environmental assessment

FOR A 50 BERTH MARINA AND CAR PARK RECONFIGURATION

CROWN LAND ABOVE AND BELOW MEAN HIGH WATER MARK
OFF BRISBANE WATER DRIVE BEING,
LOT 519 DP 729020

Applicant Gemsted Pty Ltd

August 2011

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Document Control

Issue No.		Author	
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B	24.8.11	Stephanie Van Dissel	ORIGINAL SIGNED
C	22.09.11	Stephanie Van Dissel	ORIGINAL SIGNED

Limitations Statement

This report has been prepared in accordance with the scope of services agreed between ADW Johnson Pty Ltd and the Client. The scope of services was defined by the requests of the Client and by time and budgetary constraints set by the Client.

All reasonable skill, diligence and care have been applied within the agreed scope of services and the resources made available to it by agreement with the Client. Any responsibility to the Client and others in respect of matters outside the scope of the above is disclaimed.

Unless otherwise specified in this report, information and advice received from external parties during the course of this project was not independently verified. However, to the best of our ability, checks were undertaken to determine relevancy and currency of information prior to use.

Prepared under the Environmental Planning and Assessment Act 1979.

Section 75F

EA prepared by

Name:
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Po Box 3717
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In respect of

Development Application

Applicant Name:

Gemsted Pty Ltd

Applicant Address:

C/ - ADW Johnson
Po Box 3717
TUGGERAH NSW 2259

Land to be developed:

Crown land above and below mean high water mark off Brisbane Water Drive, Koolewong

Lot no. DP/MPS, vol/fol, etc:

Lot 519 DP 729020

Environmental Assessment

An environmental assessment is attached.

Certificate

I certify that I have prepared the contents of this Statement and to the best of my knowledge:

- It is consistent with Section 75F of the Environmental Planning and Assessment Act 1979;
- The Statement contains 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:
Date: 24/08/2011
Submission of Environmental Assessment (EA)

Stephanie Van Dissel

Executive Summary

[Note: This Executive Summary should be read making reference to drawings, plans and technical product specification example (refer Appendix 1a)].

ADW Johnson has been engaged by Gemsted Pty Ltd to assist in the development of a fifty (50) berth marina and reconfiguration of the existing car park "the Project" at 19 Brisbane Water Drive, Koolewong. The proposal is submitted by ADW Johnson on behalf of Gemsted Pty Ltd who is the current lessee of the subject site from the Land and Property Management Authority.

By letter dated 24 November 2010, the Department of Planning advised the following:

> *"On 22 November 2010, the A/Director, Regional Projects as delegate for the Minister, formed the opinion under clause 6 of the State Environmental Planning Policy (Major Development) 2005 (the SEPP) that the above proposal is development of a kind that is described in Schedule 1 of the SEPP"* (refer Appendix 2).

Accordingly, the consent authority for the proposed development is the Minister for Planning.

The Project comprises the following general components:

- The upgrade of the existing timber jetty from 1 metre to 1.5 metres in width and raising by 500mm;
- Construction of a fifty (50) berth marina extending approximately 100 metres into Brisbane Water (Murphy's Bay) from the end of the existing timber jetty;
- The main walkway of the proposed marina will be 2.5 metres wide, with two arms, in a "reverse F" formation; and
- Upgrade and reconfiguration of the existing car park to provide eleven (11) additional car parking spaces to the thirty three (33) existing spaces.

The water based site is subject to the provisions of the *Gosford Planning Scheme Ordinance 2008* where the site is unzoned and development for the purpose of a 'marina' is permissible with consent under Clause 49.

Community consultation was undertaken as part of the environmental assessment with key issues elaborated upon within the body of the report.

These issues, along with the Director-Generals Requirements (DGRs) (refer Appendix 3), have been addressed in expert reports submitted with this application.

Land Owners Consent from the Land & Property Management Authority has been obtained and accompanies this application (refer Appendix 4).

The Environmental Assessment concludes that:

- The Project is an appropriate development accurately responding to current and future demand for watercraft berthing facilities.

- The Project is a positive contribution to Koolewong and the Brisbane Water aquatic recreational users in general.

- In addressing the environmental impacts of the Project and the suitability of the site, the specialist reports have demonstrated that any environmental impacts are minimal and can be suitably managed and mitigated.

- The Project does not restrict the navigation channel for other waterway users or impact on the existing and future opportunities for public recreation.

- The Project will have minimal effect on existing coastal processes and will be affected to a minimal extent by coastal processes.

- The Project will have no impact on Aboriginal Cultural Heritage or Historical Archaeology.

- The Project will have no adverse aural impacts on the surrounding residential and scenic amenity.

- Expected traffic generation for the Project is considered acceptable for the surrounding road network with parking facilities meeting numeric requirements and safety standards.

- The Project will not be visually obtrusive when view from numerous high profile points within the locality, will not detract from the natural beauty of Brisbane Water and will not block any significant views.

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APPENDICES

1.0 Introduction

This Environmental Assessment (EA) describes and assesses the environmental impacts of the proposed marina in Murphys Bay within Brisbane Water, Koolewong and associated car parking reconfiguration, and is submitted to the Minister for Planning and Director General of Planning to:

- Provide an environmental assessment of the project; and
- Apply, under Section 75E of the Environmental Planning and Assessment Act, 1979 ("the Act") for the approval of the Minister to carry out the Project.

The applicant requests that the Minister grants approval to the Project under Section 75J of the Act.

1.1 CONSENT AUTHORITY

By letter dated 24 November 2010, the Department of Planning advised the following:

> *"On 22 November 2010, the A/Director, Regional Projects as delegate for the Minister, formed the opinion under clause 6 of the State Environmental Planning Policy (Major Development) 2005 (the SEPP) that the above proposal is development of a kind that is described in Schedule 1 of the SEPP"* (refer Appendix 2).

The consent authority for the proposed development is the Minister for Planning.

1.2 COMPLIANCE WITH THE DIRECTOR-GENERAL'S REQUIREMENTS (MP10_0209)

The Director-General's Requirements compliance table located within Section 7 outlines where the Director-General's Environmental Assessment Requirements for the project have been addressed in this report and its appendices.

It is ADW Johnson's view that the Director-General's Requirements have been adequately addressed within this report and within the annexed specialist reports. The adequacy of this is to be determined by the consent authority and relevant Government Authorities.

1.3 LAND OWNERS CONSENT

Land Owners Consent from the Land & Property Management Authority has been obtained and accompanies this application (refer Appendix 4).

1.4 THE ENVIRONMENTAL ASSESSMENT

This EA has been prepared on behalf of the Gemstead Pty. Ltd by ADW Johnson and is based on information from the Applicant, expert consultants and various government agencies.

The following specialist studies have been prepared as part of the EA.

