Source: NearMap & Ethos Urban

2.2 Site Description

The land-based component of the site is owned by ENARES Pty Ltd and is legally described as:

- Lot 1 in DP 549352;
- Lot 1 in DP 430123; and
- Lot B in DP 401843.

The land-based elements of the site are accessed from Victoria Place via an existing public access road located on Lot 7058 in DP 94083, this section of the site is owned by the Crown and leased by the Proponent.

The water-based component of the site is owned and administered by the RMS. The land is leased by the ENARES Pty Ltd. A further 44 swing moorings, located to the north east of the site (and one to the south), are leased by the ENARES Pty Ltd from RMS for marina use.

A mooring field plan, showing the extent of the existing floating pontoon and the extent of the swing moorings currently operated by Gladesville Bridge Marina (i.e. red outline) is provided in **Figure 4**.

The site is approximately 19,740m² in area, comprising an approximate 1,740m² land-based component (above the Mean High-Water Mark (MHW)) and an approximate 18,000m² of lease area (below the MHW), which accommodates the water-based component. It is noted that this area does not include the existing swing moorings. A survey plan of the land based component of the site is included at **Appendix B**, and a hydrographic survey is included within the Ecology Assessment at **Appendix J**.



Figure 4 Existing mooring field plan

Source: GHD K200 Rev B

2.3 Existing Development

As shown in **Figure 3** above, the Marina comprises three key components, being a land-based building, a water-based pontoon structure and swing moorings.

The existing land-based building is three storeys in height (when viewed from the foreshore). The ground floor is occupied by the marina office and back-of-house areas, staff and member amenities, storage, engineering workshop and the shipwright workshops. The first floor is occupied by commercial offices. The second floor is occupied by two private residential dwellings. The second floor is at street level and has private access from Victoria Place.

A slipway is located along the eastern boundary. The slipway can accommodate vessels up to 60' (18 metres) LOA and 16' (5 metres) beam. Non-flybridge power vessels of up to 40' (13 metres) are able to be housed in the undercover slipway area. Slipway services include antifouling, boat services and painting.

The existing water-based marina provides 50 permanent floating berths, ranging in size from 25' (7.6 metres) to 75.7' (23 metres). A further, 44 swing moorings are provided to the north east of the floating berths and one to the south, accommodating boats ranging in length from 17' (5.2 metres) up to 50' (15m), though there is no limit in length under the lease. Together the Marina has a capacity for 99 boats with approval for five onshore boat cradles (only 4 provided). Marina services include a complimentary tender service, dinghies available for after-hours use, pump out facilities, and work berths.

A total of 11 car parking spaces are provided, 6 within the Crown lease area and 5 within the site area. Vehicle access to the marina is provided via the public access road located to the west of the site (Lot 7058 in DP 94083). Pedestrian access is also provided via stairs adjacent the public access road. It is noted that no public parking is provided via the access road.

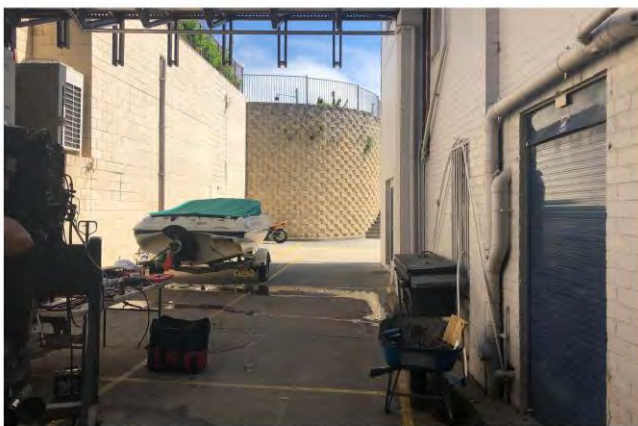
Photographs of the existing development are provided at **Figure 5** below.



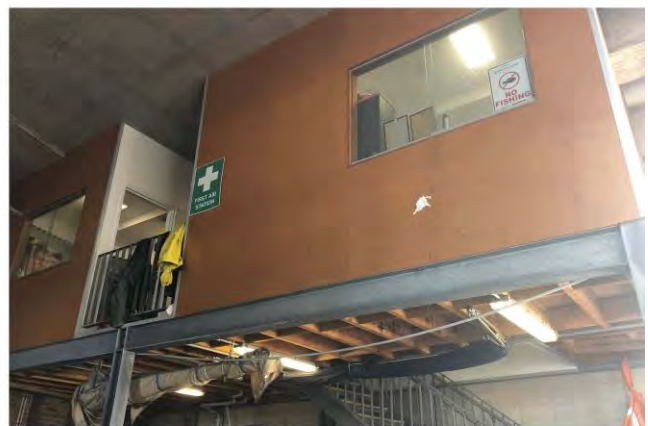
Land-based building (western facade) and car parking viewed from access road, looking east



Land-based building (northern facade) viewed from foreshore / marina entry, looking south



Shipwright workshop area and car parking viewed from undercover slipway area, looking west



Shipwright office viewed from undercover slipway area, looking south



Marina viewed from western marina arm, looking south-west



Swing moorings (orange bouys) and Gladesville Bridge viewed from Parramatta River, looking south-west



Undercover slipway, shipwright workshop and office viewed from slipway, looking south-west



Slipway viewed from foreshore, looking south-west



Water-based marina viewed from the public park, looking east



Marina viewed from public access road and foreshore, looking north-east



Marina viewed from foreshore, looking north-east



Marina entry viewed from marina arm, looking south-west

Figure 5 Photographs of the existing development

Source: Ethos Urban, 2019

2.3.1 Topography

The majority of the land-based part of the site is generally flat and situated approximately at 2m Australian Height Datum (AHD), however, it is separated from Victoria Place (8m AHD) by a 6m high retaining wall. The existing slipway has a fall of approximately 1.48m.

2.3.2 Ecology

An Ecology Assessment, prepared by Marine Pollution Research Pty Ltd (**Appendix J**) confirms that:

- The *Harbour Foreshores and Waterways Area Development Control Plan 2005*, there are two identified aquatic habitats indicated in the vicinity of the Gladesville Bridge Marina, which comprise 'mudflat' habitat which occurs inshore from the existing and proposed marina, and an area of 'mixed rocky intertidal and sand' that is located around the eastern perimeter of Five Dock Point.
- Sydney Harbour Regional Environmental Plan Sydney Harbour Catchment 2005 (SREP Sydney Harbour) indicated a continuous band of designated 'wetland' along the southern shoreline of the Parramatta River from Five Dock Point to east of the Gladesville Bridge, which is inferred to be marine algae on inter and sub-tidal substrates.
- According to mapping by the NSW Department of Primary Industries Fishers Branch (DPI Fisheries) and vegetation surveys conducted in 2007, there are no estuarine vegetation (seagrasses, mangroves or saltmarsh) in the existing or proposed marina footprint or in nearby shoreline locations between Five Dock Point and the Gladesville Bridge.
- An aquatic ecology constraints and opportunities study conducted by Marine Pollution Research Pty Ltd in 2006 for the previous owners of the Marina noted the presence of macroalgae species inshore of the marina on rock rubble and bedrock platforms, and kelp plus *Sargassum sp* on the slipway rails, along with a small patch of *Halophila* in shore near the base of the slipway.
- An aquatic ecological assessment undertaken in 2007 noted that:
 - The piles and pontoons were colonised by mussels, epiphytic algae and bryozoans;
 - There were abundant burrows in the soft muddy sediments underneath the marina pontoons, which were associated with polychaete worms, snapping shrimps and Callinassid shrimps, burrowing anemones, crabs and gobies.
 - There was a thin (5mm) layer of well aerated sediments overlying anoxic black sediments in both the existing marina location and the proposed extension area.
 - There were no seagrasses, kelp or other macroalgae in the vicinity of the existing marina, nor were there mangroves or other vegetation along the shoreline adjacent to the marina.
- Diver based surveys undertaken by Marine Pollution Research Pty Ltd in 2015 of aquatic habitats in the intertidal and in-shore waters and seabed at Five Dock Point and Huntleys Point for a proposed optical cable laying project across the Parramatta River reported that:
 - there is intertidal and sub-tidal rock reef (natural reef and on the side of the sandstone bridge revetments) on both sides of the river, which at the time of inspection supported a variety of epifauna including barnacles, molluscs, tubeworms, ascidians, bryozoans and sponges;
 - there was a macroalgae zone between -1.5m and -4m depth LAT that supported *Sargassum sp* and kelp as dominant canopy species and a variety of smaller algae plus encrusting fauna; and
 - the seabed beyond the rocky reef did not support any marine plants.
- Diver based aquatic ecology surveys undertaken over two days (16th and 17th May 2019) by Marine Pollution Research Pty Ltd reported that:
 - The key fish habitats at the site include the inshore rock and rock rubble reef habitats plus some small patches of *Zostera* and *Halophila* seagrass. The reef habitats are more or less continuous around the shoreline from Five Dock Point to Gladesville Bridge and all habitats are confined to shallow waters above the -2m LAT hydrographic contour.
 - There are no terrestrial habitats or bat roosting areas at the marina site or under the Gladesville Bridge.

Protected and Threatened Species and Endangered Ecological Communities

The Ecological Assessment, prepared by Pollution Marine Research Pty Ltd (**Appendix J**) confirms that there are no threatened species of Endangered Ecological Communities within the locality of the Gladesville Bridge Marina and the site does not constitute specific habitat for other threatened aquatic species as listed in the *Fisheries Management Act 1994*, the *Biodiversity Conservation Act 2016* and the *Environment Protection and Biodiversity Conservation Act 1999*.

2.3.3 Geotechnical Conditions

A desk top geotechnical report for the Gladesville Bridge Marina area has been prepared by GHD (**Appendix I**), a Contamination Investigation Report has been prepared by ZOIC Environmental (**Appendix G**), an Ecological Assessment Report has been prepared by Marine Pollution Research Pty Ltd (**Appendix J**) and a Foreshore Geomorphology Report, prepared by Royal Haskoning DHV (**Appendix L**). Below is a summary of their investigations on existing site conditions.

Water Based

In general, the Gladesville Bridge Marina area comprises a relatively low-lying wide river valley/ harbour side area. Underlain by Mesozoic Hawkesbury Sandstone (Triassic), the overlying sediments are expected to consist generally of peat, sandy peat and mud, silty to peaty quartz sand, silt and clay with common shell layers. Localised fill and alluvial and beach deposits are also situated alongside the water's edge.

As illustrated in **Figure 6**, and set out within the Ecology Assessment Report, prepared by Marina Pollution Research (**Appendix J**) the current marina depths range from -3m to -5m below lowest astronomical tide for the inner arm (southern arm) and -5.5m to -8m for the outer (northern arm) and berths. The site also comprises a series of inshore berths offshore of the slipway that have depths of between -1m to -2m and the depth ranges for the proposed new pontoons and berths will be consistent with the existing structure and comprise -3m to -4.5m for the southern arm and 5.5m to -9m for the northern arm.

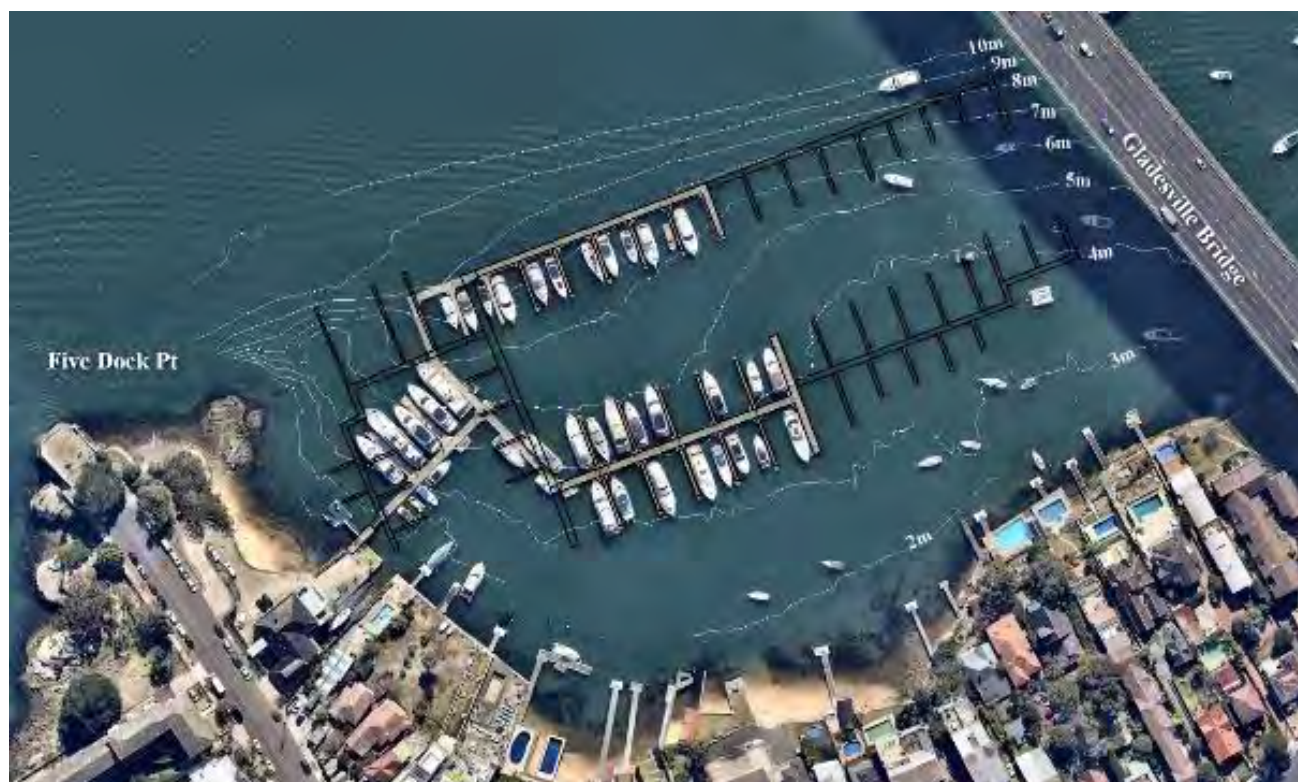


Figure 6 Hydrographical survey levels

Source: Marine Pollution Research Pty Ltd

Land Based

The Foreshore Geomorphology Report, prepared by Royal Haskoning DVH (**Appendix L**) notes that the soils on the site consists of shallow, discontinuous Earthy Sands and Yellow Sands on crests and inside shallow (<20cm) benches. Furthermore, siliceous sands exist on leading edges of benches and localised Yellow Podzoic Soils can be found on shale lenses. In poorly drained areas Leached Sands, Grey Earths and Gleyed Podzoic Soils can be found, which is typical of the Parramatta River foreshore.

Site investigations were undertaken by ZOIC between 4th and 13th June 2019 (**Appendix G**). This comprised the sinking of five (5) auger boreholes (BH01-05) and the collection of three (3) sediment samples (SD01-03) in the locations illustrated in **Figure 7**.

Accordingly, the following geotechnical observations were made during the site investigations:

- surface conditions onsite generally consisted of concrete storage/ parking space, a workshop/office building, a concrete wharf area and a slip way. The concrete hardstand was generally observed to be in good conditions, although minor cracks were noted in areas;
- soils encountered below the concrete surface generally comprises brown to dark grey clayey sand to gravel fill material, with inclusions of sandstone cobbles (BH01 and BH 03) and word (BH 04);
- fill material was underlain by sandstone bedrock, ranging from 0.2m below ground surface (bgs) (BH03) to 2.0m bgs (BH02); and
- soils became wet immediately beneath the concrete at BH03, at 0.5m bgs at BH01, and at 0.9m bgs at BH 02.

In addition, the Canada Bay LEP Acid Sulphate Soils map, confirms that the site is affected by Class 5 acid sulphate soils.



Figure 7 Land based sampling locations

Source: ZOIC

Groundwater

ZOIC's groundwater sampling activities (**Appendix G**) found:

- standing water levels were 0.89m bgs at MW01 and 0.37m bgs at MW02, noting that a slight topographical decline was observed towards the north-east;
- strongly alkaline conditions at borehole MW02, and slightly alkaline conditions at borehole MW01;
- strongly reducing conditions at borehole MW02, and oxidising conditions at borehole MW01;
- conditions indicative of marine waters (highly saline) at borehole MW01;
- conditions indicative of brackish waters at borehole MW02; and
- no phase separated hydrocarbon (PSH) or hydrocarbon sheen was observed during groundwater sampling.

2.3.4 Site Contamination

Soil, sediment and groundwater samples taken during the site investigations undertaken by ZOIC (**Appendix G**) were subsequently tested and analysed. The results of the testing are outlined in the following sub-sections.

Soil

ZOIC confirm that the soil samples were tested for heavy metals, TRH, BTEX, PAH, Organotins (TBT) and asbestos. Results indicated concentrations of contaminants of potential concern were below the adopted human health criteria at all land-based sample locations. In addition, four soil samples analysed for asbestos all reported below the laboratory level of risk (LOR).

Sediment

Sediment samples within the vicinity of the slipway were submitted for analysis of heavy metals, TRH, BTEX, PAH and Organotins (TBT). Results indicated that the sediment samples had a number of contaminants which were above both the ANZECC Guidance Values and the adopted Sediment Quality Guidelines. Specifically, the following exceedances of Guidance Values and SPGs were reported:

- SD-1 for TPH, copper, lead and zinc;
- SD-2 for TPH, copper, lead, mercury and zinc;
- SD-3 for copper and mercury.

Furthermore, the following exceedances of Guidance Values only were reported:

- SD-1 for nickel, mercury and TBT;
- SD -2 for chromium and TBT; and
- SD-3 for lead and zinc.

In addition, Marine Pollution Research Pty Ltd (**Appendix J**) undertook sediment samples from eight inshore locations (**Figure 8**) and analysed them for a range of metals and Total Organic Carbon. The results confirmed that:

- localised areas with very high levels of contamination (i.e. lead, copper and zinc) were situated closer to the slipway, (Sites 1 and 2) with concentrations at those sites, generally higher in bottom sediments;
- some residual contamination of sediments around Sites 3 and 4 at the base of the old Halverson Slipway to the north; and
- slightly elevated contamination levels for the remaining sediments around the sub-tidal shallows of the Gladsville Bridge Marina Cove, but levels (with the exception of the two slipway locations) within the Cove, generally in-line with the background sediment contamination levels for Port Jackson Estuary;
- lead concentrations at all sample locations and the cluster of elevated copper and zinc levels from the sites closest to the slipway were generally higher than the Guideline Value, but generally below the mean Port Jackson concentration.

Groundwater

Groundwater samples were submitted for analysis of heavy metals, TRH, BTEX and PAH. All groundwater samples reported results below the adopted ecological criteria with the exception of:

- MW01 for copper and zinc; and
- MW02 for chromium, copper and zinc.

These results and mitigation measures proposed are addressed further in **Sections 6.0** and **7.0**.



Figure 8 Water based sampling locations

Source: Marine Pollution Research Pty Ltd

2.3.5 Water Quality

Marina Pollution Research Pty Ltd (**Appendix J**) undertook two water quality monitoring exercises to establish the existing baseline conditions for comparison with the proposed construction and operational periods. The two exercises comprised dry neap tide sampling and wet weather sampling.

Dry Neap Tide Sample Results

The results from the dry neap tide sampling are reported as follows:

- Water temperatures ranged between 21.0 to 21.1 °c.
- Salinity and the dissolved oxygen values were similar throughout the depth profiles ranging between 35.1 and 35.2ppt and 79.8% and 82.5% saturation respectively.
- Water pH was uniform throughout the survey (7.7 to 7.8pH units).
- Water turbidity was low with an overall mean ($\pm$ standard deviation of SD) of 3.8 ± 0.8 NTU, indicating generally clear waters at all sites. This was reflected in TSS results with most results at or below 3mg/L.
- Both dissolved copper and DOC were low and uniform across sites and with depth.

Wet Weather Sampling

The results from the wet weather sampling are reported as follows:

- Water temperatures were generally similar between the sample sites and were lower than the dry neap tide results due to cold flood water mixing with estuarine tidal water and a distinct but very thin cold layer of water being evident.
- Salinity results were more variable with distinct but very thin lower salinity layers less than 0.2m depth.
- Dissolved oxygen results (as % saturation) varied between 88.7 and 92.5% saturation over both sampling days with no obvious pattern to variation with location, depth or sampling day.
- Turbidity was relatively low with values ranging between unmeasurable to 5 NTUs.
- Water sampling results found that stormwater mixing is well advanced for waters flowing down Parramatta River past the Gladesville Bridge marina for an event with moderate but low intensity rainfall.

2.4 Surrounding Development

Development surrounding the site comprises primarily residential properties, including detached dwellings and residential flat buildings, and public open space.

North

Immediately, to the north of the site is the Parramatta River, the main tributary of Sydney Harbour, spanning approximately 30 kilometres from the Sydney Heads to Parramatta. The Gladesville Bridge bounds the marina to the north-east. The existing swing moorings are located further to the north-east on the other side of the Gladesville Bridge.

Further north of the site, on the opposite side of the Parramatta River, is the suburb of Huntleys Point, located within the Municipality of Hunters Hills LGA. The foreshore area is characterised by a number of detached residential dwellings and public open space, including Betts Park. The Huntleys Point Ferry Wharf is located to the north-west of the site.

East

The area of the east, fronting the Parramatta River is the suburb of Drummoyne. The foreshore area is characterised by a number of detached residential dwellings and public open space, including the Cambridge Road Reserve. A number of these properties have direct foreshore access, with private boatsheds, wharves and swing moorings. These properties front the area in which the existing swing moorings are located.