- Aquatic Ecology Report prepared by *Cardno Ecology Lab* (refer Appendix 5);

- Coastal Processes Investigations prepared by *Cardno Ecology Lab* (refer Appendix 6);
- Aboriginal Cultural Heritage & Historical Archaeological Assessment prepared by *Insite Heritage P/L* (refer Appendix 7);
- Noise Impact Assessment prepared by *Spectrum Acoustics* (refer Appendix 8);
- Traffic Assessment Report prepared by *TPK and Associates P/L* (refer Appendix 9);
- Business Case for Marina prepared by *Coleman Ingham Chartered Accountants* (refer Appendix 10);
- Visual Impact Assessment prepared by *ADW Johnson* (refer Appendix 11) and
- Community Consultation undertaken by *Brilliant Logic* (refer Appendix 12).

The following authorities have provided their consent/comments:

- Land & Property Management Authority (refer Appendix 4);
- New South Wales Maritime (refer Appendix 13);
- Industry & Investment NSW (Fisheries) (refer Appendix 14);
- Hunter-Central Rivers Catchment Management Authority;
- New South Wales Office of Water (refer Appendix 15);
- Roads and Traffic Authority (refer Appendix 16);
- New South Wales Rural Fire Service (refer Appendix 17);
- New South Wales Industry & Investment (refer Appendix 18);
- New South Wales Environment, Climate Change & Water (refer Appendix 19); and
- Gosford City Council (refer Appendix 20); and
- Environmental Solutions (private waste contractor) (refer Appendix 24).

2.0 The Site and Surrounding Environment

2.1 THE SITE

The site of the proposed marina is located towards the southern end of Murphys Bay and makes up one of the many inlets of Brisbane Water in the Gosford City Local Government Area. The site is located approximately two kilometres north of Woy Woy, 500 metres south of Koolewong and is situated on the north eastern side of Brisbane Water Drive (see Figure 1).

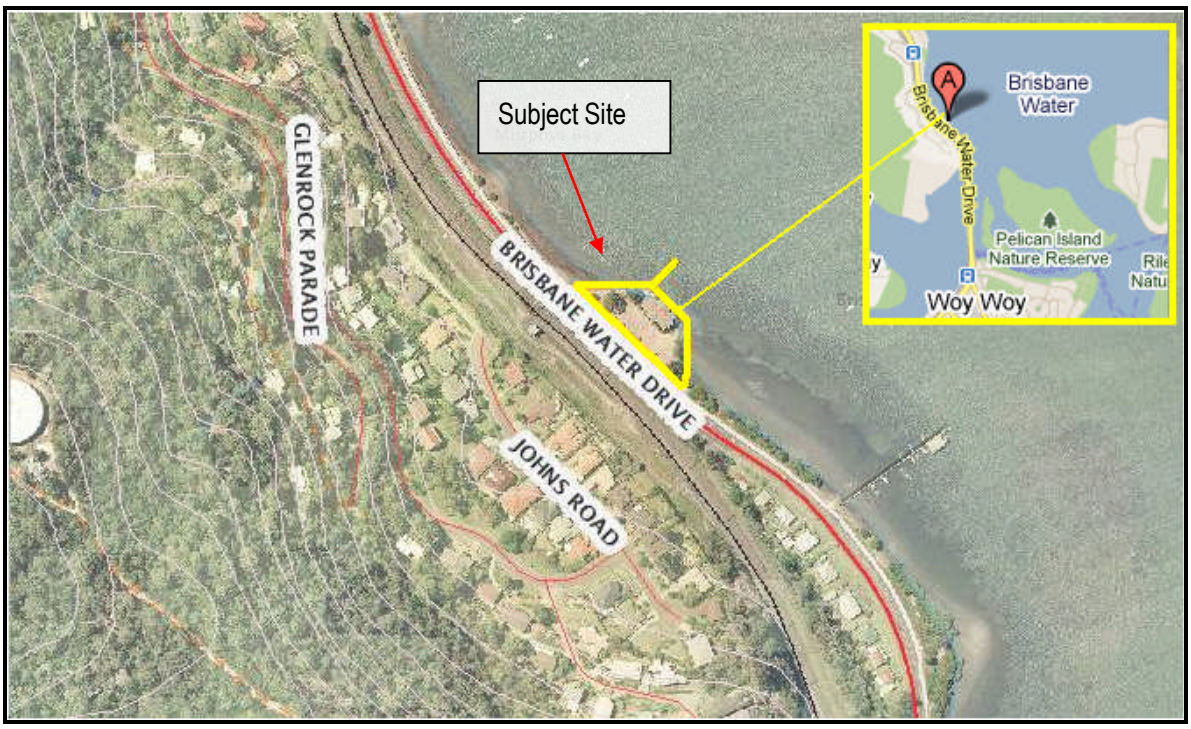

Figure 1: Locality Plan (with broader location insert)

The site is described as Crown land above and below mean high water mark (MHWM) off Brisbane Water Drive, being Lot 519 DP 729020 (refer Appendix 4).

The site consists of an irregular shaped allotment with a total area of 2533m^2 above MHWM and contains a two storey building known as 'The Boathouse' (see Figure 2, 3 and 4). The ground floor of this building is currently used as a restaurant (The Boathouse Waterfront Restaurant and Function Centre) with the first floor containing numerous vacant offices (refer Appendix 1b).

Figure 2: Boathouse Waterfront Restaurant and jetty as viewed from Brisbane Water

Figure 3: Boathouse Waterfront Restaurant as viewed from car park

Figure 4: Boathouse Waterfront Restaurant as viewed from across Brisbane Water Drive

2.2 EXISTING DEVELOPMENT

The site contains an existing restaurant building approved under Development Application No. 21637 on 11 February 1997. The specifics of the existing approved two storey building development are as follows:

- Ground Floor:
  - Restaurant (114.2m^2 net leasable area (GLA);
  - Enclosed verandah (66.4m^2); and
  - Associated kitchen, amenities and foyer.

- First Floor:
  - Seven (7) offices (total 181.1m^2 NLA); and
  - Verandah.

The restaurant is closed Mondays and Tuesdays and some Sundays depending on bookings. The most frequented period is Saturday night between 7.00pm to 11.00pm, followed by Friday night.

The office space is open standard business hours from 9.00am to 5.00pm Mondays to Fridays, however at present none of the offices are occupied.

An existing wooden jetty extends approximately 30 metres into Brisbane Water to the north of The Boathouse (see Figure 5).