South

The area to the south and south-east of the site is characterised by residential dwellings, within the suburb of Drummoyne. Properties to the south of Victoria Place, fronting Five Dock Bay, comprise detached dwellings and residential flat buildings between 3 and 8-storeys in height. Properties to the north of Victoria Place, fronting the Parramatta River, comprise detached dwellings and residential flat buildings between 1 and 5-storeys in height. A number of these properties have direct foreshore access, with private boatsheds, wharves and swing moorings. These properties front the area of the existing and proposed marina.

West

Immediately to the west of the site, on the foreshore of the Parramatta River, is Howley Park, Five Dock Point. The Park comprises dense vegetation, grassed areas and covered and uncovered seating. The Park includes the point where the original one-lane Gladesville Bridge, constructed in 1881, was formerly located.

Further west of the site, down the Parramatta River, is the predominantly residential suburb of Henley's Point. The foreshore area is characterised by a number of detached residential dwellings and open space.

Photographs of the existing surrounding development are provided at **Figure 9** below.



Residential properties (Drummoyne) viewed from the Parramatta River, looking south-east



Residential properties (Drummoyne) viewed from the Parramatta River, looking south



Residential properties (Drummoyne) and marina building viewed from the Parramatta River, looking south-west



Residential properties (Drummoyne) viewed from Victoria Place, looking west



Residential properties (Drummoyne) viewed from Victoria Place, looking south



Surrounding properties (Drummoyne) viewed from Victoria Place, looking south-east



Howley Park, Five Dock Point, viewed from the Victoria Place, looking south-west



Howley Park, Five Dock Point, looking west



Howley Park, Five Dock Point, looking north-west



Howley Park, Five Dock Point viewed from the western marina arm, looking south-west

Figure 9 Photographs of the surrounding development

Source: Ethos Urban 2019

2.4.1 Heritage

The site is not identified as a local or State heritage item under the CBLEP 2013, nor is it located within a Heritage Conservation Area. Notwithstanding this, the Gladesville Bridge is listed as a State heritage Item.

Sydney Regional Environmental Plan (SREP) Sydney Harbour Catchment also references the Federation Houses and Boatsheds in Drummoyne Avenue (opposite the intersection with Wrights Road), known as 10, 14 and 16 Drummoyne Avenue and the Gladesville Bridge as being heritage listed.

A number of local heritage items listed under Canada Bay LEP 2013 are situated within proximity to the site, including:

- 'Howley Park, Five Dock Point' (Item I475) and the 'Gladesville Bridge abutments, Five Dock Point' (Item I474) located immediately adjacent the site, to the west;
- 'House, "Tobique"' (Item I178) located at 44 Drummoyne Avenue, to the east of the site;
- 'Boatshed' (Item I472) located at 348 Victoria Place, to the east of the site; and
- 'House' (Item I473) located at 352 Victoria Place, to the east of the site.

The items are identified as items of local heritage significance under the CBLEP 2013. Their locations are identified in **Figure 10**. Furthermore, the NSW heritage Council plan for Gladesville Bridge is included at **Figure 11**.



Figure 10 LEP Heritage Context Map

Source: Canada Bay LEP 2013

Heritage Council of New South Wales



Figure 11 Gladesville Bridge NSW Heritage Council Plan

Source: NSW Heritage Council

3.0 Description of the Development

This section of the report provides a detailed description of the proposed development.

3.1 Overview of the Proposed Development

This DA seeks approval for the alterations and additions to the marina berth layout to provide overall storage for 130 vessels comprising 15 swing moorings and 115 floating berths. The works include:

- removal of 29 existing swing moorings and retention of 15 existing swing moorings;
- construction of 65 new floating berth spaces of varying sizes, that increases the number of floating berths from 50 to 115;
- cessation of the slipway activities;
- demolition of the slipway rails and demolition of the internal office mezzanine structure within the covered slipway area; and
- provision of 8 new valet car parking spaces within the existing slipway area.

3.2 Expansion of Wet Berths

The proposed wet berths will be constructed as a series of floating pontoon walkways and fingers extending in a north easterly direction from the existing pontoons and held in place with vertical driven piles.

The berth schedule of the marina as proposed to be extended is detailed in **Table 5** and the berth layout and design is in accordance with NSW Maritime Guidance Note 02 and Australian Standard AS 3962- *Guidelines for design of marinas*. A Marina Layout Plan is shown at **Appendix C** and an extract of the plan is shown at **Figure 12** below.

The marina will provide a total of 115 floating berths comprising:

- 1 x 8m vessel (1%);
- 18 x 12m vessel (16%);
- 30 x 15m vessel (26%);
- 16 x 17m vessel (14%);
- 4 x 18m vessel (3%);
- 35 x 20m vessel (30%);
- 2 x 25m vessel (2%);
- 5 x 30m vessel (4%);
- 3 x 35m vessel (3%); and
- 1 x 45m vessel (1%).

Within the desktop Geotechnical Report (**Appendix I**), GHD estimate that the marine pile works will need to be installed through a considerable thickness of river/ marine 'mud' of between 14m to 32 m thickness, with a 2.5m rock socket, which indicates that the total pile length would be up to 40m including the berthing section. However, the exact pile length will be determined at the construction certificate documentation stage, once the exact position of the pile locations is determined.

Dredging and reclamation works are not proposed as part of the construction works for the marina. Furthermore, a fuel facility is not proposed under this application.

Table 4 Berth Schedule

Berth Number	Max Vessel Length	Number
A1 – A5	12m	5
A7 – A12	15m	6
B1	45m	1
B2 – B4	35m	3
B5 – B6	30m	2
B7	12m	1
C1 – C10	15m	10
D1 – D4	15m	4
D5 – D20	17m	16
D21 – D28	12m	8
D29	25m	1
D30 – D31	20m	2
D32 – D34	30m	3
E1 – E18	20m	18
E19 – E22	18m	4
E23	25m	1
E24 – E27	15m	4
E28 – E39	20m	12
E40 – E41	20m	2
E42 – E47	15m	6
E48 – E49	12m	2
E50	8m	1
E51 – E52	12m	2
E53	20m	1
Total		115

NOTE: It is noted that there is no berth number A6.

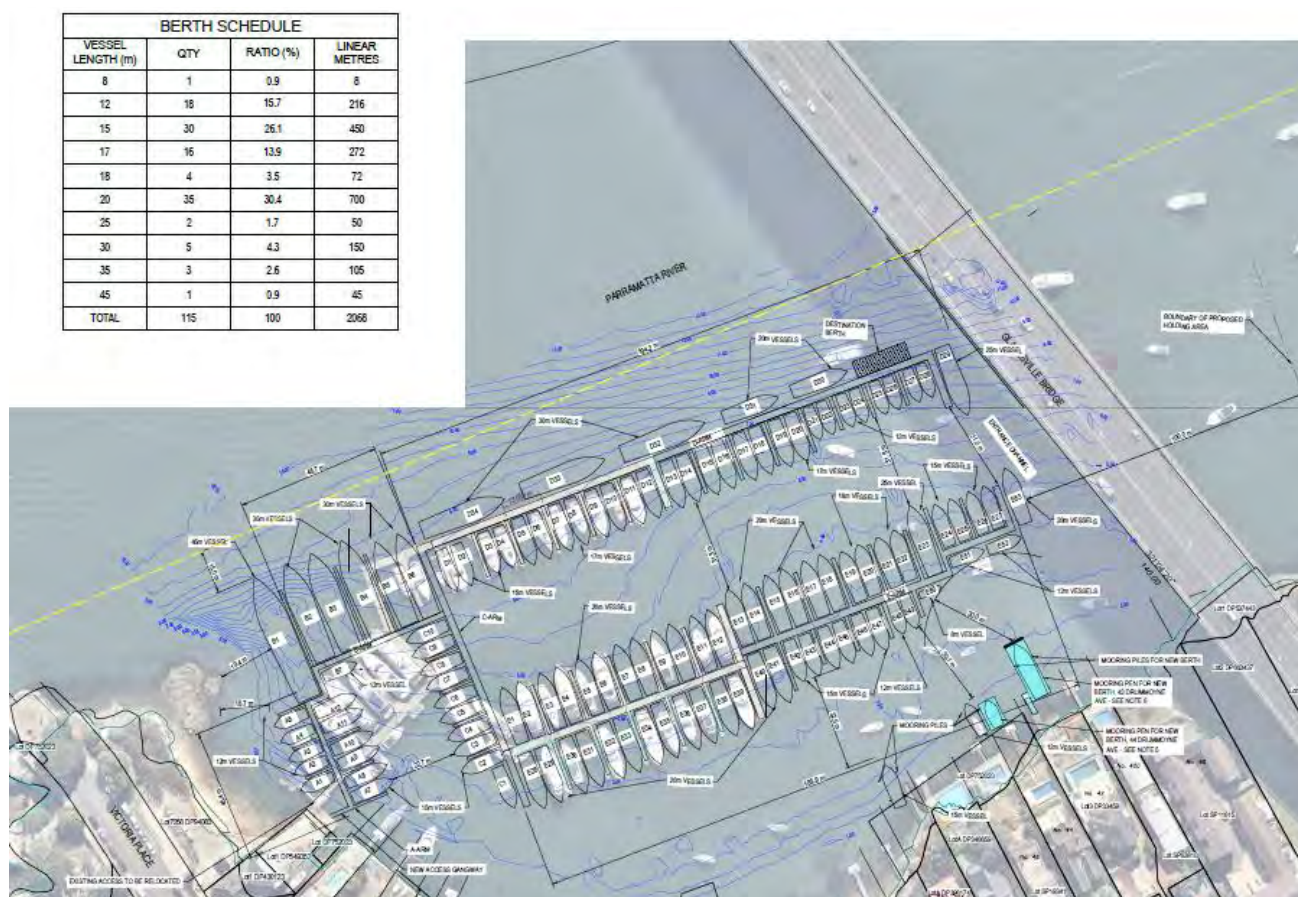


Figure 12 Extract of Proposed Marina Layout Plan

Source: GHD Rev G

3.2.1 Removal of Swing Moorings

The existing 44 swing moorings operated by GBM are identified in **Figure 13**. It is proposed to remove 29 of the existing swing moorings and retain 15. Whilst it is anticipated that private swing mooring licenses east of the Gladesville Bridge will not be affected and will retain their positions. In consideration of feedback about navigation issues, ENARES are proposing to consult with Roads and Maritime, to relinquish the 29 moorings and to open up the navigation channel by up to 28 metres. This can be achieved by locating the 15 remaining GBM commercial swing moorings, south of the mooring line as identified in **Figure 14**.



Figure 13 Existing Mooring Field

Source: GHD

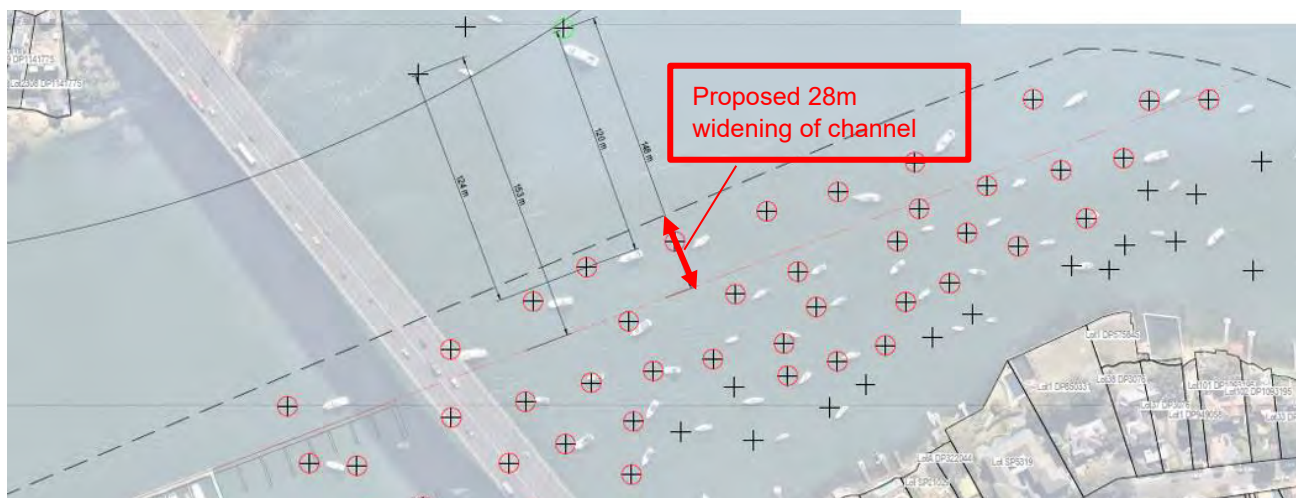


Figure 14 Proposed widening of channel

Source: GHD

3.2.2 Marina Access Arrangements

The existing access arrangements will be retained which comprise an access control gate at the top of the gangway on the land-based side. This provides the wet berths with necessary security against vandalism, property damage and theft, and controls who can access the berths to reduce environmental impacts such as noise. It is proposed that the marina walkways will be secured 24 hours 7 days a week, providing access only to boat owners and their guests, employees of the marina and associated trades.

3.2.3 Berth Services

Each berth will be provided with potable water, power and lighting. Reflecting current services, selected berths will have 3 phase power. These services are expected to be available to the berths via low height service pedestals. The detailed design of the berth services will be confirmed at construction certificate stage.

Service reticulation

Service pedestals will be located at the junctions between fingers, pontoons and the main walkways (at a rate of 1 pedestal per 2 berths). The services to the pedestals will be supplied from the land-based infrastructure via pipework and conduits which will run down the access gangway and be fitted under the floating walkway deck, out of view but accessible through access pits in the walkway for inspection and maintenance.

Potable water will be provided from taps integrated into the service pedestals.

Lighting

In accordance with Australian Standard AS 3962- *Guidelines for design of marinas*, Section 6.5, lighting will be provided to ensure safe access to the berths, security of the vessels and shore facilities and safe navigation within the marina area is provided. The detailed design of the lighting system will be confirmed at construction certificate stage, however a light spill assessment has been undertaken (**Appendix X**) to establish the parameters for the detailed design and to mitigate potential impacts on surrounding properties.. This is further discussed in **Section 6.11**.

3.2.4 Fire Fighting

Firefighting equipment will be provided in accordance with AS 3962-2001 and to the requirements of relevant authorities.

3.3 Land Based Works

3.3.1 Demolition / Site Preparation

It is proposed to dismantle and remove a number of existing minor structures across the site. The proposed structures to be dismantled and removed are identified within the Demolition Plans, prepared by GHD (refer to **Appendix B**) and include:

- The slipway rails extending from the water to the workshop (refer to **Figure 15**);
- Demountable office within the workshop (refer to **Figure 16**);
- Slipway winch; and
- Water recycling plant and water tank.

No other internal or external works are proposed to the existing building.



Figure 15 Slipway Rails to be removed

Source: GBM

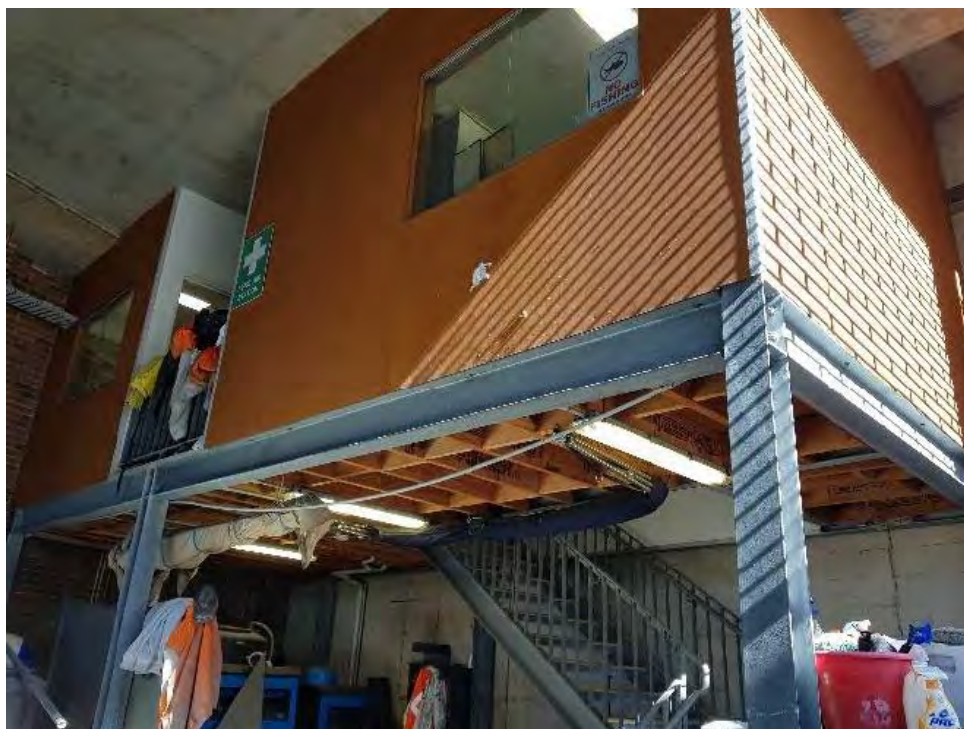


Figure 16 Office to be removed

Source: GBM

3.3.2 Access and Car Parking

No changes to the existing vehicular access arrangements are proposed as part of this application. Furthermore, no changes are proposed to the existing approved parking spaces although, minor amendments to the line markings on the Crown Lands are proposed, which will be negotiated with Crown Lands directly.

In addition to the existing car parking provision, 8 additional car parking spaces will be provided within the slipway area and a valet system will be implemented.

The total parking provision across the site is illustrated in **Figure 17** and will comprise:

- 5 public parking spaces on Crown Land (as existing) including 1 accessible parking space;
- 1 staff parking space on Crown Land (as existing);
- 5 public parking spaces at the back of workshop (as existing);
- 8 public parking spaces within the workshop (proposed); and
- 1 delivery area/ loading zone space on Crown Land (as existing).



Figure 17 Proposed car parking layout

Source: GHD

3.3.3 Utilities and Services

The proposed development will be connected to the available services to the site in accordance with the requirements of the relevant service providers. Furthermore, no alterations are proposed to the current stormwater infrastructure network.

3.4 Site Management

The marina is proposed to operate in accordance with existing procedures outlined below. Furthermore, it adopts best practice principles and will continued to be managed in line with an existing Operational Environmental Management Plan that was developed in consultation with the NSW Environment Protection Authority during the Industry Partnership program which received an award for best Industry program. The OEMP is proposed to be updated to reflect the final marina design and any PoEO requirements.

Hours of Operation

The marina operation hours are Monday to Friday 7:30am to 5:30pm and 9:00am to 5:00pm on Saturdays, Sundays and public holidays. 24-hour access to boats is provided via swipe card arrangement.

Staff

A maximum of 12 staff operate from the site at any one time.

Security

The site currently has a CCTV system and back to base alarm monitor which will be expanded to include additional cameras as part of the development. The system currently allows remote management and viewing by the marina manager 24/7. A security guard is employed on site from 5pm to 5am New Year's Eve and other busy times, as required. The security company also undertakes random site visits once each night Sunday to Thursday and twice per night on Friday and Saturday. Water Police also carry out random patrols.

Emergency Response

The marina has an existing Emergency Response Plan which covers events such as fires, severe weather and spills.

Car Parking Management

Boat owners wishing to drive to the site and utilise any the car spaces on site, will be able to drive directly into the existing car spaces if they wish to, or alternatively marina staff will park the cars for them in the new 8 valet parking spaces. Once the cars are parked, boat owners will provide marina staff with their car keys, which will enable marina staff to move cars around to ensure that all cars are easily accessible.

Waste Management

Waste will be recycled or disposed of in accordance with the existing waste management plan for the site. Although additional berths are proposed, it is not expected that there will be an increase in waste due to the cessation of the slipway activities.

Waste is currently generated from customers and tenants berthing or mooring their boats at the site, commercial tenants (offices and workshops), the marina office and kiosk. GBM currently requires that all waste and household waste must be placed in the waste bins located in the area subject of this application. The current waste in the bins is mainly comprised of food, paper, cardboard and other related matter. Waste also includes all recyclable materials, as appropriate waste is sorted off-site through GBMs waste contractor. Disposal of used batteries, discarded oil, fuel, building materials and industrial waste is separate and disposed of by GBM or tenants directly. Where possible waste such as batteries, metal, discarded oil and other recycle materials are collected by commercial recycling enterprises.

The current arrangement includes two mixed waste bins (1 x 3m³ front lift bin and 1 x 1,100L front lift bin). The bins are collected three times per week in summer and twice per week in winter. There is more frequent collecting during peak summer holiday periods (usually four). The Marina Manager and/or staff monitor waste collection areas visually on a daily basis, and when required, organise additional collections.

General waste management practices for staff, customers and tenants includes encouraging best management, reference to waste hierarchies. As an extension of its Clean Marina and Fish Friendly accreditation, GBM has recently pledged to become one of the first group of marinas in Australia to reduce and eventually eliminate the use of single use plastics in the marine/marina industry.

Noise Management

Customers are given an induction and agreement which covers acceptable noise levels such as a maximum time to run engines at the marina, no loud parties etc. There is also signage regarding noise. Operational management measures to control unacceptable noise issues will also be enforced.

4.0 Consultation

This section of the report outlines the consultation undertaken prior to and during the preparation of this EIS.

4.1 Agency Consultation

In accordance with the SEARs issued for this project, consultation was undertaken with relevant public authorities, State agencies, Canada Bay Council and Hunters Hill Council.

A summary of the consultation undertaken to-date with the relevant authorities, agencies and Councils and their summarised response is provided in **Table 6** below.