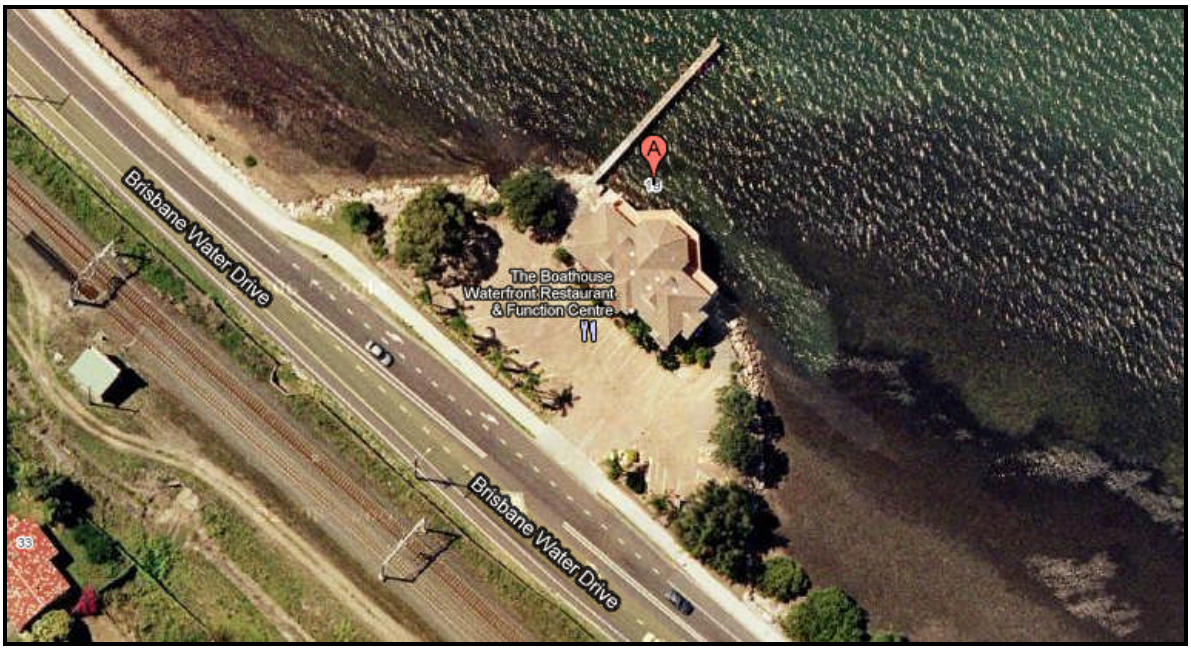

Figure 5: Aerial photo showing existing restaurant and jetty

2.3 TRAFFIC AND ACCESS

Access is currently gained via a two way ingress/egress off Brisbane Water Drive to the car parking area south-west of the building.

The current car parking layout provides for 33 spaces, 18 of which are required for the restaurant facility approved under DA 21637 (see Figure 6).

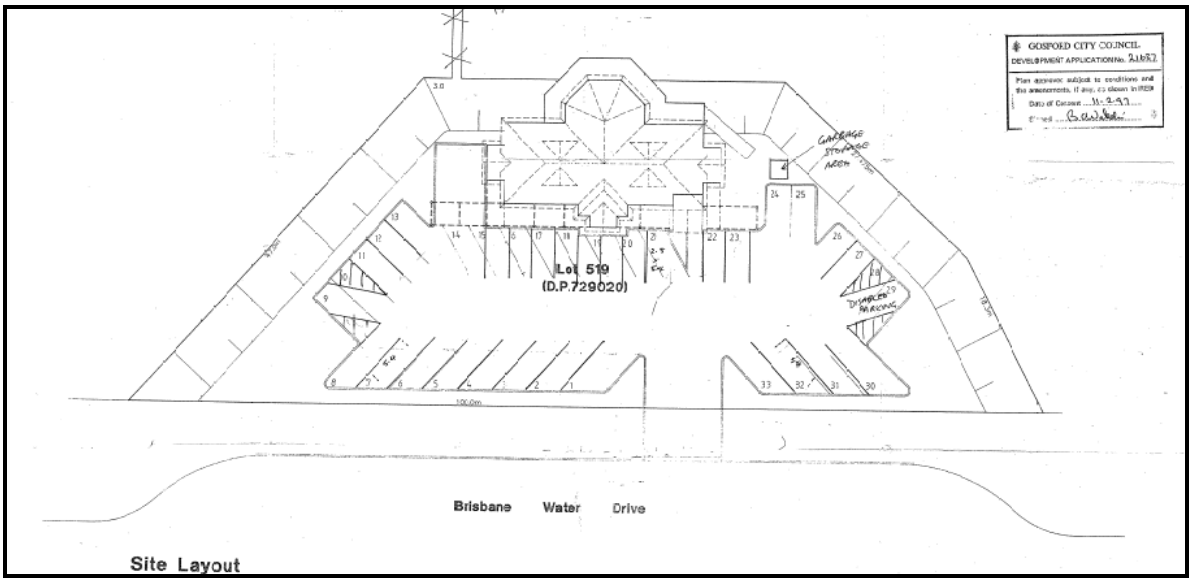

Figure 6: Existing car park layout

2.4 SEAGRASS MAPPING

Sea grasses including *Posidonia australis*, *Zostera capricorni*, and *Halophila sp.* are present within the vicinity of the proposal but not within the area of works (see Figure 7). The potential impact on this community is discussed at length throughout the report and within Appendix 5.