Table 5 Summary of Agency Consultation

Agency	Response
Environment Protection Authority	- Email (with letter attachment) sent Friday 14 December 2018. - No formal response received. Verbal response by phone received 12 March 2018 that no further consultation required pre EIS. - Confirmed existing operation does not require license under POEO Act but proposal as submitted will require a license under Schedule 1 of the POEO Act.
Office of Environment and Heritage	- Email (with letter attachment) sent Friday 14 December 2018. - Email response received Monday 7 January 2019. <i>"As per OEI previous advice to DPE regarding the request for input into the SEARs 1268 for the proposed marina, an approval from OEI for this 'integrated development' has not been identified on the relevant application form and as such OEI does not have any comments to raise at this stage".</i>
Department of Primary Industries	- Email (with letter attachment) sent Friday 14 December 2018 - Email response received Tuesday 18 December 2018 <i>"There should not be any Crown land involved in this as the waterways are managed by RMS. As long as no changes are being made to Lot 7058 DP94083, then we have no concerns about the development and no comments".</i> - Whilst the proposed development seeks to alter the car parking line markings on the Crown land, no additional car spaces are proposed to be provided or physical changes to the land are proposed, therefore no additional correspondence has been issued to the DPI. However, additional consultation will be undertaken with DPI during the assessment of the Development Application in regard to this issue.
Roads and Maritime Services – Maritime Division	- Email (with letter attachment) sent Friday 14 December 2018. - Email received from Department of Planning with RMS response to SEARs request. - Additional correspondence has been undertaken in regard to the Permission to Lodge, as discussed at Section 1.10.1.
Transport for NSW	- Email (with letter attachment) sent Friday 14 December 2018. - Email response received Tuesday 18 December 2018 noting <i>"I will be the staff officer on this project. Could you send me a copy of the final SEARs?"</i> - Email response and SEARs issued by Ethos Urban Wednesday 19 December 2018. - Email received Tuesday 15 January 2019 noting <i>"On 18 December 2018, TfNSW requested a copy of the draft SEARs for the above proposal. I have not received the draft SEARs purported to be Attachment B and would appreciate a copy ASAP. Thank you for your consideration in this matter"</i> - Email response and SEARs issued by Ethos Urban Tuesday 15 January 2019. - Email response received Thursday 31 January 2019 with attached comments 'CD18_11612 TfNSW Response to SEARs Consultation'.
Canada Bay Council	- Pre-lodgement Application Request submitted to Council Customer Service 19 November 2018. - Verbal notification from Council to GBM on 20 November 2018 noted that a pre-lodgement meeting was not required. Noting that Council is aware of the project and the Community Consultation work as previously advised. It was suggested to concentrate on the SEARs items. - Written correspondence was received by GBM on 21 November 2018 and the pre-lodgement paperwork was returned. - Email response from Ethos Urban to Council 22 November 2018 requesting clarification that no further consultation is required to be carried out with Council prior to lodgement of the DA. - Email response from Ethos Urban to Council 24 January 2019 seeking clarification that no further consultation is required prior to lodgement. - Email response from Council received 8 February 2019 stating Council did not think a pre-lodgement process would be required as the SEARs form the basis on which an EIS can be prepared.
Hunters Hill Council	Correspondence received 12 December 2018 advising that Council wished to be consulted during EIS preparation and received a copy of the SEARs.

	• Likely issues of concern for residents include visual impacts, noise from boating activities, potential for environmental impacts due to more and larger motor craft, fuel storage etc, • Meeting with Hunters Hill Council staff on 18 April 2019. Key issues raised: - look to articulate proposal more clearly i.e. use of colours on map - Council noted that a number of community members and Councillors have a key interest in the proposal and there is a resolution of Council to stay abreast of the proposal and its progress - Team outlined consultation and engagement undertaken to date and confirmed upcoming consultation. - HHC requested remain informed of the proposal. - Team confirmed that the proposal is designated development, will be assessed by CBC and determined by Planning Panel - Key issues raised. - Visual impact - Noted that a VIA is being prepared and the project team are working with surrounding landowners to consider view impacts (preparing visual montages) from their properties - HCC requested that vantage points from within the HCC LGA i.e. Huntleys Point - Parking - From the Drummoyne side - Congestion / amenity concerns - Heritage - Heritage impacts, particularly on Gladesville Bridge (State heritage item) which Council was heavily involved with having it listed - Noted a HIA is being prepared - Perception of private entity taking public land - Precedent - What would stop others going ahead in the area – negative impact - Queried whether RMS lease the swing moorings that are vacated - Noted that other marinas received a lot of community opposition and the proposal should consider those views and how this proposal addresses them - Requested that the proposal consider other marinas i.e. Cabarita, Pulpit, Margaret and the bulk, scale, public and private split - Demography study - Customer base - Project benefits to local community.
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The proposed development will be placed on public exhibition for 30 days in accordance with clause 83 of the *Environmental Planning and Assessment Regulation 2000*. During the public exhibition period Council, State agencies will have a further opportunity to make further submissions on the project.

4.2 Community Consultation

The project team have acknowledged the importance of the local community's involvement in the on-going vision for the site and locality. The team has actively engaged with key local stakeholders before and during preparation of the EIS.

The purpose of the community consultation with surrounding landowners and occupiers and the wider local community has been to provide information about the project, including how they can provide feedback and to consider concerns and responses to inform the project prior to lodgement.

Accordingly, GHD were appointed by ENARES Pty Ltd Pty to undertake the community consultation and engagement activities. A detailed report, prepared by GHD that outlines the engagement and communication process, the issues raised and responses to those issues is included at **Appendix AA**. A summary of community consultation activities is provided below.

The engagement approach and process were developed to align with the statutory requirements of the Environmental Impact Statement, and divided into three phases, described below. The GBM also requested that

engagement be undertaken prior to the statutory requirements in order to encourage stakeholders to provide early feedback to the project concept so that adjustments could be made during preparation of the Environmental Impact Statement (EIS). The phases were:

Phase 1: Non-statutory consultation commenced prior to request for SEARs: To inform the community and agencies about the concept design and proposal and seek feedback to inform and refine the design where possible. SEARs were provided on 15 November 2018. Consultation included letters to community, advertisement in the local paper, establishing a project website and 1800 number, and conducting two community information sessions (19 and 20 Oct 2018).

Phase 2: Consultation during the development of the EIS, to September 2019: Phase 2 included mail-outs providing an update and information that SEARs and Permission to Lodge (PTL) had been received, in February 2019, distribution of a Feedback Summary in May 2019, meetings, community take up of visual impact assessment from private properties, community line, community email, door knocking in May and June 2019, and a Community Information Session held on 6 September 2019, to obtain feedback to assist informing and refining the final design.

Phase 3: Consultation during the public exhibition of the EIS (2019): This phase will occur during the display of the EIS, and proposes to include an 'information desk' at GBM in the first two weeks of the public consultation, including a 'resourced desk' for two hours, at a time to be advised via the GBM website. The objective for the information desk would be to provide an additional copy of all the EIS documents for local residents along with information on how they can lodge submissions. This phase will include updating this Consultation Report to include responses to submissions once the public consultation period ends. The website will also provide links to the EIS and information and links on how to lodge a submission.

General themes raised across the consultation period included:

- Boat storage demand (size and number of vessels)
- Consultation process
- Environmental impact (ecology, water quality and pollution)
- Fire response
- Navigation (accessibility, including access to private moorings, and safety)
- Navigation (relocation of private moorings and mooring field)
- Noise impact
- Slipway removal
- Traffic and parking
- Traffic and parking (Accessible parking)
- Visual impact from private properties
- Visual impact from public space
- Other (e.g. property value, benefit to local community, inclusion of café, loss of fishing area)

The current design of the marina expansion is a result of extensive technical assessment to respond to the opportunities and constraints of the site in relation to environmental, social and economic factors. The design is also based on the outcomes of consultation with key stakeholders, including the local community, since October 2018 which has resulted in amendments during the design process. Specifically, the following key amendments have occurred since the original proposal:

- Revisions to the layout of berths and boat sizes in response to navigation issues raised by stakeholders, including replacing a 25m boat that was closer to the foreshore near the Gladesville Bridge, with two smaller 12m boats (E51 and E52) and also making E50 an 8m boat space instead of a 12m boat space (**Figure 1**). It is also noted that positive visual impacts was a significant consideration of the changes to E51 and E52.
- Moving the northern marina arm south by 28m to ensure the protection of the existing rowing course on the northern side of the marina.

- Modifications to the design of the gangway to allow kayakers and other small passive craft to navigate close to the shore near the marina.
- Amendments to car parking layout to increase capacity of spaces, provide an accessible parking space and remove the need for a car stacker.
- Numerous revisions to the design in accordance with the on-going examination of potential visual impacts and the principles derived to maximise the availability of water views and to minimise impacts from the new extension (refer to Visual Impact Assessment at **Appendix W**).

In addition, discussion has commenced with Roads and Maritime to relocate a number of the marina's commercial swing moorings to widen the channel east of the Gladesville Bridge.

The Consultation Issues Summary Table at **Appendix AA**, along with this EIS assessment provides the summary of issues and responses to these themes.

5.0 Strategic and Statutory Context

This section of the report provides a detailed review of the proposal against the relevant planning policies and controls.

5.1 Strategic Plans

The proposed developments consistency with the relevant State, Regional and local strategic plans, policies and guidelines as set out in the SEARs is addressed in **Table 6** below.

Table 6 Summary of consistency with the relevant State, Regional and local strategic plans

Strategy	Comments
The Greater Sydney Region Plan: A Metropolis of Three Cities	The Greater Sydney Region Plan: A Metropolis of Three Cities, released in March 2018 seeks to reposition Sydney as a metropolis of three cities, the western parkland, central river and eastern harbour cities. Through this repositioning, Sydney is to become a 30-minute city that is innovative and globally competitive that promotes and protects its lifestyle and environmental assets. The proposal is consistent with the Greater Sydney Region Plan in that it: • supports Sydney Harbour's defining role as a working, recreational harbour as being one of Sydney's biggest economic advantages; • provides modern land-water interface facilities which are in high demand, especially with the western part of Sydney Harbour; • improves opportunities for access to the water and foreshores to celebrate Sydney Harbour as a great place; • supports a clean, healthy and productive marine environment by implementing water quality initiatives, and by continuing to operate as an International Clean Marina and a Fish Friendly Marina; and • provides increased protection from coastal erosion and does not impact upon the aquatic biodiversity of the site and wider harbour surrounding.
Eastern City District Plan	In March 2018, the Greater Sydney Commission (GSC) released the District Plans for the Greater Sydney Metropolitan Region. These plans give effect to the goals of the Greater Sydney Region Plan by setting out priorities and actions for each District. The Eastern City District Plan, where the site resides, seeks to improve access to waterways for recreation and tourism, whilst ensuring that the cumulative impacts of activities and associated infrastructure such as marinas do not compromise the integrity of environmentally sensitive aquatic and riparian habitats. The proposal is consistent with these principles, in that it: • provides increased opportunities for people to access Sydney Harbour through the provision of modern and extended marina facilities; and • will not impact upon any critical habitats, protected species, threatened species, population, endangered ecological communities or their habitats.
NSW Sydney Harbour Boat Storage Policy (TfNSW, 2013)	The strategy identifies the need for additional capacity in boat storage in Sydney based on trends in vessel registration figures. The proposal responds to this demand by providing new wet berths, particularly in that it will accommodate additional vessels greater than 24m in length where there is an identified demand. In addition, as supported by the Demand Study (Appendix D), over 90% of boats are smaller than 24m which the proposal addresses by providing a greater number of berths for smaller boats as compared to the current configuration.
NSW EIS Guidelines for Marinas (NSW DUAP, 1996)	The proposal has been prepared in accordance with the Guidelines for Marinas and Related Facilities and this EIS has addressed all requirements listed at Section 6 of the Guidelines.

5.2 Commonwealth and State Legislation

The proposed developments consistency with the relevant Commonwealth and State legislation is discussed in **Table 7** below.

Table 7 Summary of consistency with the relevant Commonwealth and State legislation

Instrument/Strategy	Comments
Commonwealth Legislation	
Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999)	The EPBC Act protects wetlands of international important, Commonwealth Marine Areas, nationally threatened species, ecological communities and migratory species, nuclear actions and world national heritage places. It requires that any proposed activity be assessed with respect to its potential impact on species or ecological communities listed as being threatened under the Act. The Ecology Assessment report prepared by Marine Pollution Research (Appendix J) concludes that there are no threatened species or Endangered Ecological Communities residing or found within the locality of the Gladesville Bridge Marina site and the site does not constitute specific habitat for other threatened aquatic species as listed under the EPBC Act 1999 and as such the proposal does not require 'controlled action' approval under the Act.
State Legislation	
Environmental Planning and Assessment Act 1979 (EP&A Act)	The proposed development is consistent with the objects of the EP&A Act for the following reasons: - it will create opportunities for more people to have access to the water, where the management of the extended marina is undertaken responsibly and in a manner that promotes the ecological welfare of Sydney Harbour; - the development promotes public access to Sydney Harbour through the provision of an increased number of berths allowing increased public access to the foreshore; - the proposed development will not impact any endangered or threatened ecological communities or habitat; - The proposed development accords with the principles of Ecologically Sustainable Development as discussed in Section 8.3. - Consultation has been undertaken with local stakeholders, Canada Bay Council, Hunters Hill Council and various government agencies. All local stakeholders and government agencies will be afforded the opportunity for further input into the development process during the public exhibition process. Details of the consultation undertaken during the preparation of the EIS are included in Section 4.0.
Environmental Planning and Assessment Regulation 2000 (EP&A Regulations)	The EIS has addressed the specification criteria within clause 6 and clause 7 of Schedule 2 of the EP&A Regulation. Similarly, the EIS has addressed the principles of ecologically sustainable development through the precautionary principle (and other considerations), which assesses the threats of any serious or irreversible environmental damage (refer to Section 8.3). As required by clause 7(1)(d)(v) of Schedule 2, Section 0 outlines any other approvals required in order to permit the proposed development to occur.
Biodiversity Conservation Act 2016 (BC Act)	The <i>Biodiversity Conservation Act 2016</i> (BCA Act) protects threatened species, populations and ecological communities of animals and plants. The BC Act requires any activity to be assessed with respect to its potential impact on species or ecological communities listed as threatened under the Act. The Ecology Assessment report prepared by Marine Pollution Research (Appendix J) concludes that there are no threatened species or Endangered Ecological Communities residing or found within the locality of the Gladesville Bridge Marina site and the site does not constitute specific habitat for other threatened aquatic species as listed under the BC Act.
Fisheries Management Act 1994 (FM Act)	Threatened species, populations and ecological communities of fish and marine vegetation are protected under the <i>Fisheries Management Act 1994</i> . The Act requires any proposed activity to be assessed with respect to its potential impact on species or ecological communities listed as threatened under the Act. The Ecology Assessment report prepared by Marine Pollution Research (Appendix J) confirms that a permit under Part 7 of the <i>Fisheries Management Act 1994</i> is not required.
Water Management Act 2000	The proposed development involves works that are located within 40 metres of 'waterfront land'. A Controlled Activity Approval is therefore required under s91 of the <i>Water Management Act 2000</i> as noted in Section 1.7 .
Protection of the Environment Operations Act 1997 (PEO Act)	Given the marina will increase its capacity to over 79 berths, under Schedule 1 of the PEO Act, a licence under the schedule will be required to conduct activities associated with the marina, as noted in Section 1.7 .

Instrument/Strategy	Comments
National Parks and Wildlife Act 1974	As noted in Section 6.14 , an AHIMS search has been undertaken that confirms that no Aboriginal sites or places are recorded or have been declared within 200m of the site. The Gladesville Bridge Marina has operated as a boatshed, boat repair and boat storage facility for around 100 years and for over 50 years as a marina and the existing site has been disturbed/excavated over time meaning the low likelihood of relics. Further no land-based excavation is proposed, and excavation within the Harbour is limited to piling for the new berths. Hence the likelihood of encountering Aboriginal relics is low.
Heritage Act 1977	No part of the site is identified as an item of local or State heritage significance, however given the existing swing mooring field is located within the vicinity of the State Heritage listed Gladesville Bridge and a number of regionally and locally listed heritage items, a Heritage Impact Statement has been prepared by NBRS Architecture (Appendix Y). This report confirms that there is no requirement under the Heritage Act 1977 for the Heritage Council to give approval for development in the vicinity of a State Heritage listed item, and hence this application is not Integrated Development in relation to heritage.
State Environmental Planning Policy (State and Regional Development) 2011	Schedule 7 of the <i>State Environmental Planning Policy (State and Regional Development) 2011</i> , lists types of development that are classified as 'Regionally Significant Development'. Part 7 of Schedule 7 states that 'marinas' which meet the requirements for designated development under clause 23 of Schedule 3 of the EP&A Regulations 2000 are classified as Regional Development. Given the proposed development is a 'marina' development that is classified as designated development under clause 23 of Schedule 3 of the EP&A Regulation 2000, the proposed development is declared to be 'Regionally Significant' Development for the purposes of the EP&A Act and hence will be determined by the Sydney Central City Planning Panel.
State Environmental Planning Policy (Infrastructure) 2007	The development is not traffic generating development in accordance with Schedule 3 of the SEPP.
State Environmental Planning Policy No. 33 – Hazardous and Offensive Development	GHD has prepared a SEPP 33 Hazardous and Offensive Development Report (Appendix T) which indicates that the proposal does not exceed the SEPP 33 thresholds for the Dangerous Goods proposed to be stored, transported and used onsite. As a result, the proposal is not deemed a 'potentially hazardous industry' and there is no requirement for a Preliminary Hazard Analysis (PHA).
State Environmental Planning Policy No. 55 – Remediation of Land	Refer to Section 6.1 , Appendix G and Appendix H . ZOIC has confirmed that the site has localised contamination around the slipway as a result of the site's past uses, and therefore these localised areas need to be remediated to ensure the site is suitable for its ongoing use and that potential human health risk to site workers is mitigated. However on review, Marina Pollution Research has re-assessed the sampling locations and concludes that the sediments accumulated onto the lower part of the slipway are from the river and not from wash-off from the slipway. Accordingly, it is considered that there is not an isolated quantity of sediment lying on the slipway, rather the contaminants are 'locked up' in the sediments and do not present any risk to local marine biota provided they are left undisturbed. In order to enable the sediments to remain undisturbed, operational measures and signage will be implemented.
State Environmental Planning Policy (Coastal Management) 2018	The site is located within a 'Coastal Environmental Area' and 'Coastal Use Area' under the SEPP. As such, an assessment of the relevant provisions for land within these areas is provided at Section 5.2.1 below.
Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (SREP 2005) (Deemed SEPP)	Refer to Section 5.2.2 below for detailed consideration and assessment.
Sydney Harbour Foreshore and Waterways Area Development Control Plan	Refer to Section 5.2.3 below for detailed consideration and assessment.

5.2.1 State Environmental Planning Policy (Coastal Management) 2018

The site is located within a 'Coastal Environmental Area' and 'Coastal Use Area' under the Coastal Management SEPP. As such, an assessment of the relevant provisions for land within these areas is provided at **Table 8**.

Table 8 Coastal Management SEPP Assessment

Control	Assessment
Part 2, Division 3 Coastal Environment Area	
1) The consent authority must consider whether the proposed development is likely to cause an adverse impact on: - the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment, - coastal environmental values and natural coastal processes, - the water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1, - marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms, - existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability, - Aboriginal cultural heritage, practices and places, - the use of the surf zone.	Studies submitted with this application confirm that the proposal will not adversely impact: - the biophysical, hydrological and ecological environment; - coastal environmental values or processes; - the water quality of a marine estate; - marine vegetation or fauna; - public open space or access to the foreshore; - Aboriginal cultural heritage; or - the use of the surf zone.
Division 4 Coastal Use Area	
1) Development consent must not be granted to development on land that is within the coastal use area unless the consent authority: - has considered whether the proposed development is likely to cause an adverse impact on the following: - existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability, - overshadowing, wind funnelling and the loss of views from public places to foreshores, - the visual amenity and scenic qualities of the coast, including coastal headlands, - Aboriginal cultural heritage, practices and places, - cultural and built environment heritage, and - is satisfied that: - the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or - if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or - if that impact cannot be minimised—the development will be managed to mitigate that impact, and	Studies submitted with this application confirm that the proposal will not: - adversely impact access to the foreshore; - create unacceptable overshadowing and wind funnelling, or unduly impact views from public places to foreshores (refer to Visual Impact Assessment at Appendix W); - adversely impact on the amenity and scenic qualities of the coast; - adversely impact Aboriginal cultural heritage, practices and places; or - adversely impact cultural and built environment heritage.

Control	Assessment
c) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.	

5.2.2 Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

The Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (SREP) is a deemed State Environmental Planning Policy (SEPP) and applies to the Sydney Harbour, foreshores and catchment. The SREP provides planning principles to guide future development and a range of matters when considering development applications within the foreshores and waterways of Sydney Harbour, including land use zones for land below the Mean High-Water Mark and development controls.

An assessment of the proposed development against the relevant provision of the SREP is provided in **Table 10**.