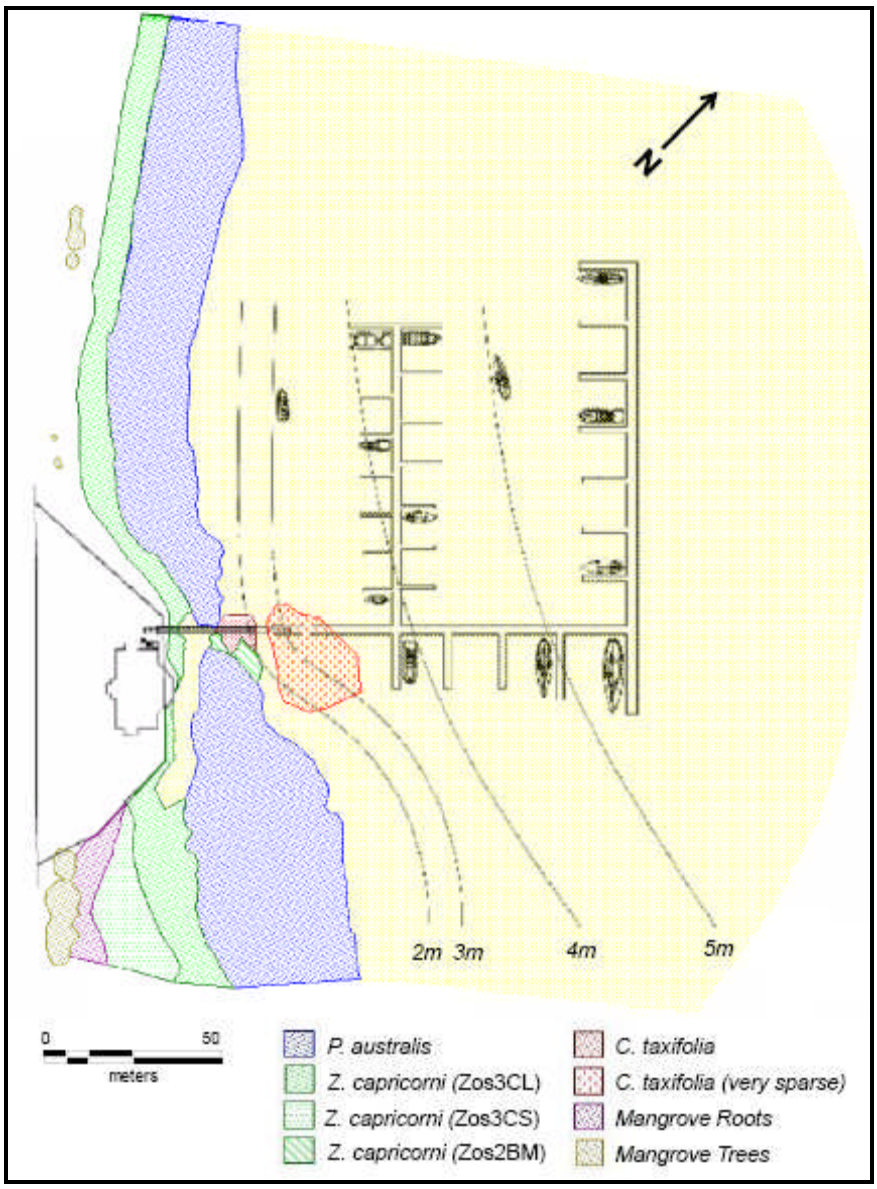

Figure 7: Habitat map of marine vegetation present in the vicinity of the current jetty and proposed marina structures.

2.5 SURROUNDING CONTEXT

The site is bordered by Brisbane Water Drive to the south west and Brisbane Water (Murphy's Bay) surrounding the remainder. A strip of public open space exists between the car park and Brisbane Water Drive containing a pedestrian/cycle way linking Gosford and Woy Woy.

The visual character of the surrounding land is made up of a pocket of low density single dwellings on the opposite side of Brisbane Water Drive extending approximately 200 metres both north and south of the site with Brisbane Water National Park abutting this to the south-west.

The Great Northern Railway runs along the coast from Woy Woy to Tascott generally following Brisbane Water Drive, with the subject site being the only developed located to the east of both of these. This infrastructure provides a minimum distance of at least 100 metres from the subject site to the nearest dwelling to the south west.

Numerous structures mainly private jetties extend below MHWM both north and south of the subject site and range in length from 30-50 metres. In addition to this, a number of swing moorings are located just north-east of the existing jetty, giving the area a very nautical feel (see Figure 8).

Figure 8: Proposed marina in comparison to existing structures below MHWM

A Council stormwater discharge point servicing the residences on the opposite side of the railway line exists to the left of the site (see Figure 9). The area of proposed works is clear of the point of discharge.

Figure 9: Looking back along the jetty to existing stormwater outlet

2.6 NEARBY BOATING FACILITIES

The following existing boating related services exist within the vicinity of the proposed marina:

- Booker Bay Marina (approximately 6kms to SSE)
  - Swing Moorings and Fixed Berthing;
  - Maintenance Services including anti-fouling;
  - Slip-way; and
  - Re-fuelling.

- Killcare Marina (approximately 8kms to SE)
  - Swing Moorings and Fixed Berthing;
  - Maintenance Services including anti-fouling;
  - Slip-way;
  - Re-fuelling; and
  - Pump-out facilities.

- Empire Bay Marina (approximately 6kms to SE)
  - Swing Moorings and Fixed Berthing;
  - Maintenance Services including anti-fouling;
  - Slip-way; and
  - Re-fuelling.

- Machman's Marina (approximately 6kms to south-south-east)
  - Swing Moorings and Fixed Berthing;
  - Maintenance Services including anti-fouling;
  - Slip-way; and
  - Re-fuelling.

- Anderson's Marina (approximately 7kms to SSE)
  - Swing Moorings and Fixed Berthing; and
  - Slip-way.

- Gosford Sailing Club (approximately 6kms to NE)
    - Fixed Berthing; and
    - Pump-out facilities.

- Gosford Council Wharf (approximately 6kms to NNE)
    - 24 hour free self-serve pump-out facilities.

2.7 NEARBY SWING MOORINGS

There are numerous swing moorings within the vicinity of the proposed marina with two of these related to the existing jetty to be removed/surrendered. A further swing mooring has been cancelled and is presently up for sale; NSW Maritime has advised that this mooring is able to be moved wherever necessary. NSW Maritime has further advised that any private moorings which require re-location (possibly 2) for the proposed development can simply be shifted (refer Appendix 13). Private moorings are licensed to individuals and a condition is they can be moved for whatever reason Maritime sees fit.

Appendix 1a contains a swing mooring map which provides further detail in regards to the above.

3.0 The Proposed Development

3.1 DESCRIPTION OF PROPOSED DEVELOPMENT

The applicant proposes to construct a new 50 berth marina to be known as the "Koolewong Marina" in Murphys Bay in order to provide additional marina moorings as oppose to the numerous swing moorings located within the area (see Figure 10).

The Project comprises the following components:

- The upgrade of the existing timber jetty from 1 metre to 1.5 metres in width, with timber decking to be removed and replaced with an ecostyle "sea grass friendly" polypropylene decking and increase the existing RL from 1.25m AHD to 1.75m AHD;

- Construction of a fifty (50) berth marina extending approximately 100m from the end of the existing jetty into Brisbane Water and accommodating the following vessels:

    - Approximately 75 % power vessels and 25 % sail driven vessels with drafts between 1 – 2.2 metres

    - Length of proposed boats:
        - 10 x 8.53m
        - 12 x 9.75m
        - 10 x 11.58m
        - 10 x 12.8m
        - 4 x 14.02m
        - 2 x 16.46m
        - 1 x 19.81m
        - 1 x 21.34m

- The main walkway of the proposed marina will be 2.5 metres wide, with two arms, in a "reverse F" formation with the outside arm being 124.5 metres and the inner arm being approximately 80 metres;

- Upgrade and reconfiguration of the existing car park to provide eleven (11) additional car parking spaces to the thirty-three (33) existing spaces; and

- Change of use to one of the first floor offices (43.3m^2) to a general amenities facility for users of the marina.

The proposed marina will be in the form of a floating pontoon held in place by 31 hollow steel piles. The pontoon will have rollers surrounding the piles to allow the marina to rise and fall with the tide (see Figure 11). Fire hydrants are proposed to be located at strategic points along the marina for fire fighting purposes, with these to be serviced by the existing water main which is able to be upgraded to a 100mm pipe if necessary.

The proposal will involve no dredging and no changes to the shoreline.

The existing car park surrounding the commercial building will be re-configured to provide additional parking to meet the requirements of Gosford Council and relevant Australian Standards.