Table 9 Summary of consistency with the SREP (Sydney Harbour Catchment) 2005

Relevant Provision	Consistency
Aims of the Plan	
Clause 2 (1) This plan has the following aims with respect to the Sydney Harbour Catchment: (a) to ensure that the catchment, foreshores, waterways and islands of Sydney Harbour are recognised, protected, enhanced and maintained: (i) as an outstanding natural asset, and (ii) as a public asset of national and heritage significance, for existing and future generations, (b) to ensure a healthy, sustainable environment on land and water, (c) to achieve a high quality and ecologically sustainable urban environment, (d) to ensure a prosperous working harbour and an effective transport corridor, (e) to encourage a culturally rich and vibrant place for people, (f) to ensure accessibility to and along Sydney Harbour and its foreshores, (g) to ensure the protection, maintenance and rehabilitation of watercourses, wetlands, riparian lands, remnant vegetation and ecological connectivity, (h) to provide a consolidated, simplified and updated legislative framework for future planning.	The development is consistent with the aims of the SREP in that: • measures are proposed to ensure the catchment, foreshores and waterways of Sydney Harbour are protected as a natural and public asset of national and heritage significance for existing and future generations (refer to Section 6.0); • environmental studies have been undertaken to ensure the development maintains a sustainable land and water environment, and promotes an ecological sustainable urban environment (refer to Section 6.0); • it will continue to promote a prosperous working harbour and will not impact on existing transport corridors; • it will maintain existing accessibility to and along the foreshore and will continue to encourage a culturally rich and vibrant place for people; and • it will protect and maintain the surrounding waterway, vegetation and ecological connectivity.
(2) For the purpose of enabling these aims to be achieved in relation to the Foreshores and Waterways Area, this plan adopts the following principles: (a) Sydney Harbour is to be recognised as a public resource, owned by the public, to be protected for the public good, (b) the public good has precedence over the private good whenever and whatever change is proposed for Sydney Harbour or its foreshores, (c) protection of the natural assets of Sydney Harbour has precedence over all other interests.	Refer to Section 6.16 below. The development will result in a number of public benefits and will continue to protect Sydney Harbour and its natural assets for the public good.

Relevant Provision	Consistency
Clause 13 Sydney Harbour Catchment	The planning principles for land within the Sydney Harbour Catchment are as follows: (a) development is to protect and, where practicable, improve the hydrological, ecological and geomorphological processes on which the health of the catchment depends, (b) the natural assets of the catchment are to be maintained and, where feasible, restored for their scenic and cultural values and their biodiversity and geodiversity, (c) decisions with respect to the development of land are to take account of the cumulative environmental impact of development within the catchment, (d) action is to be taken to achieve the targets set out in Water Quality and River Flow Interim Environmental Objectives: Guidelines for Water Management: Sydney Harbour and Parramatta River Catchment (published in October 1999 by the Environment Protection Authority), such action to be consistent with the guidelines set out in Australian Water Quality Guidelines for Fresh and Marine Waters (published in November 2000 by the Australian and New Zealand Environment and Conservation Council), (e) development in the Sydney Harbour Catchment is to protect the functioning of natural drainage systems on floodplains and comply with the guidelines set out in the document titled Floodplain Development Manual 2005 (published in April 2005 by the Department), (f) development that is visible from the waterways or foreshores is to maintain, protect and enhance the unique visual qualities of Sydney Harbour, (g) the number of publicly accessible vantage points for viewing Sydney Harbour should be increased, (h) development is to improve the water quality of urban run-off, reduce the quantity and frequency of urban run-off, prevent the risk of increased flooding and conserve water, (i) action is to be taken to achieve the objectives and targets set out in the Sydney Harbour Catchment Blueprint, as published in February 2003 by the then Department of Land and Water Conservation, (j) development is to protect and, if practicable, rehabilitate watercourses, wetlands, riparian corridors, remnant native vegetation and ecological connectivity within the catchment, (k) development is to protect and, if practicable, rehabilitate land from current and future urban salinity processes, and prevent or restore land degradation and reduced water quality resulting from urban salinity, (l) development is to avoid or minimise disturbance of acid sulfate soils in accordance with the Acid Sulfate Soil Manual, as published in 1988 by the Acid Sulfate Soils Management Advisory Committee. The development is consistent with the Sydney Harbour Catchment planning principles in that: • It will protect the hydrological, ecological and geomorphological processes of the catchment (refer to Section 6); • It will not cause any undue impacts on the scenic and cultural values of the catchment and will protect its biodiversity and geodiversity; • Where relevant, cumulative impacts of the development have been considered within the respective technical studies accompanying this proposal; • A VIA has been undertaken (Appendix W) to ensure the development protects the unique visual qualities of Sydney Harbour; • The development will not decrease the number of publicly accessible vantage points for viewing Sydney Harbour; • A Sediment Management Report and Water Management Plan have been prepared (Appendices N and O) to ensure water quality and runoff is maintained; • It will protect Sydney Harbour and surrounding native vegetation; • It will avoid disturbance of any acid sulfate soils;

Relevant Provision	Consistency
Clause 14 Foreshores and Waterways Area The planning principles for land within the Foreshores and Waterways Area are as follows: (a) development should protect, maintain and enhance the natural assets and unique environmental qualities of Sydney Harbour and its islands and foreshores, (b) public access to and along the foreshore should be increased, maintained and improved, while minimising its impact on watercourses, wetlands, riparian lands and remnant vegetation, (c) access to and from the waterways should be increased, maintained and improved for public recreational purposes (such as swimming, fishing and boating), while minimising its impact on watercourses, wetlands, riparian lands and remnant vegetation, (d) development along the foreshore and waterways should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands and foreshores, (e) adequate provision should be made for the retention of foreshore land to meet existing and future demand for working harbour uses, (f) public access along foreshore land should be provided on land used for industrial or commercial maritime purposes where such access does not interfere with the use of the land for those purposes, (g) the use of foreshore land adjacent to land used for industrial or commercial maritime purposes should be compatible with those purposes, (h) water-based public transport (such as ferries) should be encouraged to link with land-based public transport (such as buses and trains) at appropriate public spaces along the waterfront, (i) the provision and use of public boating facilities along the waterfront should be encouraged	The development is consistent with the Foreshores and Waterways Area planning principles in that: • It will maintain the natural assets and environmental qualities of Sydney Harbour; • Existing public access to and along the foreshore will be maintained; • Access to the waterway for boating will be enhanced with minimal environmental impacts; • The visual qualities of Sydney Harbour will be protected (refer to Appendix W); • Supports Sydney Harbour's defining role as a working, recreational harbour; • Public access to the foreshore is maintained; • The use of the marina is ongoing, and the use of surrounding foreshore land is compatible with this use; • Will enhance the provision and use of public boating facilities along the waterfront.
Division 1 – Development Control	
Clause 16 Zones The land below the MHWL within the Site is zoned W1 – Maritime Waters.	Noted.
Clause 17 Objectives The objectives of the W1 Maritime Waters zone are as follows: (a) to give preference to and protect waters required for the effective and efficient movement of commercial shipping, public water transport and maritime industrial operations generally, (b) to allow development only where it is demonstrated that it is compatible with, and will not adversely affect the effective and efficient movement of, commercial shipping, public water transport and maritime industry operations, (c) to promote equitable use of the waterway, including use by passive recreation craft.	The proposed development is consistent with the objectives of the zone in that the proposed development will not adversely impact the existing public water transport routes or operations of any commercial shipping or maritime industry operations along the Parramatta River. The removal of existing swing moorings will increase the width of the river channel, thus promoting effective and efficient movement of public water transport and maritime industrial operations. Furthermore, it provides increased opportunities for more people to have access to the waterway through the provision of a greater number of total boat spaces through increasing from 99 to 130 spaces. It is also noted that the gangway has been designed to promote use by smaller passive craft such as kayaks.
Clause 18 – Development Commercial marinas are identified within Clause 18 as being a type of development	The proposed development seeks consent for alterations and additions to the existing commercial marina, the proposed

Relevant Provision		Consistency
control in waterways	that may be carried out with development consent within the W1- Maritime Waters zone.	development on land below the MHWM is permissible with development consent.
Division 2 – Matters for Consideration		
Clause 20 - General		The matters referred to in Division 2 are addressed below
Clause 21 – Biodiversity, ecology and environment protection		- The development will have a neutral or beneficial effect on the quality of water entering the waterway, as discussed in Section 6.2. - The development involves the removal of existing structure which will result in the loss of brown macroalgae habitat, but the loss will be offset by the provision of additional suitable algae habitat created by the additional marina locator piles and floating pontoons. Further, as the seabed under the reconfigured marina pontoons and the marina pens do not support any patches or beds of seagrass or macro-algae, there are no direct shading effects on aquatic flora arising from the proposed development. - The development will not generate any additional indirect impacts on aquatic vegetation. - Operation management measures and signage will be implemented to ensure that the sediments are not disturbed at the bottom of the slipway. Furthermore sediment control measures will be implemented to contain the migration of any fine sediments during constructions. Refer to Section 6.1.
Clause 22 - Public access to, and use of, foreshores and waterways		The proposed development is consistent with Clause 22 in that: - It does not alter the public access arrangements to the foreshores and waterways that are currently in place; - It improves public access to the waterway for recreational purposes through the provision of 30 additional boat storage spaces; - The surrounding land is owned by Roads and Maritimes, safeguarding public access to the waterway; - New boardwalks are not proposed; - Disturbance of contaminated sediments will be minimised.
Clause 23 – Maintenance of a working harbour		The proposed development seeks consent for alterations and additions to the existing marina structure. It does not alter the foreshore and preserves its existing character, function and public access arrangements. The development is consistent with Clause 23 in that: - it will continue working harbour activities at the site through the ongoing provision of access to a variety of contractors who undertake working harbour activities on boats; - the land that adjoins the foreshore area which comprises the marina offices is compatible with the marina use; - existing public access to and along the foreshore will be maintained.
Clause 24 – Interrelationship of water and foreshore uses		The proposed development will not have any adverse impacts on the use of the waterway for maritime functions, including recreational rowing, private recreation users and public water transport users. Additionally, the proposed development seeks to increase the width of the river channel through the realignment of the swing mooring field. The development is consistent with Clause 24 in that: the use of the waterway for maritime functions, including recreational rowing, private recreation users and public water transport users. It is noted that the gangway has been designed to improve access for small recreational craft;

Relevant Provision	Consistency
	- no development on foreshore land is proposed that would adversely impact the use of the waterway for commercial and recreational uses; - the width of the river channel through the realignment of the swing mooring field will be increased, improving the congestion of traffic in the waterway; - it prioritises water-dependent use (i.e. marina); - it avoids conflict between other uses in the waterway and along the foreshore, including residential properties and public open space. In particular, measures have been proposed to address light spill, air quality, construction activity, safety and navigation (refer to Section 7).
Clause 25 – Foreshore and Waterways Scenic Quality	As assessed in the VIA at Appendix W , the proposal is consistent with Clause 25 of the SREP. Considering the site context, manner in which the development will be viewed, and that the marina is not visible in the context of any other marina, there is no potential for cumulative impact of water-based development to arise.
Clause 26 – Maintenance, protection and enhancement of views	As assessed in the VIA at Appendix W, the proposal is consistent with Clause 25 of the SREP. The proposal will: - Maintain views to and from Sydney Harbour - Minimise adverse impacts on views and vistas to and from public places, landmarks and heritage items - Not result in any cumulative visual impacts Furthermore, whilst additional lighting has the potential to have a modest impact, the proposed mitigation strategies outlined within the Light Spill assessment report and Section 6.11 will address light spill issues relevant to the proposed development.
Clause 27 – Boat storage facilities	The development is consistent with Clause 27 in that: - it increases the number of boat storage facilities available to the public; - it does not rely on a proliferation of boat sheds and other buildings above the mean high water mark; - it is for the expansion of a commercial, public marina which is available to anyone to access and use through an agreement with the marina; - it does not result in a proliferation of private boat storage facilities in and over the waterway. The development involves the expansion of a commercial, public marina whereby demand for additional storage has been demonstrated (refer to Appendices D and E); - the proposal has been designed to be as visually unobtrusive as possible (refer to Appendix W); - it will not be affected by the wave environment (refer to Appendix K) and will avoid adverse impacts on safe navigation (refer to Appendix F).
Clause 36 - Development on land comprising acid sulfate soils	The proposal does not include the excavation, dredging, filling or contouring of land. Furthermore, site observations undertaken by ZOIC as outlined in Appendix G confirmed that the site soils comprised clayey gravel/ sand fill overlying shallow sandstone, with no sulphurous odours noted. Therefore, based on these observations, Acid Sulfate Soils are not anticipated within the development areas on land or in the water.

5.2.3 Sydney Harbour Foreshore and Waterways Area Development Control Plan

The Sydney Harbour Foreshore and Waterways Area Development Control Plan (Sydney Harbour DCP) complements the SREP and provides more detailed design parameters for development within the foreshore area of Sydney Harbour.

The Sydney Harbour DCP contains controls relating to commercial marinas that are to be considered during the assessment of the proposed development by the consent authority. The Sydney Harbour DCP also defines landscape character types and sets out guidelines and procedures for ecological assessment, visual assessment and general design guidelines relating to foreshore access, the siting of buildings and structures, built form and signage. Relevant aspects to the DCP are addressed below.

Location of Marinas

Clause 4.7 of the Sydney Harbour DCP requires the following guiding principles to be considered:

- Marinas are preferably to be located away from wetlands or the wetlands protection areas or where they or the vessels using them will physically damage or overshadow estuarine vegetation of high value;
- Marinas are to be located where there is adequate water depth or where minimal dredging of soft material will achieve an adequate water depth;
- Marinas are to be located where they can be used by as many people as possible and are easily accessed from land and water;
- Marinas are to be located away from areas subjected to exposed wave environments;
- Marinas are not to reduce the number of publicly available swing (swing) moorings, jeopardise safe navigation or adversely impact other water uses including small craft; and
- Waterside structures are to minimise impacts on public water activities.

There will be some impact on private and commercial mooring holders. To address this, the GBM team met with Roads and Maritime during the Permission to Lodge discussions, to determine how the mooring field adjacent to the marina could be relocated within the current boundaries, to maintain numbers, and minimise dislocation. It is noted that relocation of moorings is increasingly common around the State waterways as waterside development occurs. Matters relating to the relocation of moorings are usually addressed following lodgement of the Development Application, as the project progresses into the assessment and determination phases as Roads and Maritime would usually rely on the submitted design drawings to guide their discussions. In this regard, GBM's navigation specialist is continuing to work with GBM and Roads and Maritime to explore solutions and ideas to resolve any relocation issues. Any relocation will be funded by GBM.

Environmental characteristics of the Site

The Sydney Harbour DCP includes provisions and maps that describe the landscape character and ecological characteristics of sites around the harbour. **Figure 18** is an extract of the DCP's Ecological Community's and Landscape Characters Map. The Sydney Harbour DCP states that the below maps were produced from aerial photographs and are somewhat generalised. For this reason, site-specific investigations have been undertaken to confirm actual site conditions.

According to the map, there are two identified aquatic habitats indicated, 'mudflat' habitat (light yellow) occurring inshore from the existing and proposed marina, and an area of 'mixed rocky intertidal and sand' light purple (light purple) around the eastern perimeter of Five Dock Point.

In line with the Ecological Assessment requirements included within the Sydney Harbour DCP, a detailed ecology assessment has been undertaken by Marina Pollution Research (**Appendix J**) which concludes that provided mitigation, offset and additional recommendations included within the reports are incorporated into the marina design, construction and operation of the proposed development at Gladesville Bridge Marina, residual risk can be managed to satisfy the ecology and fish habitat conservation requirements of the Sydney Harbour SREP and DCP.

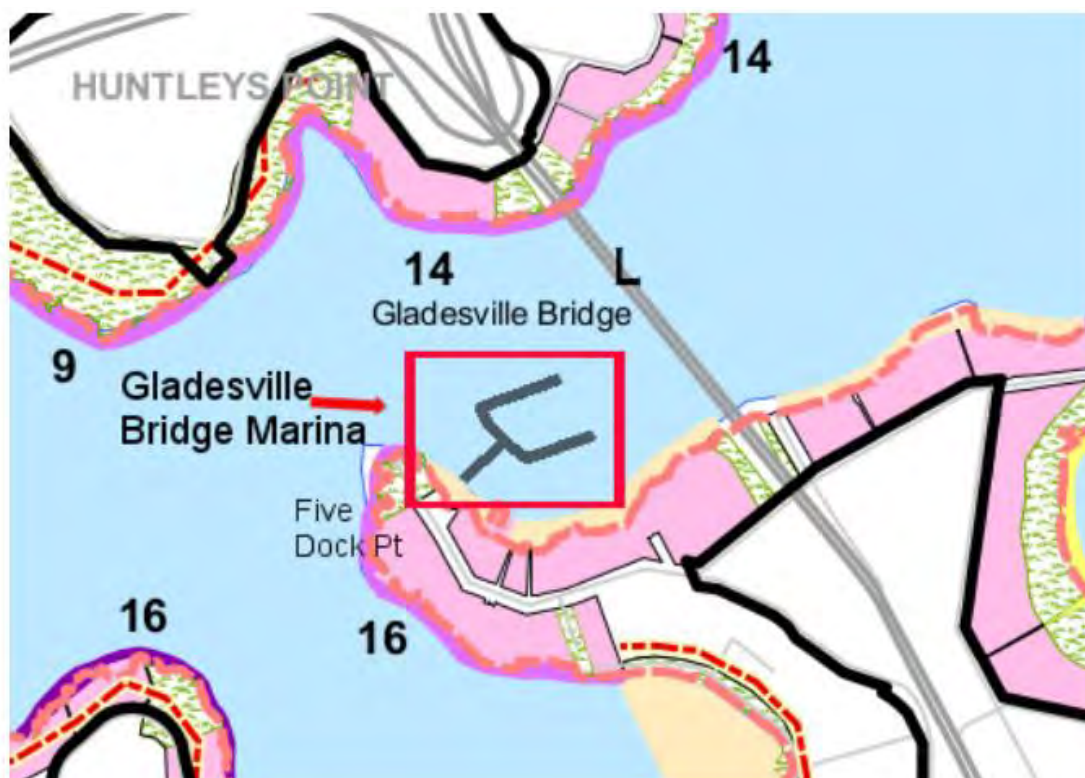


Figure 18 Extract from Sydney Harbour DCP

Source: Department of Planning, Environment and Industry and Marina Pollution Research

Land-Based Development

The proposed development is consistent with the land-based design controls of the DCP in that:

- it is designed so that natural or other attractive features, such as the heritage listed headland, are not obscured;
- does not impact the existing public access to and along the foreshore which will be maintained and approved through the provision of a gangway which allows for smaller recreational vessels;
- the extent of the floating marina structure is minimised as much as possible and does not result in any alienation of the waterway. It is noted that although the number of berths is proposed to increase from 50 to 115, the structure is only approximately double the size of the current structure. In addition, the use of water space is minimised both adjacent to the marina and east of the bridge where the removal and relocation of moorings is resulting in increased waterway;
- the proposed structure is in the form of a series of interlinked pontoons which will be held in place by a number of piles in the seabed;
- shiny and reflective materials are not proposed to be used;
- a point of access to boats for disabled people is provided and the marina is a floating structure which promotes accessibility. An accessible parking space is also proposed for the development; and
- the proposal adequately mitigates any environmental impacts on surrounding land uses and natural ecosystems, as detailed in Section 6 of this EIS and accompanying technical studies.

Landscape Character

Landscape Character Type 16 applies to the site. The statement of character and intent for this landscape character type is as follows:

“These areas have a high degree of built form with waterside commercial, residential, and industrial development dominating the foreshore. The mix of uses provides a distinctive urban character which should be maintained. The intent for these areas is to encourage appropriate waterfront development while protecting the character and amenity of developed areas, foreshores and the shoreline.”

Any development within these areas is to satisfy the following criteria:

- *Remaining natural elements along the foreshore are preserved;*
- *Public wharves and jetties are retained to enable continued maritime activities;*
- *Visual continuity of elements such as beaches is maintained and generally not broken by development;*
- *Design and mitigation measures are provided between potentially conflicting land uses to minimise noise and amenity impacts; and*
- *Landscape areas should be provided and incorporated with open space linkages where possible to minimise the contrast between built elements.*

The proposed development seeks consent for alterations and additions to an existing marina that has been in operation for over 50 years. Furthermore, only minor amendments are proposed to the land-based elements, and these will all generally be confined to the internal parts of the existing building. Accordingly, the existing marina development is considered appropriate waterfront development and the proposed amendments to the marina berth layout have been designed to protect the character and amenity of the neighbouring residential community, and the foreshores and shoreline as:

- no significant natural elements of the foreshore will be affected by the proposal and there are no public wharves or jetties;
- the lighting design will ensure that light spill impacts are minimal and can be appropriately mitigated to meet all relevant Australian Standard requirements;
- no unreasonable visual impacts will be generated;
- acoustic and vibration impacts can all be managed appropriately to ensure noise from boats, construction activities and road traffic impacts do not adversely impact amenity. In addition, the removal of the slipway activities will enhance noise and amenity for surrounding properties;
- no adverse impacts are expected to affect the local wave conditions (refer to Section 6.7);
- no significant impacts on the sediment sources at the site or adjacent foreshore are anticipated (refer to Section 6.3); and
- no adverse impacts will be generated that affect water quality (refer to Section 6.5).

5.3 Local Planning Instruments and Controls

5.3.1 Canada Bay Local Environmental Plan 2013

The Canada Bay Local Environmental Plan (CBLEP) 2013 is the primary local environmental planning instrument applying to the land-based component of the site.

Under the CBLEP 2013, the site is zoned 'R3 – Medium Density Residential'. Clause 10 of Schedule 1 Additional Permitted Uses applies to 'certain land at 380 Victoria Place, Drummoyne' and allows development for the purpose of marinas to be permitted with development consent. As such, the proposed land-based development and ancillary uses such as car parking are permissible with consent at the site.

The proposed developments consistency with the other relevant provisions of the CBLEP 2013 is discussed in **Table 11** below.