Figure 10: Aerial photomontage of proposed marina

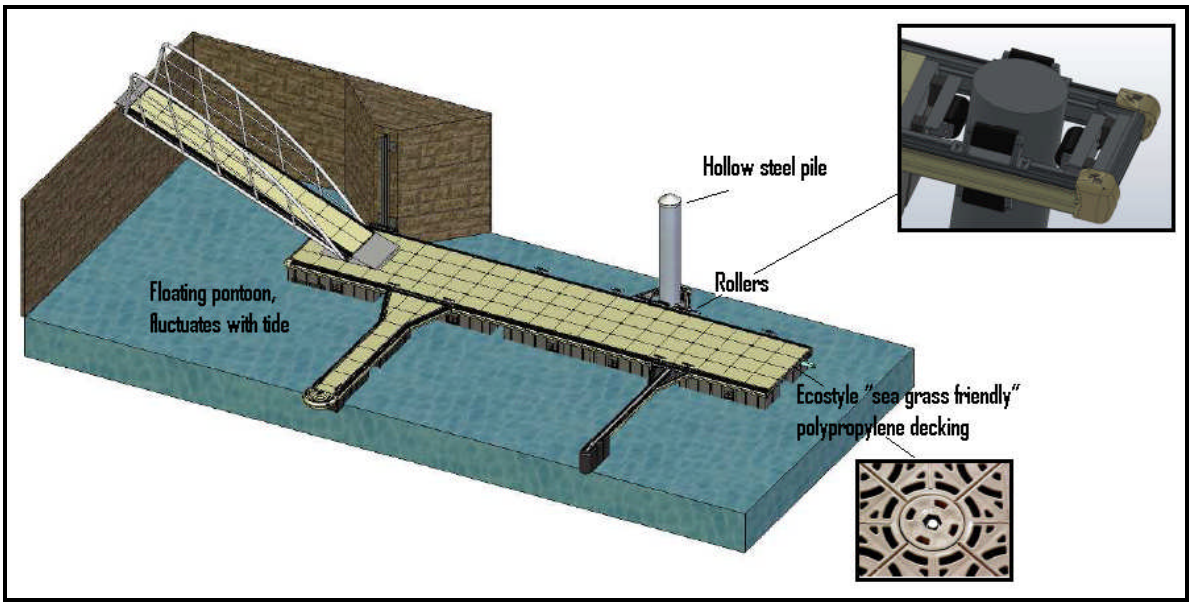

Figure 11: Example of floating pontoon system (with roller and decking insert)

As mentioned above, three swing moorings related to the existing jetty will be removed/surrendered as a result of the proposed marina.

The marina would be most active on Saturdays and Sundays and statistics from Boating Industry Australia have the average boat being used for about 50 hours per year.

Refer Appendix 1a for full plans.

3.2 OPERATIONAL DETAILS

The opening hours for the existing restaurant and office facility will remain as is, with marina users being able to access the first floor amenities facility during these hours.

Marina berth holders will be able to gain access to their vessels 24 hours a day, 7 days a week via authorised swipe card/security gate access which will be located at the end of the jetty/start of the marina structure.

The boating public will have unimpeded access to the fixed jetty 24 hours a day.

The Marina will have a full-time manager on-site 7 days a week to help boat owners with general boating enquiries, to assist in boating navigation and to monitor all operational and environmental aspects. In addition to the manager, an administration officer will co-ordinate the financial side of the facility from an office off-site in the Gosford CBD.

Section 10 *Draft Statement of Commitments* outlines a list of mitigation methods to ensure environmental and social commitments and recommendations made by external consulting experts are observed. These mitigation measures will be included within Marina Regulations which will be issued to all patrons and developed prior to the issuance of a Construction Certificate. Part of the Marina managers roll will be to ensure marina users are complying with these regulations.

The proposal will not involve:

- The construction, repair, maintenance of boats;
- Fuelling of boats;
- Sewage pump out services;
- Launching or landing facilities;
- Land reclamation / dredging; or
- Slipways for construction, repair, maintenance.

The future sale and hire of boats may occur through private operators however these can be lodged as separate applications when necessary.

The proposed marina will be situated approximately 160 metres east of the nearest dwelling, separated by Brisbane Water Drive and the Great Northern Railway. With this in mind, the proposed marina is unlikely to have any negative impacts on the residential amenity of the area.

4.0 Justification for Project

4.1 DEMAND

Whilst there are numerous swing moorings in Brisbane Water there are only five small marinas servicing the whole of the Brisbane Water. Of those, four are in the southern part of the Brisbane Water, not far from Pittwater. Only the new marina at the Gosford Sailing Club services the northern part of the Brisbane Water.

With this in mind the demand for permanent mooring facilities in a marina environment is growing. When the Gosford Sailing Club constructed its 29 berth marina approximately two years ago, the berths were very quickly purchased to the point where there is now a waiting list for berths to become available, with these berths only being offered to Sailing Club members and not the general public.

Stemming from this, the applicant wanted to provide a marina facility which would service the general public. In order to secure a 25 year lease over the subject land, Gemsted P/L was required to submit a business case and financial modelling of the proposal to the Land & Property Management Authority (LMPA). On 28 October 2010 the LMPA provided the following advice:

Following review of the business case and financial modelling submitted the Authority is prepared to consider the issue of a consolidated 25 year term Lease, subject to development consent being obtained.

The LMPA's endorsement to support the above lease gives assurance that the project will be financially beneficial based on the described demand for permanent marina moorings in the area.

A complete Business Case elaborating the above is available within Appendix 10.

4.2 PUBLIC BENEFIT

Due to the depth of the water at the proposed marina and the proximity to the Gosford District Hospital, the Applicant's marina will provide easy access for emergency services during periods when the main Central Coast – Sydney Highway is closed.

In times of other emergencies when residents are required to flee by water, there are no jetties or wharves with sufficient water depth to allow large vessels to manoeuvre to berth. The proposed marina site at Murphys Bay is protected from the southerly and westerly winds which cause other water access points (eg public wharf at Gosford) to be dangerous.

The proposed marina is located on Brisbane Water Drive one of only two access roads to the Woy Woy peninsular. In recent years Woy Woy Road has been closed by fire and landslip, making Brisbane Water Drive the only way in and out of the peninsular. If a fire or other emergency occurs during the time of closure, Brisbane Water Drive alone would not cope with both the exodus of residents and the arrival of emergency services. A marina with deep water berthing abilities and an area that will give large vessels the ability to easily manoeuvre would give residents of the peninsular an additional escape route.

5.0 Consultation

The Applicant has undertaken a range of community consultation activities to assist in developing the project. *Brilliant Logic,* an independent company that specializes in community consultation activities undertook and managed the community consultation process and activities (refer Appendix 12).

Consultation was undertaken with community groups and affected landowners in the areas of Koolewong, Tascott and Point Clare.

The applicant also consulted with numerous Local and State Government Agencies with the issues raised being addressed in the various expert reports and the Project Application.

Community and stakeholder consultation is an integral part of providing an open development assessment process right from the inception phases of a project through to its completion. As part of providing a highly 'in demand facility' one which is viewed as adding to the 'sense of place' of the area, the Applicant was adamant that a thorough consultation process was completed to ensure the local community were able to have input into the assessment process and decision making.

5.1 COMMUNITY CONSULTATION

In order to achieve the applicant's desires for a thorough community consultation process, *Brilliant Logic* implemented a multifaceted approach including:

- Advertising – public notices in the Central Coast Express Advocate outlining the planned development and directing interested parties to appropriate channels for feedback. These forums were chosen due to their circulation to residents in and around Koolewong.

- Direct mail campaign – Distribution of flyers to 4,000 households detailing the proposed development and directing residents to the appropriate channels for voicing feedback or concerns.

- Online communication – Both the direct mail campaign and advertisements directed interested parties to a basic website displaying the proposed project plans, information about the application, maps of the proposed structure and avenues where the public can provide feedback.

As a result of the above two (2) written submissions were received outlining the following concerns:

1. Lack of public consultation;
2. Concern over preliminary plans being made available only;
3. Environmental concerns (climate change, sea level rises, biodiversity etc);
4. Social/community concerns; and
5. Requests for public amenities, pump out facilities and fuel outlets.

The applicant addressed the above concerns as follows:

1 & 2. As mentioned above a thorough community consultation process was undertaken including a direct mail out campaign and wider public notice in the Express Advocate. As part of the assessment of the proposal, further consultation will be undertaken by the Department of Planning with all final reports and plans being made available to the public at this time.

3. All environmental issues associated with the proposal have been addressed within the various experts' reports summarized within the body of the EA and available in full within Appendix 5 and 6.

4. As outlined within Section 5 above the proposed marina will provide numerous public benefits to not only private boat owners but also the wider community through improved emergency services access.

5. Public amenities such as toilets will be made available to berth holders. The applicant has opted against providing pump out facilities and fuel outlets in order to reduce potential environmental impacts on the immediate surrounds. It is considered that existing services in the area will be sufficient to handle any excess demand and will therefore continue to consolidate these sensitive uses within existing facilities.

5.2 AGENCY CONSULTATION

During the preparation of the EA, the following consultation was undertaken with the Local Council and relevant State Government Agencies:

Gosford City Council

On 12 August 2010 a Pre-Development meeting was held with Gosford City Council where the following issues were raised:

- *A Seven Part Test for sea grasses is required and if significant a Species Impact Statement will be required.*

Response: A Seven Part Test has been conducted and concludes that a Species Impact Statement is not required (refer Appendix 5).

- *Consent of Department LMPA as owner to lodge development application.*

Response: Refer Appendix 4 for LMPA consent

- *Clause 49 of Gosford Planning Scheme Ordinance, State Environmental Planning Policy 71 – Coastal Protection and Development Control Plans 106 (Waste Management Controls), 111 (Car Parking) & 119 (Wharves & Jetties) apply.*

Response: Refer Section 6 of Report.

- *Traffic and parking report required. Address against Council's DCP 111 as well as surveys of parking generated by existing development / restaurant;*

- *Parking to comply with AS2890.*

Response: Refer Appendix 9 for Traffic Assessment Report.

- *Development Application will be referred to RTA, Fisheries, and Waterways/Maritime.*

Response: Noted

- *Minister is the consent authority unless referred back to Council.*

Response: Noted

- *Water & Sewer Certificate required.*

Response: This can be addressed as a condition of consent.

- *Draft LEP a matter for consideration.*

Response: Refer Section 6 of Report.

- Check turning area for garbage trucks.

Response: The proposed car parking layout has been designed with reference to Austroads Design Vehicles and Turning Path Templates.

- *Car parking - ratio of spaces to berths to be addressed (may require EIS).*

Response: Refer Section 6 of Report; Environmental Impact Statement is not required.

- *Current legal documents require maintenance of jetty. Will need to be amended if approved or new legal agreement.*

Response: Noted

- *Brisbane Water Plan of Management to be addressed.*

Response: Refer Section 6 of Report

- *Address visual impact.*

Response: Refer Appendix 11 for Visual Impact Assessment

<u>Department of Environment, Climate Change and Water</u>

The Department of Environment, Climate Change and Water (DECCW – now the Office of Environment & Heritage) provided the following comments on 10 January 2011 (refer Appendix 19):

DECCW has considered the details of the proposal as provided in the Preliminary Environmental Assessment and has identified the information it requires to be addressed in the Environmental Assessment (EA) to make a reliable appraisal of the proposals impacts. The main issues of interest to DECCW are:

- *impacts on threatened species, populations, ecological communities and their habitat;*
- *any impacts on Aboriginal cultural heritage values;*
- *water quality and quantity impacts, and*
- *impacts on noise amenity.*

Response: These issues have been investigated and discussed at length within the body of the EA as well as within Appendix 5 – Aquatic Ecology Report, Appendix 7 - Aboriginal Cultural Heritage & Historical Archaeological Assessment and Appendix 8 - Noise Impact Assessment.

Industry & Investment NSW

As the proposed works do not involve dredging, reclamation of land, harm to marine vegetation or obstruction of fish passages, a permit from Industry & Investment NSW is not required (refer Appendix 14). The Department has raised concerns with potential impacts on sea grasses, aquaculture and fishing with these concerns being elaborated upon with the Aquatic Ecology Report (refer Appendix 5). Various recommendations have been suggested in order to avoid impact on sea grasses, aquaculture and fishing and these are able to be implemented through conditions of consent and have been included with the Draft Statement of Commitments (see Section 10).

Refer Appendix 18 for detailed Industry and Investment response.

New South Wales Office of Water

Further consultation was not deemed necessary with regards to the NSW Office of Water (NOW) given that the Project does not require any licenses under either the Water Act 1912 or the Water Management Act 2000 and is exempt from requiring a "Controlled Activity Approval".

Refer to Appendix 15 for the NOW's complete response with these points being covered within the DGR's and discussed at length within Section 8.

Roads and Traffic Authority

Numerous conversations were undertaken with Scott Stapleton of the RTA throughout the design phase of the Project, with all concerns being addressed within the proposed plans and commissioned Traffic Assessment Report.

In addition, detailed written requirements have been provided with these being addressed within Section 8 (refer Appendix 16).

New South Wales Maritime

NSW Maritime provided the following advice on 19 October 2010:

"*An inspection of the designated proposal by the local Boating Services Officer indicates that there are no navigational concerns regarding the above proposal*" (refer Appendix 13).

Hunter-Central Rivers Catchment Management Authority

In email correspondence dated 24 December 2010 the Hunter-Central Rivers Catchment Management Authority (HCRCMA) provided the following response in regard to the proposed marina:

"*The CMA issues we would like to see covered include*:

- *Potential impact of the development on seagrass (and any saltmarsh or mangroves present). The Seagrass report says that the proposed marina structure will cause no impact however boat turning areas and wash zones may impact seagrass*.

Response: Since the above email was received a thorough Aquatic Ecology Report has been commissioned and details mitigation methods to avoid impacts on sea grasses (refer Appendix 5) with these being included with the Draft Statement of Commitments (see Section 10).