Table 10 Consistency with the Canada Bay LEP 2013 provisions

Relevant Provision	Consistency	
Zone R3 Objectives of the zone	Objectives of zone - To provide for the housing needs of the community within a medium density residential environment. - To provide a variety of housing types within a medium density residential environment. - To enable other land uses that provide facilities or services to meet the day to day needs of residents.	The proposed development is not residential and therefore is not directly analogous to the R3 zone objectives. However, marinas are permitted as an additional permitted use on the site under Schedule 1. The proposal is consistent with the objectives of the R3 Zone in that it will not impact upon the medium density residential environment and provides additional on-site parking to reduce any perceived traffic and parking impacts on the local surrounding residential road network and provides other land uses to provide facilities and services.
Clause 4.3 Height of Buildings	Maximum building height of 8.5m.	The proposed development does not alter the height of the existing building. Minor internal reconfiguration works are proposed to the ground floor of the existing building only.
Clause 4.4 Floor Space Ratio	Maximum floor space ratio of 0.5:1	The proposed development only seeks to remove the office mezzanine structure from the slipway area and provide parking spaces within this undercover area. No additional GFA to what is existing is therefore proposed and therefore the FSR of the building remains generally consistent with what has been previously approved.
Clause 5.6 Development below mean high water mark	Development consent is required to carry out development on any land below the mean high-water mark of any body of water subject to tidal influence (including the bed of any such water).	Development consent is sought within this development application for works on land below the mean high-water mark.
Clause 5.10 Heritage conservation	A heritage assessment is required to be prepared for any development that is located within the vicinity of any land that is a heritage item or any land that is within a heritage conservation area.	Whilst the site is not classified as a State or local heritage item, the Gladesville Bridge Marina is located within the vicinity of the State Heritage listed Gladesville Bridge and a number of other locally listed heritage houses. Accordingly, a heritage assessment has been prepared by NBRS Architecture (Appendix Y) and the issue is discussed at Section 6.14 .
Clause 6.1 Acid sulfate soils	The land-based component of the site is classified as having Class 5 Acid Sulphate Soils.	Site observations undertaken by ZOIC as outlined in Appendix G confirmed that the site soils comprised clayey gravel/ sand fill overlying shallow sandstone, with no sulphurous odours noted. Therefore, based on these observations, Acid Sulfate Soils are not anticipated within the development areas on land or in the water. Accordingly, an Acid Sulphate Soils Management Plan is not required.
Clause 6.3 Terrestrial biodiversity	The land-based component of the site is identified as 'Environmentally Sensitive land'. Accordingly, the consent authority must consider whether the development is likely to have any adverse impact on the terrestrial biodiversity.	An ecology assessment report, prepared by Marina Pollution Research (Appendix J) has assessed the potential for the development to impact upon terrestrial and aquatic biodiversity, which concludes that there are no terrestrial habitats or bat roosting areas and there will be no impact on terrestrial biodiversity.

Relevant Provision	Consistency
Clause 6.4 Limited development on foreshore area	Development on land within the foreshore area unless: - the development will contribute to achieving the objectives for the zone in which the land is located, and - the appearance of any proposed structure, from both the waterway and adjacent foreshore areas, will be compatible with the surrounding area, and - the development will not cause environmental harm such as: - pollution or siltation of the waterway, or - an adverse effect on surrounding uses, marine habitat, wetland areas, fauna and flora habitats, or - an adverse effect on drainage patterns, and - the development will not cause congestion or generate conflict between people using open space areas or the waterway, and - opportunities to provide continuous public access along the foreshore and to the waterway will not be compromised, and - any historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance of the land on which the development is to be carried out and of surrounding land will be maintained, and - in the case of development for the alteration or rebuilding of an existing building wholly or partly in the foreshore area, the alteration or rebuilding will not have an adverse impact on the amenity or aesthetic appearance of the foreshore, and - sea level rise or change of flooding patterns as a result of climate change has been considered. The proposed development only seeks minor works to the interior of the ground floor level of the existing building and car parking within the undercover slipway area. The removal of the slipway will minimise any noise and other adverse impacts on surrounding land uses. Furthermore, all potential environmental impacts associated with the full scope of the works proposed are all able to be appropriately managed and mitigated.

5.3.2 Canada Bay Development Control Plan

Canada Bay Development Control Plan (DCP) contains design controls for various types of development. The relevant provisions of the DCP that apply to the proposed development and the proposed development's consistency with those provisions are set out below:

- C3 – Vehicle and bicycle parking rates – a detailed traffic and parking assessment is provided at **Appendix U**, which confirms that a car parking survey was undertaken and as allowed under the DCP, the car parking rates determined by the car parking survey has been applied to the proposed development. Furthermore, the traffic and parking assessment confirms that eight additional proposed car spaces on the site satisfies the requirements of the draft Australian Standard, the DCP and the surveyed requirement of the existing marina and therefore is therefore appropriate. Furthermore, the proposed provision of 1 accessible car parking space meets the requirements of C24 which requires 1 space per 50 or part thereof is to be accessible. The DCP does not require any bicycle parking spaces.
- C4 – Waste Management – a waste management plan that addresses the DCP requirements is provided at **Appendix V**.
- C8 – Contaminated Land – a detailed contamination investigation and supplementary contamination assessment has been prepared by ZOIC (**Appendices G**) and Marine Pollution Research (**Appendix H**) which confirms that the site is suitable for the proposed development;

5.3.3 City of Canada Bay Section 7.12 Fixed Levy Contributions Plan

The City of Canada Bay Section 7.12 Fixed Level Contributions Plan (Contributions Plan) applies to all development applications and complying development certificates that are pursuant to Part 4 of the EP&A Act 1979. Under the terms of the Contributions Plan, Council is authorised to grant consent to development subject to a condition requiring the applicant to pay to the Council a levy as specified in the Contributions Plan.

Accordingly, for developments with a cost of development which is more than \$200,000, a 1% levy is applied.

6.0 Environmental Assessment

This section of the report assesses and responds to the potential environmental impacts of the proposal. It addresses the matters for consideration set out in the SEARs (see **Section 0**) and the Mitigation Measures at **Section 7.0** complement the findings of this section.

6.1 Soil, Sediment and Groundwater Contamination within the vicinity of the land-based works

A detailed contamination assessment has been prepared by ZOIC Environmental (**Appendix G**) that investigates and assesses the potential for soil, sediment and groundwater contamination at the Site with respect to human health and ecological criteria.

The investigation comprised:

- a desktop study of relevant background information; and
- more intrusive investigation on site, that included the drilling of boreholes at five (5) locations, the collection of three (3) sediment samples and the installation of two (2) ground water monitoring wells within two of the boreholes.

As noted in **Section 2.3.4**, the soil samples reported concentrations of contaminants of potential concern including asbestos that were below the adopted human health criteria. The sediment samples had a number of contaminants of potential concern above both the ANZECC Guidance Values and the adopted Sediment Quality Guidelines. In addition, the groundwater sample analysis found that the levels of copper and zinc in MW01 and the levels of chromium, copper and zinc in MW02 also exceeded the adopted ecological criteria.

Following ZOIC's investigation, Marine Pollution Research (**Appendix H**) has re-assessed the sampling locations and in particular the sediment samples adjacent to the slipway. Marine Pollution Research conclude that the organotins in those samples are residual from activities prior to the '*Organotin waste materials chemical control order 1989*' taking effect and therefore could not be considered as accumulated sediments on the slipway arising from slipway activities post 1989 or thereabouts.

Furthermore, the re-assessment of the sampling locations concludes that the sediment accumulated onto the lower part of the slipway is from the river and are seabed sediments that are continuous with the surrounding seabed. They are not an isolated quantity of sediment lying on the slipway and as such the contaminants are 'locked up' in the sediments.

Accordingly, ZOIC (**Appendix I**) has provided an assessment of the potential for impacts to human health, ecological considerations and site management requirements. A summary of the key findings is set out below.

6.1.1 Human Health Considerations

ZOIC confirm that the reported concentrations of TPH, heavy metals and organotins (TBT) in the slipway sediments may pose potential for human health exposure risk. However, Marina Pollution Research's (**Appendix H**) reassessment of the slipway sediments concludes that as the contaminants are 'locked up' within the sediments they do not pose a risk to human health provided they are left undisturbed.

Furthermore, analytical data suggests there is no human health risk posed by concentrations of chemicals in soil or groundwater and concentrations of hydrocarbon compounds in the groundwater indicate a low risk of vapour intrusion/ exposure, which is supported by the site being covered with concrete hardstand.

6.1.2 Ecological Considerations

Similar to the human health considerations, the site investigation results indicate that the foreshore sediments adjoining the slipway are impacted by a number of chemicals.

Marina Pollution Research's (**Appendix H**) reassessment of the slipway sediments concludes that as the contaminants are 'locked up' within the sediments they do not pose a risk to local marine biota provided they are left undisturbed.

Marina Pollution Research further consider that if the sediments were to be removed, this would provide a void in the existing seabed that would rapidly be refilled from collapse of the edge void walls and re-work the inshore sediments by wind and wash that would 'relevel' the seabed. This would lead to localised destabilisation of other contaminated sediments which would then result in large pulses of contaminants into the water column which could then result in adverse impacts to the local biota.

ZOIC confirm that several chemicals of concern were also identified in groundwater at concentrations above the adopted marine water criteria, but the exceedances do not significantly exceed criteria and are indicative of the ubiquitous nature of the metals in an urban environment.

6.1.3 Mitigation Measures

In light of the above, Marine Pollution Research (**Appendix H**) recommend that the preferred action is to leave the seabed sediments intact and ensure low risk to human health by minimising the opportunity for contact with the sediments. According, it is proposed that:

- only marina personnel will be allowed on the slipway, in line with current access restrictions;
- fencing preventing access to the lower part of the slipway will be provided; and
- signage positioned at the top of the slipway will be provided to inform people that access is prohibited and access to the seabed from the slipway is not safe.

6.2 Biodiversity and Ecological Impacts

A detailed ecology assessment has been prepared by Marine Pollution Research Pty Ltd (**Appendix J**) that provides a detailed assessment of the potential impacts of the proposed development on any critical habitats, protected species, threatened species, populations, endangered ecological communities or their habitats, and marine vegetation.

In order to inform the assessment, Marine Pollution Research Pty Ltd undertook:

- a desktop review of available information on terrestrial and aquatic habitats and conditions affecting the site;
- a diver based aquatic ecology survey of the intertidal plus shallow in-shore waters and seabed;
- water quality sampling from 12 monitoring sites; and
- sediment sampling from 8 sampling locations and sediment contamination testing.

The results of the investigations and a summary of the existing aquatic ecological characteristics of the site are detailed in **Sections 2.3**. It is noted that the investigations also confirm that there are no threatened species of Endangered Ecological Communities within the locality of the Gladesville Bridge Marina and the site does not constitute specific habitat for other threatened aquatic species as listed in the *Fisheries Management Act 1994*, the *Biodiversity Conservation Act 2016* and the *Environment Protection and Biodiversity Conservation Act 1999*.

Utilising the ecological investigations, Marine Pollution Research Pty Ltd has undertaken a detailed assessment of the proposed construction and operational activities that have the potential to impact the existing aquatic ecological characteristics of the site.

In particular, the ecology assessment report has considered the following construction activities:

- removal of the swing moorings;
- removal of slipway rails;
- reconfiguring the marina which will involve:
 - the removal of the existing marina locator piles and associated floating pontoons; and
 - replacement or reuse of piles and pontoons as well as the introduction of additional new piles and pontoon structures;
- the addition of extra floating walkways, pontoons and moored vessels that will shade the seabed and potentially risk the loss of marine vegetation;
- construction noise; and
- marina fit out works.

Furthermore, the ecology assessment has considered the following operational activities:

- shading from the marina structures and moored vessels;
- vessels entering and existing the marina, which may create wash and increased wave activity along the shoreline, resulting in more frequent mobilisation of shallow inshore sediments and risk of smothering inshore vegetated habitats;
- vessel propeller wash, which may disturb and mobilise seabed sediments with a potential for contaminants to be transferred to the water column;
- increased risks of spillages of liquids and solids from over-water pump out and maintenance works on vessels in the marina; and
- increased concentration of vessels that use copper-based anti-fouling paint in the marina, which has the potential to increase the concentrations of dissolved copper and other biocides within and around the Marina.

Overall, Marine Pollution Research Pty Ltd considers that the reconfiguration of the Gladesville Bridge Marina would result in overall water quality improvement, negligible losses of sediment benthic aquatic habitat and organisms from additional piling and a long-term gain in available hard substratum marina vegetation (algae) habitat post construction. Specifically:

- cessation of slipway activities is the biggest benefit for overall water quality and aquatic ecology of the locality;
- whilst the concentration of vessels into an overall smaller footprint increases the potential for elevated dissolved copper concentrations, the combination of doubling the size of the floating marina and the retention of the same alignment with the river flow means that the overall increase in copper concentration remains small and is likely to be immeasurable;
- copper concentrations in terms of mass balance are likely to be similar to the present marina by virtue of the discontinuation of the slipway vessel cleaning and anti-fouling activities;
- whilst some sediment benthic organisms will be disturbed or lost due to piling operations, new encrusting assemblages will colonise wetted surfaces of piles and pontoons within the new facility and as such there will be a net increase in hard substratum habitat in the locality;
- provided suitable construction environmental management procedures are adopted, disruption to fish assemblages of the inshore rocky reef and rubble habitats would be negligible and overall fish assemblages would benefit from the additional hard substratum habitat arising from the expanded wetted surface areas from the marina structures;
- shading impact risk associated with the project is low and there would be a substantial increase in pile and floating habitat available to support additional marine algae growth;

- the risk of vessel impacts on adjacent and underlying aquatic habitats associated with the vessel movements in and out of the marina is considered low and any risk can be managed by the provision of suitable vessel speed limits and docking procedures that will be specified in the Marina's Operational Management Plan and the Standard Operating Procedures (as addressed in the Marine Safety and Navigation Report at **Appendix F**); and
- impacts associated with rubbish disposal, spillages, hydrocarbon spills and grey and black water spillages can be minimised by appropriate prevention, minimisation and control measures that will be specified in the Marina's Operational Management Plan, marina usage documents provided to users and via appropriate public signage displayed prominently around the Marina.

Furthermore, the ecology assessment report also provides a number of mitigation and offset recommendations. These measures will be incorporated into the proposed marina design, and the construction and operation activities, Marine Pollution Research Pty Ltd confirms that residual impact risk can be managed to satisfy the aquatic ecology and fish habitat conservation requirements of the Sydney Harbour Catchment SEPP. In addition, the project will also meet the fish habitat conservation requirements of the *Fisheries Management Act 1994* that ensures that there will be no net loss of fish habitat and a permit under Part 7 of the *Fisheries Management Act 1994* is not required for the 'taking or harming of marine vegetation' or for 'reclamation or dredging works'.

In order to ensure that the construction and operation of the proposed development does not give rise to any adverse ecological impacts, the mitigation measures recommended by Marine Pollution Research Pty Ltd will be adopted and are included in the schedule of mitigation measures provided at **Section 7.0**.

6.3 Geomorphological Impacts

Royal Haskoning DVH has prepared a Foreshore Geomorphology Report (**Appendix L**) which provides a detailed description of the topography of the site, its sea bed levels, geology, soils, the coastal processes affecting the site, sediment sources and geomorphological character of the existing foreshore, in order to undertake an assessment of whether the proposed development is likely to have an impact on the geomorphological processes at the site.

The key findings of the report are set out below:

- The site is subject to wind generated waves primarily from the northeast and west and the frequent boat traffic along the Parramatta River and around the marina also produce consistent wave energy towards the foreshore. However, analysis undertaken by MetOcean (**Appendix K**) highlights that the magnitude of boat generated waves is similar to that of the ambient wind generated waves.
- Historical trend analysis indicated that the foreshore at the site has undergone significant modification over the past 70 years. These modifications have caused sedimentation processes to change, however, this has been primarily caused by sheltering from wave, tidal and fluvial flows as there are no significant stormwater discharge outlets at the site.
- The existing marina seawalls and drainage discharge points are not proposed to be altered and therefore there would be negligible change to the existing flow process along the foreshore of the site.
- The extension of the marina pontoons and the increase in moored vessels will act to shelter the foreshore from wave energy resulting from wave actions along the Parramatta River. This will result in slight increases in sediment accumulation at the site, which is occurring due to existing natural and manmade obstructions.
- The increase in boat traffic is expected to increase wave generated wave energy but the low speed operation within the marina will provide minimal increase to the existing boat generated wave energy at the site.

Overall, Royal Haskoning DVH considers that any changes to the sedimentary processes will be minor, there is little potential for geomorphological change at the site and due to the stable environment provided by the rock outcrops, the construction of the proposed development will not have any significant impacts on the geomorphological character of the site or the adjacent foreshore. No additional mitigation measures are required.

6.4 Stormwater Management

Royal Haskoning DVH has prepared a Stormwater Management Report (**Appendix M**) to provide details of the existing stormwater management system, any proposed changes and measures to mitigate surface water impacts.

Accordingly, Royal Haskoning DVH confirms that existing site drains directly into the Parramatta River through and via an internal drainage network and overland surface runoff routes. A series of grated stormwater drains are located across the site which discharge surface water runoff into the waterway and there are also existing drainage pits along Victoria Plan which drain the road reserve through pipes along the southern and northern boundaries of the Marina. However, during higher runoff events, stormwater discharges directly into the Parramatta River via overland flow across the site.

No alterations to the land-based stormwater infrastructure is proposed and no changes are proposed to the land-based impervious areas as part of this development, therefore the existing drainage paths and infrastructure will be maintained in the existing condition.

It is noted however that the extension to the marina pontoons will increase the impervious area but given that the pontoons are in the Parramatta waterway itself, Royal Haskoning DVH consider that the design does need to further consider the DCP flood impact requirements. No additional mitigation measures are required.

6.5 Water Quality and Sediment Management

Water quality sampling undertaken by Marina Pollution Research found that overall water quality at the site is good, but it deteriorates during wet weather common to urban runoff environments but recovers shortly afterwards. Deteriorating water quality is caused by general street litter and pollutants that are contained in stormwater run-off from the catchment. At present, the existing customer amenity facility and waste management systems have been adequate for the current activities at the marina, however, the proposed construction activities and operation of a larger marina has the potential to give rise to greater water quality impacts.

Accordingly, Royal Haskoning DVH has prepared a Sediment Management Report (**Appendix N**) and GHD has prepared a Water Management Plan (**Appendix O**), which confirm that the following construction activities have the potential for the greatest impact on the water quality within Sydney Harbour;

- removal of slipway rails and existing piles, which has the potential to disturb sediments;
- installation of piling, which has the potential to disturb sediments; and
- movement and anchoring of construction vessels, barges and crew transfer vessels which may lead to hydrocarbon spills, disturbance of bottom sediments and may contribute to the dispersal of suspended sediments.

Accordingly, in line with the recommendations and specific criteria outlined within the Royal Haskoning DVH Sediment Management Report, a Sediment and Erosion Management Plan will be prepared and incorporated into the detailed Construction Management Plan to ensure that soil erosion and sediments are appropriately managed so that they will not give rise to any unacceptable water quality impacts.

6.6 Marine Safety and Navigation

A Navigation Assessment has been prepared by Brett Moore Navigation Consultant (Navcon) and is included at **Appendix F**. The report assesses the potential impacts of the construction and operational phases of the proposed development on commuter ferry routes, water-based traffic, existing users of the Parramatta River and private boat moorings that surround the site. The assessment is also supported by a set of Standard Operating Procedures that will be implemented to provide a comprehensive guide for skippers and guests to follow specifically in relation to safety and environmental matters in and around the marina.

The key findings of the assessment are summarised in **Table 12** below.

Table 11 Marine Safety and Navigation Assessment

Issue	Commentary
Boat usage patterns	The usage of vessels on moorings is anticipated to be approximately 8-10% at peak times and lower on weekdays, and with the winter months usage reduced even further. On average, Navcon estimate that vessels on berths are used on average 20 times per year, with vessels on moorings being used even less frequently. A survey of the number of vessel movements within one day in April either within the marina or outside its confines, found that there were a total of 29 vessel movements, that were made up of boats leaving the marina, travelling east or west for some time or boats leaving the marina for testing purposes. The Gladesville Bridge Marina boats made 9 trips throughout the day, the slipway had 2 movements and a small fishing boat also pulled up. In addition, there were 2 kayak movements. Whilst the proposed development will increase the number of berths in general, the cessation of the slipway activities will reduce the day to day movements by vessels utilising the slipway and the overall increase in vessel movements is expected to be 30%. Given the low usage pattern evident, Navcon do not anticipate that the increase in the number of berths will be difficult to manage or cause substantial traffic issues in the river.
Commuter ferry services	A Rivercat ferry service operates a return service between Circular Quay and Rydalmere, as the Parramatta wharf is currently being renovated. Current timetables show that there are 98 journeys that pass the Marina on a weekday, 95 on weekends and 53 on Public Holidays. Whilst the ferry services have increased over time, the service has been running along the same route for many years, which is generally the starboard side of the channel in the direction they are travelling, unless they are avoiding other vessels in the channel. As noted previously, the area of the Parramatta River within the vicinity of the marina is an established 'Low wash zone', and therefore all vessels, including ferries are required to slow down to ensure that their wash is minimised. Given the modest increase in vessels utilising the marina, Navcon do not anticipate there to be any difficulties with the interaction of the marina vessels and the commuter ferry services either during construction or operation of the marina, provided the Standard Operation Procedures are followed.
Marina design	The design of the Marina, including the navigation holding area under the Bridge allows for the safe manoeuvring of vessels to observe the channel at a 'T' intersection prior to heading east or west.
Interaction with rowers and Sailing Club vessels	An existing aquatic license course is located across the northern face of the Marina and facilitates rowing activities in the area. During the design development, amendments were made to ensure that there were no conflicts with the aquatic license course. Furthermore, given rowers tend to train in the early morning, this lessens the frequency of interaction with Marina traffic. Furthermore, navigation on the river is governed by the Marine Safety Regulation 2016 and the International Regulations for Preventing Collisions at Sea. It is anticipated that as long as all vessels follow the Regulations, and the marina vessels and other users of the river proceed with caution in and around pinch points such as under the Bridge, no adverse impacts by a greater number of berths being provided should be generated.
Passive craft	Paddle craft utilising the bay will be able to circumnavigate the marina, or with the addition of a gangway that will allow kayakers and other small passive craft, to navigate close to the shore near the marina, as an additional access option. This will also benefit any paddlers launching from the adjacent beach attached to Howely Park East. Paddlers will be able to pass under the gangway at all tides.

Issue	Commentary
Commercial and private mooring	In consideration of feedback about navigation issues, ENARES are proposing to consult with Roads and Maritime, to relinquish the 29 moorings and to open up the navigation channel by up to 28 metres. This can be achieved by locating the 15 remaining GBM commercial swing moorings, south of the mooring line Should any repositioning be required, ENARES Pty Ltd will bear the cost of any revision, and ensure (through negotiation with RMS) the positioning of the moorings agreed with the RMS.

6.6.1 Mitigation Measures

As per the Marine Safety and Navigation Report (**Appendix F**), the marina will be required to adhere to the *Marine Safety Regulations 2016 Act* and the Standard Operating Procedures as contained in the Navigation Assessment will be adopted in the expanded marina operations.

6.7 Wave Climate

MetOcean Solutions has prepared a Wave Climate study (**Appendix K**) and a review of flushing conditions within the Harbour.

In order to determine the ambient and extreme wave climate near the Gladesville Bridge Marina, a wave modelling exercise was undertaken and Australian Standard AS 3962- *Guidelines for the Design of marinas* which provides the criteria and parameters that are used to define a 'good' wave climate for a marina.

The results of the modelling confirmed that the local wind sea wave periods are generally less than 2 seconds and the wave heights satisfy the conditions for 'good' wave climate and are also within the threshold for 'excellent' wave climate.

Whilst MetOcean Solutions consider that these conditions may not continue to be satisfied should there be significant increases in water levels (i.e. sea level rise), which is an impact of climate change, MetOcean Solutions confirm that the proposed development will not increase the potential impact of increased water levels.

MetOcean Solutions also undertook a review of potential vessel wake waves that are generated by passing vessels, which showed that the vessel waves are not expected to rise above the criteria for 'good' wave climate especially as the area is a no-wash zone. Accordingly, the proposed development is not expected to affect local wave conditions besides providing some wave sheltering to the shorelines directly behind the proposed extension, similar to the existing marina.

6.7.1 Flushing

Flushing refers to the water circulation within the marina and tidal patterns generally determine that circulation within the Parramatta River estuary. Based on analysis of the tidal patterns, and the water sampling that has been undertaken for the project, MetOcean Solutions considers that the pile structures that will be used for the marina pontoons are expected to have a very small and localised impact on the flow due to their small diameters. Furthermore, marina pontoons and vessels drafts typically dampen the current magnitudes in the upper water column, which has the potential to slow down the water circulation process and flushing of the marina.

However, given the proposed marina layout maintains is in general alignment to the main tidal flow (i.e. opening towards the east) the existing current circulation features are anticipated to be preserved. Whilst some localised effect of vessels and pontoons may be observed, the extended marina is expected to present flushing characteristics that are similar to the existing marina. No additional mitigation measures are proposed.

6.8 Visual Amenity and Views Impacts

A Visual Impact Assessment (VIA) of the proposed marina expansion has been undertaken by ARPL in accordance with the requirements of the SREP Sydney Harbour and accompanying DCP (**Appendix W**). Potentially sensitive view locations were identified from both public domain locations and from selected private residences within the visual catchment. The public domain viewpoints are identified at **Figure 19** below and private property owners were provided with copies of the photographs taken from their property and resulting photomontages but are not included within this report for privacy reasons.



Figure 19 Significant View Locations

Source: ARPL

The current design is based on the findings of numerous preliminary visual impact analysis and consultation with the community throughout the DA preparation process (which commenced in May 2016). As outlined in the Consultation Summary Report and Section 4.2 above, extensive modifications have been made to the proposal to respond to the ongoing visual impact assessment process. **Table 13** provides a summary of findings for each of the significant vantage points.

Table 12 Visual Impact Assessment Summary

Item	Comment	Average Score and Rating Against DCP	Assessment against Planning Principles
1. Five Dock Point	There is a change to the current outlook from this oblique aspect from the portion of Howley Park to the waterway, but not to the bridge. The vessels do not obstruct the arc of Gladesville Bridge and a water/bridge aspect will be retained.	1.7 – below medium	Low Impact upon existing views from Five Dock Point
2. Victoria Place	The outlook from the roadway will be improved with vessels in the foreground being less obtrusive towards the bridge and being less cluttered and smaller in scale. There will be a minor reduction in view to the waterway behind the existing vegetation, however overall there will be a net benefit to this view.	1.7 – below medium	Low Impact upon views from Victoria Place (potential improved view through the centre of the marina site).

Item	Comment	Average Score and Rating Against DCP	Assessment against Planning Principles
3. Cambridge Park	A portion of the waterside view beyond Arm D from Cambridge Reserve may be affected, however this is a minor portion of the overall aspect. There will be no impact upon the waterway aspect east of the bridge.	1.8 – below medium	Low Impact upon views from Cambridge Park reserve
4. Reserve	The impact on this view is marginal, with no impact on the extent of open waterway views east or west of the bridge or to the City skyline or Harbour Bridge.	1.7 – below medium	Low impact upon views from the reserve at the North Pylon of the bridge.
5. Betts Park	There will be no impact to views of open water in the foreground or views to Five Dock Point.	1.7 – below medium	Low Impact upon views available from Betts Park
6. Huntleys Point Road	There will be no impact to views of open water with most of the development viewed against the existing marina and land-based built form. Views to Five Dock Point will not be affected.	1.5 – below medium	Low Impact upon the view available from Huntleys Point Road
7. Huntleys Point	There will be no impact to views of open water with most of the development viewed against the existing marina and built form south of the marina. The primary panoramic water outlook is retained, with no impact upon views to natural features such as bays or to Five Dock Point.	1.5 – below medium	Low Impact upon the panoramic view from Huntleys Point
8. Ferry	There will be no view impact of open water until approaching the bridge and the removal of swing moorings will reduce visual impacts. Views will be retained to foreshore development and the ridge line of Five Dock Point.	1.5 – below medium	Low Impact upon aspects from the Rivercat

Whilst not included within the VIA report, ARPL has also considered the outlook from a number of residential properties on the southern side of the river which front the development. Before and after photomontages from these properties indicate a 'Low' impact rating upon their existing views due to the context of the exiting marina and that waterway views are retained to the foreshore channel, between the marina arms and over the marina to the main channel of the river. The assessment also found that views to the northern escarpment, the main channel and the bridge are unaffected by the proposed development.

Overall, the VIA concludes that the development will be visible from each of the public domain location, however the visual impact is limited to a small area of waterway within a wider panorama of open water. The development does not restrict or obscure any significant or prominent views to or from the waterway. In accordance with the conservative assessment matrix of the DCP, the development has an impact rating of 'Below Medium' and none of the locations are subject to a 'High' impact rating that warrants amendment to the development. Similarly, assessment of the proposal against the Land and Environment Court Planning Principles concludes that there will only be a low impact upon each of the locations. Accordingly, the impacts from the development are considered to be either negligible or minor.

6.9 Traffic and Parking

A Transport Impact Assessment has been prepared by Colston Budd Rodgers and Kafes Pty Ltd (CBRK) (**Appendix U**) that provides a comprehensive assessment of the potential traffic and transport implications that may result from the proposed development. The key components of the assessment are outlined below.

6.9.1 Traffic Generation

Gladesville Bridge Marina is accessed from Victoria Place, which provides for one traffic lane and one parking lane in each direction and is clear of intersections. It also has a dead end at its northern end adjacent to the marina. Traffic counts undertaken by CBRK between Drummoyne Avenue and the site found the vehicles flows to be 'low' and less than the RMS desirable and maximum flows for local residential streets, which reflects the fact that Victoria Place is a dead end and that adjacent land uses have low traffic generations. Specifically, CBRK found:

- peak hour flows to be between 50-70 vehicles per hour two-way and an average weekday flow of 725 vehicles two-way (i.e. sum of both directions); and
- peak hour flows to be 60-100 vehicles per hour two-way on the weekend and an average weekend flow of 800 vehicles two-way.

Given the proposed development will provide an additional 31 berths, CBRK anticipate that the proposed alterations and additions will result in less than five (5) additional vehicles per hour (two-way) during peak periods, which is classified as a very small increase in the volume of traffic generated.

CBRK consider that this very small increase will not have any noticeable effects on the operation of the surrounding road network and is will not result in an exceedance of the RMS desirable and maximum flows for local residential streets.

Construction Traffic Generation

It is anticipated that the majority of the construction activity will occur from the water, however, CBRK estimate that approximately 10 vehicles per day will be generated by the construction works. This is considered to be very 'low' and will not noticeably Victoria Place and the surrounding network.

6.9.2 Car Parking Provision

The site currently provides 10 car parking spaces for marina clients, 1 staff parking space and 1 delivery area. Furthermore, Victoria Place provides generally unrestricted parking. In order to assess the implications of the proposed development on car parking provision on Victoria Place and on the site, CBRK undertook car parking counts on Victoria Place (between Drummoyne Avenue and the northern end) and on-site at the marina on Saturday 19th January 2019, Sunday 20th January 2019, Saturday 8th June 2019 and Monday 10th June 2019 (public holiday).

The survey results are summarised in **Table 13**:

Table 13 Car parking survey results

Date	On-street	Marina
19 January 2019	88-97	7-9
20 January 2019	88-102	9-12
8 June 2019	90-100	8-11
10 June 2019	84-100	6-10

Source: CBRK

Overall, CBRK conclude that on-street parking in the northern part of Victoria Place is generally well used, with little significant variation over the day. Furthermore, there were generally spaces available at the marina on all survey days which suggests that on-street parking is generally unrelated to the marina.

Utilising the parking survey results and the existing provision on site for 99 vessels, CBRK have calculated the peak parking rate for the site to be between 0.09-0.12 spaces per vessel on any day. This compares to the parking data for the marina back to 1999 which found parking demands of 0.09-0.11 spaces per berth.

In assessing the car parking requirement for the marina (post development), CBRK have considered the guidance and general parking rates set out in the following documents:

- Part 3 of the City of Canada Bay DCP;
- The RMS Guide to Traffic Generating Developments;
- Australian Guidelines for Design of Marinas, AS 3962-2001; and
- Draft Australian Standard, AS3962: DR AS 3962:201X Marina design — Draft Standard.

CBRK comment in its assessment, that all four of the documents (i.e. Canada Bay DCP, RMS Guide and the Australian Standards) either make provision or recommend that parking requirements are based on surveys. Given surveys of the existing marina have found parking demand to be up to 0.15 spaces per berth, the parking requirement for the additional 31 berths equates to the necessity to provide 5 additional parking spaces.

Eight (8) additional parking spaces are proposed to be provided on the site, therefore CBRK conclude that the existing and proposed parking provision satisfies the requirements of both the draft Australian Standard and the surveyed requirement of the existing marina and the proposed parking provision is therefore appropriate.

6.9.3 Internal Parking Layout

CBRK's assessment of the proposed additional car parking layout (as illustrated in the Architectural Plans at **Appendix B**) confirms that the spaces will be 5.4m long by 2.4m wide in accordance with Australian Standard for Parking Facilities (Part 1: Off-street car parking), AS 2890.1:2004. The revised layout will also provide for an accessible parking space.

6.10 Air Quality and Odour

GHD have prepared an Air Quality Impact Assessment (**Appendix Q**) report to assess the potential air quality and odour impacts that may arise during the construction and operational phases of the development and determine whether the project would result in adverse air quality impacts above the relevant criteria at sensitive receptors.

6.10.1 Sensitive receptors

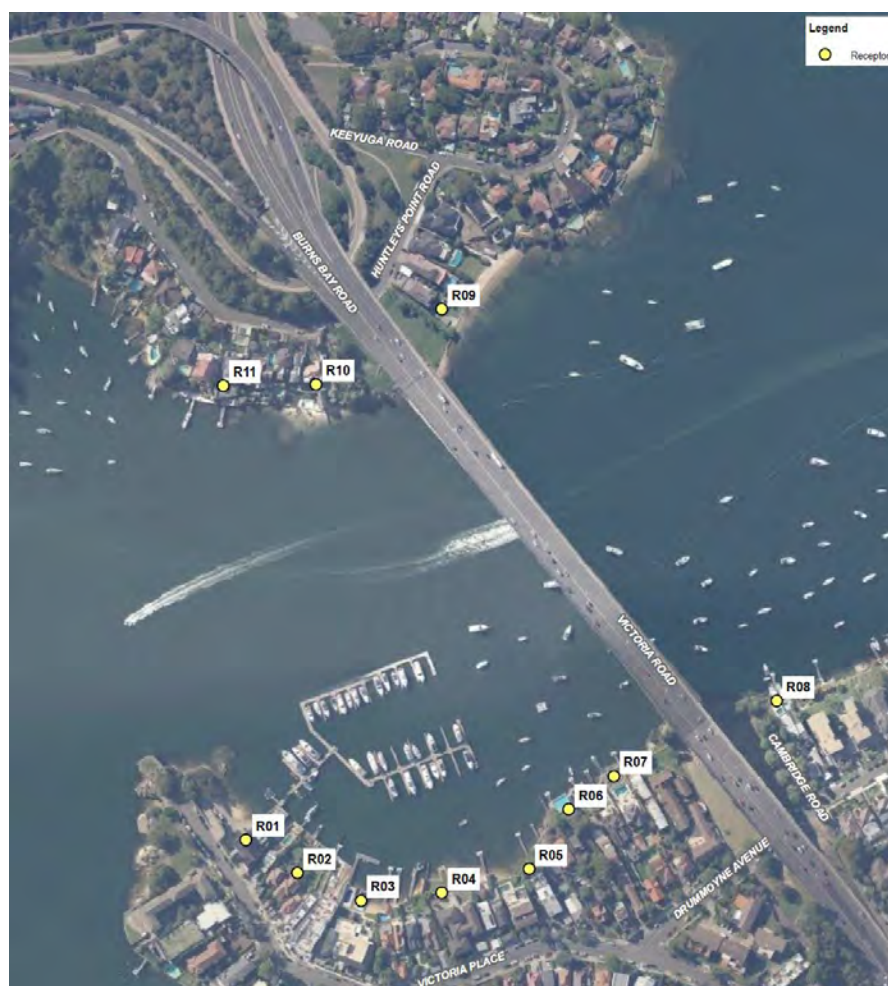
GHD confirm that air quality sensitive receptors are locations where people are likely to work or reside. Given the site is situated within a suburban area, the sensitive receptors closest to the site have been identified, as it is anticipated that the closest receptors will experience the worst-case air quality impacts. GHD consider that if the potential air quality impacts from the proposed development comply with the adopted assessment criteria, at those locations, then receptors situated a greater distance from the site will also comply.

The sensitive receptor locations identified by the Air Quality Assessment are identified in **Table 14** and illustrated in **Figure 20**.

Table 14 Sensitive receptor locations

ID	Description	Address
R01	Gladesville Bridge Marina	380 Victoria Place, Drummoyne
R02	Residential	374 Victoria Place, Drummoyne
R03	Residential	356-362 Victoria Place, Drummoyne
R04	Residential	348 Victoria Place, Drummoyne
R05	Residential	332 Victoria Place, Drummoyne
R06	Residential	46 Drummoyne Avenue, Drummoyne
R07	Residential	42B Drummoyne Avenue, Drummoyne
R08	Residential	22 Drummoyne Avenue, Drummoyne
R09	Residential	25 Huntleys Point Road, Huntleys Point
R10	Residential	23A Huntleys Point Road, Huntleys Point
R11	Residential	17 Huntleys Point Road, Huntleys Point

Source: GHD

**Figure 20 Air quality assessment sensitive receptor locations**

Source: GHD

6.10.2 Existing Environment

In order to establish the base case scenario for the air quality assessment GHD established:

- the ambient (i.e. background) air quality concentrations of pollutants for the site; and
- the local meteorology including wind speed and direction and the pattern of atmospheric stability.

The findings of this research are set out in detail within the Air Quality Assessment Report, but can be summarised as follows:

- There are no local sources of industrial emissions within the established study area;
- Local combustion emissions are anticipated from the marina operations and vehicles travelling along Victoria Road;
- The predominant annual average wind directions (as illustrated in **Figure 21**) are the north-west, north-east and south;
- The majority of lower wind speeds (<2m/s) are from the west-northwest, north sector and south;
- The average wind speed measured was 1.72 metres/ second;
- Calms (wind speeds less than 0.5m/s) occurred 8.7% of the time;
- During summer, the predominant wind direction is from the northeast and south;
- During winter, west-north westerly and westerly winds are most dominant; and
- Autumn and spring are transitional periods.

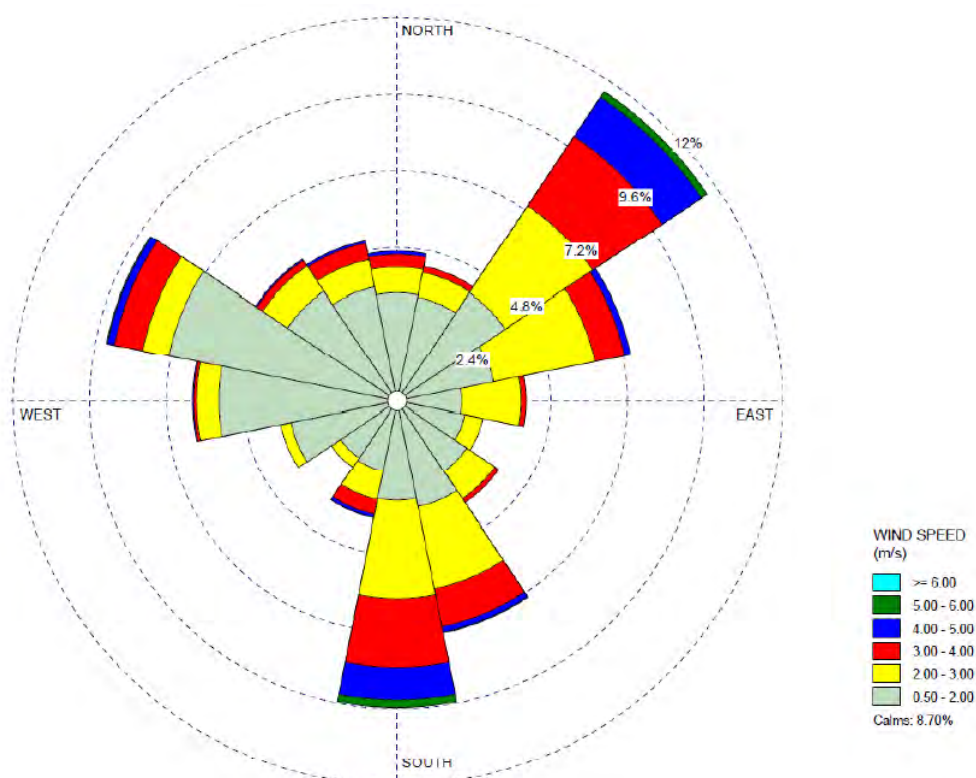


Figure 21 Wind Rose for the site

Source: GHD

6.10.3 Potential emissions

During Construction

Dust is considered to be the highest-risk impact emission generated by construction activities. Whilst the final Construction Management Plan will include dust management measures, GHD's air quality assessment does not consider that significant construction dust generating activities will be undertaken as part of the proposed construction works. Furthermore in modelling the potential impact of dust on the sensitive receptors, GHD confirm that the background or ambient levels will dominate the dust levels in the area and therefore air quality impacts associated with the construction activities are not anticipated and the marina development will generate a negligible contribution.

During Operation

GHD consider that the operational emission sources associated with the larger marina will be combustion emissions from idling boats moored at the marina, as other activities such as fire training (except for simulated training without the use of propellants), refuelling, major paint repairs and the use of emergency generators/ incinerators will not be permitted at the marina. GHD's air quality modelling confirms that the levels of primary pollutants from combustion above the background level will be negligible and the predicted levels comply with the relevant criteria at all sensitive receptors for both the existing and future operations.

Furthermore, given dredging or odour generating activities are not proposed, odour impacts are not anticipated.

6.10.4 Mitigation Measures

Whilst GHD confirm in its Air Quality Assessment report that air quality impacts associated with the construction and operation of the proposed development are not deemed significant and will comply with the relevant air quality criteria, the following general air quality mitigation and management measures are recommended:

- Plant and equipment are to be maintained in good condition to minimise spills and air emissions that may cause nuisance;
- Dust suppression will be undertaken as required using water sprays, water carts or other media on:
 - sand, spoil and aggregate stockpiles; and
 - during the loading and unloading of dust generating materials.
- If the works are creating levels of dust which may significantly impact on residential amenity, the works will be modified or stopped until the dust hazard is reduced to an acceptable level.
- Construction vehicles with potential for loss of loads (such as dust or litter) will be covered when using public roads.
- During the operation phase, a maximum idling duration of 10 minutes should be enforced.

In order to ensure that the proposed development does not give rise to any adverse air quality impacts, these mitigation measures will be adopted and are included in the schedule of mitigation measures provided at **Section 7.0**.

6.11 Light Spill

Under Australian Standard AS 3962 2001- *Guidelines for design of marinas* Section 6.5, "adequate lighting should be provided for safe pedestrian access to the berths, security of the vessels and shore facilities, and safe navigation within the marina area". Furthermore, all lighting is required to be designed and located to minimise glare for vessels navigating in the vicinity.

Whilst the detailed design of the lighting system has not been determined as yet, a light spill assessment has been prepared by SLR (**Appendix X**) to establish a set of recommendations that can be implemented into the detailed lighting design to minimise any adverse impacts upon surrounding residents, road users, transport signalling systems and areas where astronomical observations are made.