- *Clearing of any foreshore vegetation.*

Response: The proposal does not involve any clearing of foreshore vegetation.

- *Pumpout facilities.*

Response: No pumpout facilities are proposed as part of the Project.

- *Access to foreshore and any modification to the foreshore.*

Response: Modifications and access to the foreshore will not be altered as part of the Project.

- *Sea level rise, inundation and recession.*
- *Foreshore erosion issues caused by boat wash.*

Response: These issues have been covered within the Coastal Processes Report (refer Appendix 6).

- *Any changes in runoff from the development.*

Response: The proposed marina and jetty will have no stormwater runoff impact and the proposed reconfiguration to the car park will be graded to drain into the existing system.

- *The existing development on site has some history, I understand it was originally approved as an oyster depuration plant. Could the proponent provide an update on the status on the current development, e.g. is it an approved development?*

Response: The land was reclaimed in 1985 for the construction of an oyster depuration site with landfill creating a trapezoidal shape jutting from the shore line. The existing site however houses a two storey building operating as a restaurant, function room and office space with this being approved under Development Application No. 21637 on 11 February 1997.

Following the issuance of the DGR's, the Applicant approached HCRCMA for further comments and on 20 May 2011 they responded with the following:

"...with reference to our conversation this morning and your e-mail of 16.5.11, please see attached an e-mail I sent to Dept of Planning late in 2010, which briefly lists the issues of concern of the CMA. Since then we have no further issues of concern..."

Rural Fire Service

Given that the proposed development is not affected by bushfire, further consultation aside from that undertaken as part of the DGR's (refer Appendix 17) was not considered necessary.

NSW Police

The NSW Police have not individually been consulted; however the Project has been developed in accordance with the Crime Prevention Through Environmental Design principles with these being addressed within Section 9.14.

Local Aboriginal Land Council/s and Aboriginal community groups

Notification of the project was provided to the Darkinjung Local Aboriginal Land Council (DLALC); Registrar of Aboriginal Owners and the Native Title Service with their detailed responses being provided within Appendix 7.

Land and Property Management Authority

Refer to Appendix 4 for Land Owners Consent from the Land & Property Management Authority (LMPA) obtained on 29 October 2010 advising that support for a 25 year lease would be provided upon development consent being issued.

LMPA provided the following further advice on 29 June 2011 with regards to public access to the existing jetty:

> *I refer to your recent inquiry regarding the above matter and advise that Crown Lands Division do not have a requirement for maintained public access to the subject jetty (refer Appendix 4).*

Despite the above, the proponent is still prepared to provide access to the jetty for the boating public, emergency services and restaurant patrons.

6.0 Statutory Context and Planning Controls

The Environmental Assessment has been prepared in accordance with the requirements of Part 3A of the *Environmental Planning and Assessment Act, 1979 (the Act)* and the *Environmental Planning and Assessment Regulation, 2000 (the Regulations).*

The proposal has also been assessed in the context of the relevant environmental planning instruments (EPIs) for the region as well various State and Nation legislation.

6.1 LEGISLATIVE FRAMEWORK AND PLANNING CONTROLS

Legislative Framework	
Environmental Planning and Assessment Act 1979 (EP&A Act) (NSW)	
Project Approval and Environmental Assessment – Part 3A	Project Approval is required under Part 3A of the *EP&A Act* and pursuant to the provisions of the *SEPP Major Development*. An Environmental Assessment is required under Section 75H of the *EP&A Act.*
Approvals etc, legislation that does not apply	Pursuant to Section 75U of the *EP&A Act*, the following authorisations are not required for an approved project (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply): • A permit under Section 201 and 205 of the *Fisheries Management Act 1994;* • A Controlled Activity Approval under Section 91 of the Water Management Act 2000*;* • A permit under Part 3A of the *Rivers and Foreshores Improvement Act 1948.*
Environmental Planning and Assessment Regulations 2000 (EP&A Regs) (NSW)	
Development is NOT "Designated"	The Project does not fall into "Designated Development" pursuant to Schedule 3 Clause 23 despite having a capacity of more than 30 vessels as it is **not** located within non-tidal waters, within 100 metres of a wetland or aquatic reserve; does not require the construction of a groyne or annual maintenance dredging and provides car park spaces to vessels of more than 0.5:1.
Protection of the Environment Operations Act 1997 (POEO) (NSW)	
Environment Protection Licence (EPL)	Under Section 43 Scheduled Activity, of the *POEO Act*, an Environment Protection Licence is **not** required as the proposed marina provides less than 80 berths.
Environment Protection and Biodiversity Act, 1999 (EPBC) (Commonwealth)	
Referral	The *EPBC Act* requires approval from the Commonwealth Minister for the Environment for actions that will have a significant effect on matters of national environmental significance (NES). It is considered that the proposal would not have a significant impact on matters of NES as listed in the *EPBC Act* or a significant environmental impact on Commonwealth land, and accordingly, a referral is not required to the Commonwealth Minister for the Environment.
Threatened Species Conservation (TSC) Act 1995 (NSW)	
Endangered Ecological Species	The *TSC Act* includes provisions to declare threatened species, populations, ecological communities and Key Threatening Processes (KTPs). Species populations and communities identified as 'endangered' are listed in Schedule 1. Species populations and communities identified as 'critically endangered' are listed in Schedule 1A and species populations and communities identified as 'vulnerable' are listed in Schedule 2.

	An 'Assessment of Significance' for threatened species, populations and communities listed under the *TSC Act* has been completed within Appendix 5.
Fisheries Management (FM) Act 1994 (NSW)	
Endangered Ecological Species	The *FM Act* seeks to conserve fish stocks, key fish habitats and threatened species, populations and ecological communities of fish and marine vegetation. Consistent with those objectives is the aim to ensure social, cultural and economic benefits to commercial, recreational and Aboriginal fisheries as well as the wider community of NSW. Species populations and communities identified as 'endangered' are listed in Schedule 4. Species populations and communities identified as 'critically endangered' are listed in Schedule 4A and species populations and communities identified as 'vulnerable' are listed in Schedule 5. Division 3 of the Act provides for the identification of habitat that is critical to the survival of an endangered species, population or ecological community. Marine vegetation including sea grasses, mangroves and algae are protected in NSW and a permit is required from NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS formally I&I NSW, fisheries) to undertake works or activities that may harm them. An 'Assessment of Significance' for threatened species, populations and communities listed under the *FM Act* has been completed within Appendix 5.
State Environmental Planning Policy (Major Development) 2005	
Part 3A Classes of Development	The project falls within Schedule 1, Group 6 Tourism and Recreational Facilities, Clause 14 Marina Facilities as being a proposal storing more than thirty (30) vessels within the tidal waters of Broken Bay.
State Environmental Planning Policy (SEPP) 62: Sustainable Aquaculture	
Development near aquaculture	The project is located within proximity to oyster farming and as such *SEPP 62* requires addressing.
State Environmental Planning Policy (SEPP) 71: Coastal Protection	
Sensitive Coastal Location	The proposed development site falls within a 'Sensitive Coastal Location' pursuant to *SEPP 71* as it is located within 100 metres below mean high water mark.
Gosford Planning Scheme Ordinance (GPSO)	
Zoning	The subject site is unzoned under the *GPSO*.