In undertaking the light spill assessment, SLR conducted a baseline survey to establish the current night-time lighting levels of the existing marina. These baseline surveys confirmed that:

- The average illuminance on the land portion of the site is approximately 3 lux, while the average value on the walkways that provide access to the berths was 15.7 lux.
- The baseline values measured at the site are lower than the reference values found in AS 1680.5:2012 – *Interior and Workplace Lighting Part 5: Outdoor Lighting*, which has been used as a reference, given Australian Standard 3692-2001 does not include specific illuminance requirements.

Once the baseline lighting levels were established, SLR developed a three-dimensional lighting simulation model to assess the additional light that would be produced by the proposed development on the water walkways and any land-based areas such as the car parking areas. The initial goal of the modelling was to produce a lighting case that provided at least the minimum required illuminance to the main pedestrian areas. The results of the modelling calculated the average lux level on land are 60.98 and the average lux level on the walkways was 27.69. SLR considered that the modelled case resulted in more light being provided than necessary. However, these levels were then subsequently used to provide a conservative case for the light spill assessment to ensure that any light spill found will not be as severe in the real-life scenario.

In order to undertake the light spill assessment, calculation points were added to the facades of all surrounding buildings immediately facing the site, including some buildings located on the northern side of the Parramatta River. The light spill assessment found that the only façade that would receive any light spill is at 378 Victoria Plan, which neighbours the marina. Notwithstanding this, the peak illuminance on the façade facing the water is 0.7 lux which is below the threshold requirements included in Australian Standard AS4282-1997 – *Control of the Obtrusive Effect of Outdoor Lighting*.

Further from observations, it would appear that the lights on the Gladesville Bridge have the biggest effect on the local environment in terms of lighting and are likely to be more noticeable than other installations.

6.11.1 Mitigation

To ensure that any potential light spill from the proposed development complies with the relevant requirements and does not give rise to any adverse impacts, the following recommendations provided by SLR will be implemented.

General Mitigation

When designing outdoor light to minimise any adverse effect of the light installation, use the following general principles during the detailed lighting design phase as set out in Australian Standard AS4282-1997 – *Control of the Obtrusive Effect of Outdoor Lighting*:

- Direct lights downward as much as possible;
- Use luminaires that are aimed to minimise light spill, e.g. full cut off luminaires where no light is emitted above the horizontal plane;
- Note that reducing spill light means that more of the light output is used to illuminate the area and a lower power output can be used. The energy consumption for the fitting can thus be reduced without decreasing the illuminance of the area;
- Do not waste energy and increase light pollution by over-lighting;
- Keep glare to a minimum by keeping the main beam angle less than 70°;
- Wherever possible use floodlights with asymmetric beams that permit the front glazing to be kept at or near parallel to the surface being lit;
- Be aware of the location of any surrounding sensitive receptors and direct the site lighting away from these locations where feasible; and
- Where possible position site lighting as far away from site boundaries as practicable.

Site Specific Mitigation

- The proposed development is required to be designed to comply with Australian Standard AS4282-1997 – *Control of the Obtrusive Effect of Outdoor Lighting* and Australian Standard AS 3962 2001- *Guidelines for design of marinas*.
- Use luminaries with a narrow beam to provide useful light on the walkways while minimising wasted light shining on the water.
- Current lighting (e.g. bollard lighting) should be replaced with full cut-off luminaries (all luminaries used in the modelling exercise were full cut-off). This will mean no light will escape above the horizontal plane and light can be directed down to the walkways where it is needed allowing for energy savings.
- Take advantage of smart placement and choice of lights to minimise light spill. Specifically lights on the land area should face away from the neighbouring building.
- Vegetation, fences and other obstacles were not included in the model due to uncertainties involved in modelling landscaping which may be prone to seasonal changes in foliage density and varying growth height with the passage of time. They will however provide additional shielding in the real-world case and further reduce light spill.

6.12 Greenhouse Gas Emissions

GHD has prepared a Greenhouse Gas Assessment report (**Appendix R**) to quantify the greenhouse gas emissions generated by the existing Marina operation, those that are likely to be produced by the proposed development and the identification of any potential greenhouse gas emission impacts that may be generated by the proposed development.

Using the principles of *ISO 14064-2* and the *National Greenhouse and Energy Reporting (NGER) Determination 2008*, GHD have calculated the potential greenhouse gas emissions generated during both the construction and operation of the marina from:

- direct energy use during construction and operation;
- indirect energy use from imports and exports of electricity, heat or steam; and
- other indirect energy use.

Within the calculations, the emission sources contemplated were:

- fuel consumption during construction activities, including piling and construction of the fixed floating berths and ancillary works;
- fuel and electricity consumption during slipway demolition;
- vegetation removal (if any);
- construction personnel commuting;
- transportation of materials and equipment to site by truck or other water-based transport during construction;
- waste material disposal during construction and operation; and
- energy (fuel and electricity) consumption during operation and maintenance of Gladesville Bridge Marina (moorings, floating berths, on-water maintenance and repair activities).

GHD's greenhouse gas assessment reports that the quantity of emissions estimated to occur during the entire construction phase are estimated to be approximately 87tCO₂-e. Furthermore, the quantity of emissions estimated to occur during operations are estimated as approximately 1,919 tCO₂-e per annum, which is the equivalent of an increase of approximately 225 tCO₂-e per annum from the current operations.

When compared to the threshold for facility level reporting under the National Greenhouse and Energy Reporting (NGER) Act of 25,000 tCO₂-e, the operation of the marina following completion of the construction works will not require annual reporting under the NGER scheme. Furthermore, the annual emissions generated by the marina would account for approximately 0.0002% of Australia's annual emissions and 0.001% of NSW's annual emissions.

Accordingly, the greenhouse gas emissions generated during the construction phase and operational phase are considered insignificant.

6.12.1 Mitigation Measures

Notwithstanding the above calculations, the following measures will be undertaken to minimise/ reduce greenhouse gas emissions during the construction phase:

- all plant and equipment used during the construction works will be regularly maintained to comply with the relevant exhaust emission guidelines;
- the following measures will be required to be considered by the appointed contractor (s):
 - construction materials sourced locally where possible;
 - plant and equipment will be switched off when not in constant use and not left idling;
 - plant and equipment brought onsite will be regularly serviced and energy efficient vehicles or equipment will be selected where available;
 - any plant and equipment that is not working efficiently will be removed from the site and replaced as soon as possible; and
 - construction works will be planned to ensure minimal movement of plant and equipment (including barges).

6.13 Noise and Vibration

A Noise and Vibration Assessment prepared by Pulse Acoustic Consultancy (**Appendix P**) provides an assessment of both noise and vibration impacts during the construction and operational phase as well as road traffic impacts of the site.

6.13.1 Sensitive Receivers

The sensitive noise receivers that have been identified for the project are mostly located adjacent to the water and south of the Marina along Victoria Place, as identified below and in **Figure 21**.

- 376 Victoria Place, Drummoyne (R1);
- 56-364 Victoria Place, Drummoyne (R2);
- 338 Victoria Place, Drummoyne (R3);
- 15/332 Victoria Place, Drummoyne (R4); and
- 50 Drummoyne Avenue, Drummoyne (R5).



Figure 22 Location of the nearest potentially affected receivers

Source: Pulse Acoustic Consultancy

6.13.2 Noise and Vibration Generation and Mitigation Measures

In order to establish the background noise levels, noise loggers were placed at nearby receptors to measure the existing environmental conditions. Using the results from the noise logging, specific noise criteria were established for the operational activities, road traffic and construction activities.

During the operational phase, the noise generating model has been assessed at a worst case 15-minute scenario with the assumption that boats can arrive at the Marina anytime over a 24 hour period and that clients may stay on their boat overnight. The predicted noise levels generated indicate that the operation of the marina will not exceed the maximum noise criteria thresholds at all times of the day. Accordingly, no further mitigation measures are required.

Notwithstanding, it is noted that Management at GBM is responsible for controlling noise from boats berthed or moored at the marina, and other users of the marina. To achieve this, GBM requires that all users of the marina comply with the request of the marina to lower or cease noise, and to observe any GBM rules and relevant NSW legislation and regulations. GBM monitors and logs any noise issues that are raised, and reviews its logs regularly to revise any requirements. GBM is able to reasonably terminate berthing and mooring agreements and prohibit access to anyone who does not observe our requirements.

In addition, the minor increase in road traffic that will be generated by the development will not give rise to unacceptable noise impacts as the anticipated levels are predicted to comply with the Road Noise Policy at all receivers.

However, construction noise impacts are predicted to exceed the noise management levels at a number of surrounding receptors during the piling activities. Whilst cosmetic damage from vibration is not predicted during the construction phase, a Construction Noise and Vibration Management Plan will be prepared and implemented to ensure that all potential noise and vibration impacts are mitigated, which will include the following mitigation measures:

- respite periods will be provided after continuous construction activity;
- high noise generation works will be undertaken during less sensitive hours;
- the distance between plant items, equipment and construction works from noise sensitive receivers will be maximised where possible;
- lower vibration generation items as well as screw pile driving will be used where possible to reduce noise;
- loading and unloading will be undertaken away from noise sensitive receivers and deliveries will be received during standard construction hours; and
- consecutive works in the same site area will be minimised where possible.

In the event that a noise complaint is received, the Gladesville Bridge Marina complaints procedure should be carried out. All complaints will be responded to in the required timeframe and action taken recorded.

6.14 Heritage

The site is not identified as an item of heritage significance under the SREP or Canada Bay LEP, and it is not located within a conservation area. However, it is located within the vicinity of a number of locally and regionally listed heritage items and the Gladesville Bridge, which is a State heritage item, as identified in **Section 2.4.1**.

Accordingly, a Heritage Impact Statement, prepared by NBRS Architecture (**Appendix Y**) assesses the potential impacts on the European cultural heritage values of the site against the assessment criteria contained within the SREP, Sydney Harbour Foreshores and Waterways Area Development Control Plan, Canada Bay LEP 2013, Canada Bay DCP and the NSW Heritage Division guidelines, *Altering Heritage Assets and Statements of Heritage Impact*, contained within the NSW Heritage Manual.

6.14.1 Physical Impacts

The proposed development is physically separated from the listed heritage items in its vicinity, accordingly, NBRS Architecture confirm that the proposed works will not undermine or otherwise cause physical damage to these items.

6.14.2 Visual Impacts

NBRS Architecture's assessment of the potential impacts of the proposed development upon the views and settings of the heritage items within the vicinity of the proposed development is summarised in **Table 15**. Overall, NBRS Architecture consider that the proposed development will have an acceptable impact on the established heritage significance of the listed heritage items in its vicinity, and the proposed development is consistent with the heritage objectives of the SREP, Sydney Harbour Foreshores and Waterways Area DCP, the Canada Bay LEP 2013 and the Canada Bay DCP. Accordingly, no mitigation and conservation measures are required.

Table 15 Heritage Visual Assessment Summary

Item	Comment
Gladesville Bridge	The heritage curtilage of the Gladesville Bridge does not include the water below it and although vessels moored at the altered marina facility will be seen in some views of the Gladesville Bridge, it will remain a dominant feature in the locality and its landmark status will not be challenged or compromised by the proposed development. Residents and users of the area will be able to continue to view and appreciate its technical significance and therefore the proposed development will not have an adverse impact on the established heritage significance of the Gladesville Bridge.
Gladesville Bridge Abutments	A small park on the top of the abutments has replaced the former roadway and includes interpretive signage regarding the bridge history. The outlook from this park includes extensive vistas of the Parramatta River. The proposed development will result in a minor change to the composition of the outlook from the park, however, the views will not be interrupted or obscured and as such it will not have an adverse impact on the established historical and aesthetic heritage significance and from a heritage perspective, the change in this view is considered to be minor and acceptable.
352 Victoria Place (house), 44 Drummoyne Avenue (house) and 348 Victoria Place (boatshed)	These properties are separated from the marina building by intervening buildings and there is no visual connection between these items and the marina building in the street. The proposed car spaces contained within the existing workshop area will not present any changes to the street presentation of the existing building. Furthermore, views are not identified as an important contributing factor in the cultural significance of the listed heritage items located within the vicinity of the Gladesville Bridge Marina. However, views to the water are part of the character of any waterside property and the visual connection between the river and the waterfront homes and boatshed contributes to their significance as waterfront buildings. Notwithstanding this, the outlook from the harbourside properties has evolved over time and now include views of vessels tied up at private jetties and moorings as well as the Gladesville Bridge itself. The water-based component of the proposed development will therefore result in a change to the foreground views from some of these properties. However, the visual connection between the Parramatta River and the heritage listed waterfront homes will be retained and the change in the composition of the foreground views is considered to be minor and acceptable. The proposed development will therefore not have an adverse impact on the established historical and aesthetic significance of these properties.
14 and 16 Drummoyne Avenue (houses) and 10 Drummoyne Avenue (boatshed)	These houses are located on the eastern side of the Gladesville Bridge and overlook the swing mooring field. Minor changes are proposed within this area through the reduction in the number of commercial swing moorings and as such there will be no adverse impact on the available views to or from these houses or the boatshed.
Howley Park	Howley Park includes the land immediately adjoining the Gladesville Bridge Marina and the park on the other side of the road. Whilst there are uninterrupted views to the Parramatta River, including the marina from the portion of the park adjoining the marina and limited views near the street edge in the western portion of the park, these views are not identified as an important contribution in the cultural significance of Howley Park. The change in the view composition will not have an adverse impact on the established historical significance of this item.

6.15 Aboriginal Cultural Heritage

An AHIMS search has been undertaken (**Figure 23**) that confirms that no Aboriginal sites or places are recorded or have been declared within 200m of the site. Accordingly, it is considered that the proposed development will not give rise to any significant adverse impacts to Aboriginal cultural heritage. The Gladesville Bridge Marina has operated as a boatshed, boat repair and boat storage facility for around 100 years and for over 50 years as a marina and the existing site has been disturbed/excavated over time meaning the low likelihood of relics. Further no land-based excavation is proposed, and excavation within the Harbour is limited to piling for the new berths. Hence the likelihood of encountering Aboriginal relics is low.

Notwithstanding, standard conditions of consent can be imposed on the development applications regarding unexpected heritage finds procedures.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

Figure 23 AHIMS Web Services result

Source: Aboriginal Heritage Information Management System

6.16 Social Impacts

The social impacts arising from the project, both positive and negative, relate to the impacts of the proposed development on people in the affected community and the wider Sydney region. The people in the community that are potentially affected include:

- the recreational and commercial boating community;
- local residents, local community members and workers and visitors to the foreshore; and
- existing Gladesville Bridge Marina users.

However, it should be noted that these people may be potentially impacted upon in different ways.

Accordingly, a Social Impact Assessment has been prepared by GHD **Appendix Z** to identify and assess the potential social benefits and impacts of the proposed construction and operation of the development. The findings are summarised below.

6.16.1 Socio-economic benefits of recreational boating

GHD note that the socio-economic benefits of interactions with nature and green space are well documented, with research identifying benefits including physical and mental health, well-being, productivity and community cohesion which is associated with 'blue space', a term that relates to the ocean, lakes, rivers and other water bodies. Benefits associated with water-based leisure activities such as boating, are considered to be social, cultural and economic:

- Social – including physical and mental health, and community cohesion benefits gained through the enjoyment of the water itself and participation in activities such as diving, swimming, recreational boating and fishing;
- Cultural – including connection to place through cultural heritage and cultural practices; and
- Economic – including opportunities in livelihood for business such as fishing, aquaculture and marine tourism and recreation.

6.16.2 Public benefits

In addition, it is considered that the development will also have a range of positive public benefits which include:

- the provision of public access to the foreshore of Sydney Harbour and to the waterway, for anyone, and in particular for all the community that does not have exclusive access to the foreshore, such as through private residential properties;
- the provision of modernised and the increased provision of on-water storage and boating facilities in a location where demand is high and supply is low;
- the provision of an increased level of equitable access due to the conversion of moorings to berths, which are more accessible for people with limited mobility;
- improvements to the waterfront for passive recreational boats such as kayaks;
- improvements to the navigation within the marina, which in turn will increase safety;
- the continued provision of an International Clean Marina and Fish Friendly Marina operation;
- the retention of established historical and aesthetic significance of surrounding heritage local and State Heritage items and acceptable impacts on key views;
- the provision of an increased diversity of views that will be a result of the increased maritime activity;
- the provision of some wave sheltering of the shorelines directly behind the proposed extension;
- the cessation of slipway activities which will greatly benefit the amenity of nearby residents, overall water quality and aquatic ecology;
- the provision of new wetted surfaces to promote new encrusting assemblages to colonise and provide a net increase in the hard substratum habitat; and
- indirect employment opportunities for skilled workers during the construction activities.

6.16.3 Social Impacts during operation and construction

During the construction phase, access to the existing moorings will be retained and therefore there will be minimal impact for recreational boaters utilising the marina with the exception of minor navigation implications which is outlined within the Navigation Assessment at **Appendix F**. Furthermore, it is expected that no social impact will occur in relation to parking and traffic generation throughout the surrounding streetscape. This is assessed on the basis that the construction of the marina will generate an additional 10 vehicles per day, and given the current vehicular activity within the area, the additional traffic will have a negligible impact.

Social benefits are anticipated to be generated through employment opportunities in response to the construction works affiliated with the proposed development. Furthermore, local business may feel an indirect flow on effect where higher trading is expected to occur over the course of construction as a result of workers accessing local business for food and other goods and services.

Notwithstanding the above, GHD also consider that there may be a perceived safety risk with the expanded marina operation, which could potentially deter some users from accessing the waters adjacent to the marina. However, it is expected that most people would adapt to this change and continue to access the area. In addition, intermittent

daytime noise for residents living on Drummoyne Avenue and Victoria Place, users of Howley Park and the Cambridge Road Reserve, nearby recreational boaters and due to the construction activities, which may disrupt their usual activities.

In order to reduce the level of perceived social impact during the construction activities, GHD recommend that a construction communications plan be prepared and implemented to inform local stakeholders of project activities, any changes to the navigation area and the mechanism for the provision of feedback.

The expansion of the marina will address the undersupply of storage spaces and services and therefore may enhance accessibility to recreational boating and waterways. By having access to a greater number of berths, vessels currently located at moorings can relocate and accordingly, the safety of and mobility of those using the marina will be improved by not having to move to and from vessels.

Due to the high demand of moorings within the Sydney Harbour Catchment, vessels currently located at moorings within the Gladesville Bridge Marina area will have the opportunity to relocate to the new berths. Accordingly, the supply of available berths will increase at a more affordable price. The flow on effect of a more affordable price is that a greater number of people may have access to recreational boating activities within the Sydney Harbour Catchment.

6.16.4 Mitigation Measures

A construction communications plan be prepared and implemented to inform local stakeholders of project activities, any changes to the navigation area and the mechanism for the provision of feedback.

6.17 Economic Impacts

The marina will provide improved and modern boat storage. It is not expected to have any significant adverse economic impacts, however, there are a number of economic issues that can be identified. These include:

- current market demand for services being offered;
- the impact on construction and operational employment;
- the impact on other businesses in the area; and
- the impact of the proposal on other marinas.

6.17.1 Market Demand

Australian Marina Management Pty Ltd has undertaken a Marina Berth Demand Assessment (refer to **Appendix D**). The Demand Assessment report demonstrates that there is demand for on-water boat storage in Sydney Harbour for 659 vessels and a likely latest demand for marina berth and other on-water boat storage in Sydney Harbour of between 91 and 234 vessels. Furthermore, the Demand Assessment and Marina Strategic Review reports (**Appendices E and D**) also confirms that there is insufficient storage in Sydney Harbour, for a variety of boat sizes, specifically for vessels greater than 25 metres LOA, particularly west of the Sydney Harbour Bridge

6.17.2 Employment

Construction Employment

Up to 14 contractors are anticipated to be employed through the construction of the marina.

Operational Employment

Up to 12 full time employees are anticipated to be employed through the ongoing operation the marina.

6.17.3 Impact on other businesses in the area

The establishment of the marina is expected to result in positive economic impacts including supporting ancillary maritime uses. The success of the marina and the ancillary supporting maritime retail uses coupled with supporting shops/cafes more broadly will contribute towards the overall vitality and viability of the Harbour city. This is expected to generate an increase in employment opportunities of shops in the broader area.

6.17.4 Impact of the proposal on other marinas in the locality

There would not be expected to be any significant impact on the operation of other marinas on Sydney Harbour in this general locality given the lack of other marina facilities available in this part of Sydney Harbour.

6.18 BCA and Fire Engineering

The proposed development will generally meet the relevant deemed-to-satisfy provisions of the BCA. Where non-compliance with the deemed-to-satisfy provisions of the BCA arise, alternate solutions that meet the performance-based criteria will be achieved.

In addition, a fire system will be integrated into the design and management of the facility in accordance with AS3962-2001 (Guidelines for design of marinas) and any other relevant Australian Standards and BCA requirements. Current and future fire protection measures include:

- Portable powder type fire extinguishers suitable located;
- Fire hose reels;
- Fire hydrant; and
- Back-to-base fire alarm system.

Prior to the issue of the Construction Certificate, detailed construction drawings will be prepared and provided to the relevant certifying authority to demonstrate compliance with all relevant provisions.

6.19 Accessibility

The proposed development will meet the relevant accessibility provisions of the BSW, AS1428.1-2009, the *Disability Discrimination Act 1992* and the Disability (Access to Premises — Buildings) Standards 2010. Prior to the issue of the Construction Certificate, a specialist access consultant will be appointed, and detailed construction drawings will be prepared and provided to the relevant certifying authority to demonstrate compliance with all relevant provisions.

6.20 Waste Management

A Waste Management Plan (WMP) (**Appendix V**) has been prepared by SLR to ensure that waste generated by the proposed demolition and construction works as well as the continued operation of the marina is appropriately managed. The WMP has been prepared in accordance with all relevant legislation and guidance, including the aims, objectives and guidelines in the *NSW Waste Avoidance and Resource Recovery Strategy 2014-2021*.

6.20.1 Demolition and Construction Waste Management

With respect to the potential waste generated through the proposed demolition and construction activities, the WMP identifies that the potential waste streams that will be generated through the proposed demolition and construction activities will comprise:

- Minor construction waste including fit-out offcuts and minor trimmings;
- Unspecified waste from the workshop demolitions;
- Packaging waste; and
- Work compound waste from on-site employees.

With regard to the management of the demolition and construction waste, SLR notes that the quantity of generated waste is anticipated to be small, however, the types of waste has the potential to be quite expansive. The WMP therefore provides a detailed breakdown of the potential waste streams, the NSW EPA Classification and the proposed management method. The WMP also provides a number of recommendations in regard to:

- waste avoidance;
- re-use, recycling and disposal;
- waste storage and servicing;
- contaminated or hazardous waste management;
- signage;
- site inductions;
- monitoring and reporting; and
- roles and responsibilities.

In order to appropriately manage and mitigate any potential adverse impacts arising from waste generation through the demolition and construction phases of the project. The relevant components of the WMP, prepared by SLR will be incorporated into the final Construction Management Plan protocols for the proposed development, as discussed in **Section 6.21**.

6.20.2 Operational Waste Management

The operational management of Gladesville Bridge Marina is proposed to be undertaken in line with current practice procedures. Furthermore, as the proposed development seeks alterations and additions to the existing marina 'use' the type of waste generated by the expanded marina facility is expected to continue to be mainly food, cardboard and drink containers. However due to the increase in the number of boats that will be berthed at the marina, the volume of waste generated is anticipated to increase.

At present, the existing waste collection system comprises:

- provision of two mixed waste bins – one (1) x 3m³ front lift bin and one (1) x 1,100ltr front lift bin;
- a collection frequency of twice per week in winter by a private contractor;
- a collection frequency of three times a week in summer by a private contractor; and
- a collection frequency of four times a week during peak holidays such as Christmas, New Year and Australia Day by a private contractor.

Based on this existing system, SLR has calculated the volume of waste that is currently generated per boat and the anticipated volume of waste that will be generated once the proposed development is complete. The anticipated operational waste generation rates and required number of collections are provided in **Table 16**.

Table 16 Anticipated operational waste generation rates

Season	Waste generation per boat (L/boat)	Proposed boat capacity	Total weekly waste generations	Number of collections per week
Winter	83	130	10,790 L	3
Summer	124	130	16,250 L	4
Peak Holiday	166	130	21,580 L	6

Source: SLR

Accordingly, based on the fact that no additional bins are proposed to be provided on site, SLR's assessment has found that one additional collection is required in winter and summer, and two additional collections will be required during the peak holidays.

It is noted that a separate DA has recently been submitted to Crown Lands for landowners' consent which seeks to upgrade the existing waste storage area located within Lot 7058 in DP 94083, commonly known as Howley Park.

In addition to waste generation rates, the WMP assesses the suitability of the current waste storage and waste servicing arrangements and confirms that:

- the proposed waste storage facilities comply with Council's DCP that states that waste storage areas are to be located in areas where negative noise, odour, visual and traffic impacts to adjoining properties are minimised;
- the proposed waste servicing arrangements by GBM's appointed contractor satisfy Council's DCP requirements;
- the proposed increase in frequency of waste collections are expected to increase the number of truck movements marginally.

In addition, SLR provide a number of recommendations to ensure that best practise sustainability programs are met, and waste generated by the marina will continue to be suitably managed. These recommendations relate to:

- litter management;
- waste avoidance, re-use and recycling;
- bulky or hazardous waste management;
- communication strategies;
- signage;
- monitoring and reporting; and
- roles and responsibilities.

In order to appropriately manage and mitigate any potential adverse impacts arising from waste generation, the operational components of the WMP, prepared by SLR will be incorporated into the operational management of the marina.

6.21 Construction Management

A preliminary Construction Management Plan has been prepared by SMC Marine and is included at **Appendix S**. The CMP clearly defines the general scope of works, the proposed construction hours of work and the site manager contact details. In addition, the CMP includes the procedures that will be implemented in order to manage the construction activities such as:

- Training;
- Reporting;
- Construction methodology; and
- Marine traffic management

In order to mitigate against all potential adverse impacts during the construction phases of the development, the management measures provided in the preliminary CMP will be implemented. Furthermore, a detailed final CMP prepared and submitted to the Principal Certifying Authority prior to the commencement of works will include management measures in regard to:

- Land based construction traffic management;
- Demolition management;
- Waste management;
- Noise and vibration management;
- Environmental management;
- Dust management;
- Acid sulphate soils management; and
- Stormwater and sediment control.

The detailed final CMP will be supported by a Communications Plan for the construction phase.

6.21.1 Construction Traffic Management

The Transport Impact Assessment prepared by Colston Budd Rodgers and Kafes Pty Ltd (CBRK) (**Appendix U**) provides preliminary Construction Management principles that will be incorporated into the detailed final CMP to mitigate any adverse impacts that result from the proposed works. In summary, the following is proposed:

- parking on site for construction workers will be provided by site management;
- an area on site for construction equipment will be provided by site management;
- vehicle access to the site from Victoria Place will be retained;
- existing pedestrian routes in Victoria Place will be retained;
- access to adjacent properties in Victoria Place will be retained;
- construction activity will be confined to the approved hours of construction; and
- on-street parking in Victoria Place will be maintained.

6.21.2 Protection of the Aquatic Environment

The Ecology Assessment report, prepared by Marina Pollution Research (**Appendix J**) provides specific details that relate to the protection of the aquatic environment which will be incorporated into the Construction Management Plan. Accordingly, all contractors will implement the precautions outlined within the Ecology Assessment report to ensure that their activities do not cause any harm to the inshore rocky reef or rubble habitat, or areas of marine vegetation near the slipway.

In addition, to ensure that no adverse impacts to water quality within Sydney Harbour arise during the construction phase, a Sediment and Erosion Control Management Plan, will be prepared in line with the recommendations and criteria outlined within the Sediment Management Report, prepared by Royal Haskoning DVH (**Attachment N**) is prepared and incorporated into the Construction Management Plan.

6.22 Site Suitability

As demonstrated through the assessment above, the proposed development has been specifically designed to respond to the opportunities and constraints on the site. The site is considered suitable for the proposed development as:

- the land based and water-based works are permissible with consent, consistent with the objectives of each zone, while responding to the needs of a modernising marina and the demands for increased berths for recreational users across Sydney Harbour;
- the proposal will not result in any undue adverse impacts on air quality, wave climate, noise, waste or water quality. Potential sources of risk associated with the construction works and operation of the marina including car parking, light spillage, navigation and waste materials can be managed with the appropriate safeguards and mitigation measures outlined at Section 7;
- the existing and proposed parking provision satisfies the requirements of both the draft Australian Standard and the surveyed requirement of the existing marina and the proposed parking provision is appropriate and meets the parking and traffic generation demands of the expanded marina;
- opportunities to establish new commercial marinas are extremely limited in Sydney Harbour, with a range of factors influencing feasibility, including the availability of waterfront land, ownership and lease requirements, and environmental constraints. Indeed, the Demand Assessment confirmed that in the last 10 years there has been no net growth in marina facilities within the western section of Sydney Harbour. There are limited opportunities available to expand any nearby commercial marinas and the site is capably able to accommodate the expansion with balanced and considered environmental impacts as assessed throughout this EIS. As recognised by the Strategic Review, the provision of new boat storage facilities on Sydney Harbour to address the existing shortfall is consistent with State Government policy.
- the potential environmental impacts of the development have been carefully evaluated and, where considered necessary, mitigating measures have been proposed; and
- Visual impacts from the development are considered to be either negligible or minor.

Therefore, the proposed development is considered suitable for the site and will result in a positive contribution to the Sydney Harbour.

6.23 Public Interest

The proposed alterations and additions to the Gladesville Bridge Marina is in the public interest for a range of reasons outlined in this EIS. The project has a number of benefits, including:

- the upgrading of recreational facilities within Sydney Harbour, by providing an expanded and modern marina for the recreational boating community, and catering for the growing demand for larger berths within the region. Consistent with State Government policy;
- proposed relocation of the commercial moorings, resulting in a widened navigation channel;
- improving public facilities at the marina and reducing environmental impacts by improving the public domain through the cessation of slipway activities;
- the provision of an increased level of equitable access due to the conversion of moorings to berths, which are more accessible for people with limited mobility;
- improvements to the waterfront for passive recreational boats such as kayaks;
- the proposal provides an overall water quality improvement and the cessation of slipway activities is the biggest benefit for overall water quality and aquatic ecology of the locality and enhances local resident amenity; and
- the existing and expanded marina will continue to operate as an International Clean Marina, Boating Destination Berth and a Fish Friendly Marina

Consequently, the project is in the public interest and should be approved subject to conditions.

7.0 Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed in **Table 17** below. These measures have been derived from the previous assessment in **Section 6.0** and those detailed in appended consultants' reports.

Table 17 Proposed mitigation measures

Mitigation Measure	Responsibility	Timing
Contamination		
Minimise the opportunity for contact with the sediments on the lower part of the slipway by: - only allowing marina personnel on the slipway, in line with current access restrictions; - providing fencing to prevent access to the lower part of the slipway; and - providing signage at the top of the slipway to inform people that access is prohibited and access to the seabed from the slipway is not safe.	Construction Manager/ Gladesville Bridge Marina	Prior to construction commencing
Aquatic Ecological Impact Management		
- Construction Management - The measures specified within Section 4.3 of the Ecology Assessment, prepared by Marine Pollution Research (Appendix J) that relate to the protection of the aquatic environment during the construction phase will be incorporated into the detailed Construction Management Plan to ensure that all contractors ensure that their activities do not cause any harm to the inshore rocky reef or rubble habitats, or areas of marine vegetation near the slipway.	Construction Manager	Construction
- During operation, - ensure that suitable vessel speed limits and docking procedures are specified within the Standard Operating Procedures provided to boat owners, to reduce the risk of vessel impacts on adjacent and underlying aquatic habitats associated with vessel movements in and out of the marina; and - ensure appropriate waste prevention and minimisation measures are specified within the operational management plan for the marina to reduce the risk of impacts associated with rubbish disposal, spillages, hydrocarbon spills and grey and black water spillages are minimised.	Gladesville Bridge Marina	Operation
Light Spill		
The design of the outdoor lighting will minimise any adverse effects through the implementation of the General and Site Specific Mitigation measures outlined within the Light Spill Assessment, prepared by SLR, dated October 2019.	Construction Manager	Detailed Design
Greenhouse Gas Emissions		
- All plant and equipment used during the construction works will be regularly maintained to comply with the relevant exhaust emission guidelines; - The following measures will be required to be considered by the appointed contractor (s): - construction materials sourced locally where possible; - plant and equipment will be switched off when not in constant use and not left idling; - plant and equipment brought onsite will be regularly serviced and energy efficient vehicles or equipment will be selected where available; - any plant and equipment that is not working efficiently will be removed from the site and replaced as soon as possible; and - construction works will be planned to ensure minimal movement of plant and equipment (including barges).	Construction Manager	Construction
In order to minimise the risk of any unintended greenhouse gas emissions during operation, all equipment will be maintained appropriately.	Gladesville Bridge Marina	Operation

Mitigation Measure	Responsibility	Timing
Hazard identification and Management		
- Chemical and spill management - Each chemical will have appropriate labelling, separation (where necessary) and disposal in accordance with the relevant Australian Standards. - Emergency services will have access to the material safety data sheet register of all chemicals that are located on site. - Appropriate safe work procedures will be implemented for the handling of all chemicals including transfer, storage, spill prevention and clean up requirements.	Gladesville Bridge Marina	Operation
- Fire prevention and protection - A fire system will be integrated into the design and management of the facility in accordance with AS3962-2001 (Guidelines for design of marinas) and any other relevant Australian Standards and BCA requirements. Likely fire protection measures that will be included comprise: - Portable powder type fire extinguishers suitable located; - Fire hose reels; - Fire hydrants; and - Emergency stop equipment suitably located.	Gladesville Bridge Marina	Detailed Design and Operation
Air Quality Management		
- During Construction - Plant and equipment are to be maintained in good condition to minimise spills and air emissions that may cause nuisance. - Dust suppression will be undertaken as required using water sprays, water carts or other media on: - Sand, spoil and aggregate stockpiles; - During the loading and unloading of dust generating materials. - If the works create levels of dust which may significantly impact on residential amenity, the works will be modified or stopped until the dust hazard is reduced to an acceptable level; and - Construction vehicles with potential for loss of loads (such as dust or litter) will be covered when using public roads.	Construction Manager	Construction
- During Operation - A maximum idling during of 10 minutes are to be included as part of the Marina's Standard Operating Procedures.	Gladesville Bridge Marina	Operation
Aboriginal Heritage Unexpected Finds Procedure		
- Despite the likelihood of relics being very low and ground disturbance minimal, during Construction an unexpected Aboriginal Heritage Unexpected Finds Procedure will be implemented in consultation with an appropriately qualified archeologist. This will involve: - Stop all work in the immediate area of the item and notify the Project Manager - Establish a 'no-go zone' around the item. Use high visibility fencing, where practical. - Inform all site personnel about the no-go zone. No further interference, including works, ground disturbance, touching or moving the item must occur within the no-go zone. - Contact archaeologist and, where required, an Aboriginal site office - Notify Department of Planning, Industry and Environment (DPIE) (formerly OEH).	Gladesville Bridge Marina in consultation with heritage archaeologist	Construction
Construction Management		
The detailed construction management plan will be prepared and updated taking into account the recommendations of various technical reports including:	SLR	Prior to construction

Mitigation Measure	Responsibility	Timing
- Sediment and Erosion Control Plan as recommended by the Sediment Management Report (Appendix N) and the Water Management Plan (Appendix O). - The Air Quality Assessment (Appendix Q). • The Construction Noise and Vibration Management Plan will include the following measures: - respite periods will be provided after continuous construction activity; - high noise generation works will be undertaken during less sensitive hours; - the distance between plant items, equipment and construction works from noise sensitive receivers will be maximised where possible; - lower vibration generation items as well as screw pile driving will be used where possible to reduce noise; - loading and unloading will be undertaken away from noise sensitive receivers and deliveries will be received during standard construction hours; and - consecutive works in the same site area will be minimised where possible. - in the event that a noise complaint is received, the Gladesville Bridge Marina complaints procedure should be carried out. All complaints will be responded to in the required timeframe and action taken recorded .		
Construction Communications Plan		
• A construction communications plan be prepared and implemented to inform local stakeholders of project activities, any changes to the navigation area and the mechanism for the provision of feedback.	Gladesville Bridge Marina and GHD	Prior to construction
Marina Safety and Navigation		
• The marina will be required to adhere to the Marine Safety Regulations 2016 and Act. • Standard Operating Procedures as contained in the Navigation Assessment will be adopted in the expanded marina operations.	Gladesville Bridge Marina and users	During operation

8.0 Justification of the Proposal

In general, investment in major projects can only be justified if the benefits of doing so exceed the costs. Such an assessment must consider all costs and benefits, and not simply those that can be easily quantified. As a result, the EP&A Act specifies that such a justification must be made having regard to biophysical, economic and social considerations and the principles of ecologically sustainable development.

This means that the decision on whether a project can proceed or not needs to be made in the full knowledge of its effects, both positive and negative, whether those impacts can be quantified or not.

The proposed development involves alterations and additions to an existing marina. The assessment must therefore focus on the identification and appraisal of the effects of the proposed changes over the site's existing condition.

Various components of the biophysical, social and economic environments have been examined in this EIS and are summarised below.

8.1 Social and Economic

The environmental impact assessment of the proposed development has demonstrated that the development will have an overall positive social and economic impact. The proposal will address the recognised shortage of suitable maritime facilities for the existing and future boating community, particularly west of the Sydney Harbour Bridge. In addition, the proposal:

- provides direct employment during the construction phase and 12 operational jobs;
- provides upgraded marina facilities that will meet the need for improved boat storage facility on Sydney Harbour;
- facilitates efficient and safe public access to the waterway by repositioning and extending the existing pontoons, increasing the number of wet berths and reducing the number of swing moorings to enable the Parramatta River channel to expand by approximately 28m; and
- provides an injection of approximately \$10+ million into the NSW economy.

8.2 Biophysical

The environmental impact assessment of the proposed development has demonstrated that:

- the proposal would not have any significant effect on threatened species, populations or ecological communities or their habitat arising from the construction or use of the proposed development. The proposal will not have an impact on any matters of national environmental significance under the Environment Protection and Biodiversity Conservation Act 1999, *Fisheries Management Act 1994* or *Biodiversity Conservation Act 2016*.
- the proposal would have an overall water quality improvement, negligible losses of sediment benthic aquatic habitat and organisms to additional piling, but a long-term gain in available hard-substratum marine vegetation habitat;
- the proposal will not result in any undue adverse impacts on air quality, wave climate, noise, waste or water quality. Potential sources of risk associated with the construction works and operation of the marina including car parking, light spillage, navigation and waste materials can be managed with the appropriate safeguards and mitigation measures.

8.3 Ecologically Sustainable Development

The EP&A Regulation lists four principles of ecologically sustainable development to be considered in assessing a project. They are:

- The precautionary principle;
- Intergenerational equity;
- Conservation of biological diversity and ecological integrity; and
- Improved valuation and pricing of environmental resources.

An analysis of these principles follows.

Precautionary Principle

The precautionary principle is utilised when uncertainty exists about potential environmental impacts. It provides that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. The precautionary principle requires careful evaluation of potential environmental impacts in order to avoid, wherever practicable, serious or irreversible damage to the environment.

The environmental impacts associated with the marina alterations and additions can be identified and quantified to an appropriate degree of certainty and impacts can be mitigated. The marina development will have a beneficial outcome and there are no significant risks arising to community health that cannot be appropriately mitigated. The potential environmental impacts of the development have been carefully evaluated and, where considered necessary, mitigating measures have been proposed.

Measures included within the proposed development to mitigate against possible future risks include:

- inclusion of stormwater treatment measures to eliminate present or future impacts on water quality; and
- minimising the opportunity for contact with the sediments that are located on the lower part of the slipway.

When taking into account the above ESD measures, this EIS has not identified any serious threat of irreversible damage to the environment and therefore the precautionary principle does not impede the proposal progressing.

Intergenerational Equity

Inter-generational equity is concerned with ensuring that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. The proposal has been designed to benefit both the existing and future generations by:

- addressing the recognised shortage of suitable maritime facilities for the existing and future boating community;
- implementing safeguards and management measures to provide opportunities to protect environmental values;
- facilitating business investment and job security to provide opportunities for future generations; and
- continuing to operate as an International Clean Marina and a Fish Friendly Marina.

The proposal has been designed to benefit both the existing and future generations by:

- providing improved and expanded marine facilities for future generations to appreciate and enjoy;
- implementing safeguards and management measures to protect environmental values.
- continuing job creation during construction and operation; and
- improving the public domain through the cessation of slipway activities.

The proposal has integrated short and long-term social, financial and environmental considerations so that any foreseeable impacts are not left to be addressed by future generations. Issues with potential long-term implications such as waste disposal would be avoided and/or minimised through construction planning and the application of safeguards and management measures described in this EIS and the appended technical reports.

Conservation of biological diversity and ecological integrity

The principle of biological diversity upholds that the conservation of biological diversity and ecological integrity should be a fundamental consideration.

As demonstrated within the EIS and the Ecology Assessment report (**Appendix J**) prepared by Marina Pollution Research, measures will be implemented during the construction activities and operational phase, to ensure that the proposal does not have any significant effects on the biological diversity and ecological integrity of the land based and water based portions of the site. Design amendments have also been made to remove the requirement for excavation within the site. These measures contribute directly to the conservation of biological diversity and ecological integrity within Sydney Harbour.

Improved valuation, pricing and incentive mechanisms

The principles of improved valuation and pricing of environmental resources requires consideration of all environmental resources which may be affected by a proposal, including air, water, land and living things. The value of the environmental resources affected by the proposal has been acknowledged through the examination of the environmental consequences of the proposal and identification of mitigation measures to address potential impacts, including any short-term construction impacts.

Mitigation measures for avoiding, reusing, recycling and managing waste during construction and operation will be implemented to ensure resources are used responsibly in the first instance. Furthermore, the proposal will not have any significant impacts upon air quality and measures will be implemented to minimise and reduce greenhouse gas emissions and energy.

9.0 Conclusion

The Environmental Impact Statement (EIS) has been prepared to consider the environmental, social and economic impacts of the proposed marina. The EIS has addressed the issues outlined in the Secretary's Environmental Assessment Requirements (**Appendix A**) and accords with Schedule 2 of the EP&A Regulation.

Having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development, the carrying out of the project is justified. In summary:

- the proposal is permissible with consent and meets all requirements of the relevant planning controls for the site;
- the proposal is consistent with and complies with all the relevant strategic policies, environmental planning instruments and controls.
- the environmental risks associated with the construction and operation of the facilities can be appropriately mitigated;
- the development will result in a range of positive social and economic benefits to Sydney.
- there are no adverse impacts on any heritage items in the vicinity;
- the berths have been designed to minimise visual impact and the development is of an appropriate scale and appearance given its location and intended use;
- the development provides adequate parking to service the uses and will not significantly increase on-street parking demand nor cause any adverse traffic impacts;
- the proposal addresses the demand for additional floating marina berths in Sydney Harbour;
- the proposal provides direct employment during the construction phase and permanent employment during the operational phase;
- the proposal provides improved maritime facilities that will service the boating community's needs and broader community needs as a focal point for recreation that offers public access for those who do not have exclusive access to the foreshore of Sydney Harbour.

Given the planning merits described above, and the significant public benefits associated with the proposed development, it is recommended that this application be approved.