6.2 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The proposed development will meet the objects of the *EP&A Act* as follows:

(a) to encourage*:*

> *(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*

Comment: The applicant has ensured that all necessary environmental studies in relation to the project have been undertaken and all recommendations deemed necessary

have been adopted within the Draft Statement of Commitments in order to conserve Brisbane Water and promote a sound social, economic and environmental welfare to the area.

(ii) the promotion and co-ordination of the orderly and economic use and development of land,

Comment: As part of the application a Business Case was undertaken to ensure the project provided an orderly and economic development response to the facility demand.

(iii) the protection, provision and co-ordination of communication and utility services,

Comment: Given the minor scale of the marina, existing infrastructure will have the capacity to accommodate any increased usage.

(iv) the provision of land for public purposes,

Comment: The proposed marina will continue to provide a jetty for the boating public, restaurant patrons and emergency services and the existing public walkway/cycle way in front of the car park will remain unaffected.

(v) the provision and co-ordination of community services and facilities, and

Comment: The proposed marina will be the only facility within the area to have depths deep enough to accommodate larger vessels thus being able to facilitate any necessary emergency services water craft.

(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and

Comment: As mentioned above, numerous studies and investigations have been undertaken to ensure the protection of threatened species, populations and ecological communities.

(vii) ecologically sustainable development, and

Comment: the proposed development meets all ecologically sustainable development principles (see Section 9.10).

(viii) the provision and maintenance of affordable housing, and

Comment: Not Applicable

(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and

Comment: As part of the assessment of the application numerous State government bodies as well as Gosford City Council will be consulted in order to achieve a thorough well rounded determination.

(b) to provide increased opportunity for public involvement and participation in environmental planning and assessment.

Comment: As illustrated above the applicant has undertaken a thorough community consultation process in order to provide a facility which meets the needs of all levels of society. Additional consultation undertaken by the consent authority will further the opportunity for public involvement.

6.2.1 Application of Part 3A Major Infrastructure and Other Projects

Part 3A Major Infrastructure and other projects of the *EP&A Act* commenced operation on 1 August 2005. Part 3A consolidates the assessment and approval regime of all major projects previously considered under Part 4 (Development Assessment) or Part 5 (Environmental Assessment) of the *EP&A Act*. Under the provisions of Section 75B of the *EP&A Act* development may be declared to be a Major Project by virtue of a State Environmental Planning Policy (SEPP) or by order of the Minister published in the Government Gazette.

6.2.2 State Environmental Planning Policy (Major Development) 2005

Major Development SEPP outlines the types of development declared to be a Major Project for the purposes of Part 3A of the *EP&A Act*. For the purposes of the *Major Development SEPP*, certain forms of development may be considered a Major Project if the Minister (or a delegate) forms the opinion that the development meets criteria within the *Major Development SEPP*.

Clause 6 of the *Major Development SEPP* defines 'Major Development' and includes development described in Schedule 1 - Part 3A Classes of Development.

The Project, which proposes a marina with capacity to moor, berth and store 50 vessels at floating berths in Murphys Bay (within Broken Bay) is development described in Schedule 1 – Part 3A Classes of Development, Group 6 Tourism and Recreational Facilities, Clause 14 Marina Facilities.

On 22 November 2010, the Acting Director General of the Department of Planning, as delegate of the Minister for Planning, formed the opinion that the proposal is a Major Project to which Part 3A of the *EP&A Act* applies (refer Appendix 2). The Consent authority is the Minister for Planning.

On 20 December 2010, the Director General issued environmental assessment requirements (DGR's) pursuant to Section 75F of the *EP & A Act* (refer Appendix 3).

6.2.3 State Environmental Planning Policy 62 (Sustainable Aquaculture)

The aims of SEPP 62 are to encourage sustainable aquaculture. Given that the site for the proposed marina is within proximity to nearby oyster farming it is necessary to assess the development against the following relevant clause:

Clause 15B Consultation with Director-General of Primary Industries

(1) Before determining a development application for any development, a consent authority:

(a) must consider whether, because of its nature and location, the development may have an adverse effect on oyster aquaculture development or a priority oyster aquaculture area, and

(b) if it suspects that the development may have that effect, must give notice of the application to the Director-General of the Department of Primary Industries.

Comment: Brisbane Water is an important estuary for the oyster industry and contains areas classified as priority oyster aquaculture areas. The Applicant commissioned a full Aquatic Ecology Report based in part on the *NSW Oyster Industry Sustainable Aquaculture Strategy,* and it was found that the proposal is unlikely to cause any detrimental effects to aquaculture (oyster farming) through contamination. A full investigation into this conclusion is provided within the Aquatic Ecology Report within Appendix 5.

6.2.4 State Environmental Planning Policy 71 (Coastal Protection)

The provisions of *SEPP 71* require the consent authority to consider the Aims and Objectives of the SEPP together with the matters for consideration listed in Clause 8 when determining an application within the Coastal Zone. The Coastal Zone is an area defined on maps issued by the Department of Planning NSW. The subject property falls within the Coastal Zone.

An assessment of the proposal against the provisions of Clause 8 is included in the table below.

SEPP 71 Clause 8	Matters for Consideration	Proposed
a	The aims of the Policy	The proposal is compliant with the objectives of the Policy in terms of protection of the coastal zone and environment.
b	Existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved.	The subject site is built upon reclaimed land and as such there is no opportunity to provide pedestrian foreshore access of any kind. Existing access to the boating public to the foreshore will be improved through the upgrade and widening of the existing jetty.
c	Opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability.	The proposed marina will provide a greater opportunity for temporary mooring for public boaters.
d	The suitability of development given its type, location and design and its relationship with the surrounding area.	The development is considered suitable for the location given the lack of deep berth marinas in the area. The proposal is considered suitable in terms of its relationship with the surrounding nautical area.
e	Any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore.	The proposed marina will not overshadow the coastal foreshore and will not impact upon any significant views (refer Appendix 11).
f	The scenic qualities of the New South Wales coast, and means to protect and improve these qualities.	The proposal will have minimal impact on the scenic qualities of the coastline. The development of a marina in front of an existing two

		storey built structure is considered to enhance the coastal foreshore.
g	Measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995) and plants (within the meaning of that Act), and their habitats.	It is recommended that a detailed construction management plan is implemented to conserve animals, plants and their habitats against the potential impacts of the construction and on-going operation of the proposed marina. This recommendation has been included within the Draft Statement of Commitments. A full investigation under The Threatened Species Conservation Act is provided within the Aquatic Ecology report within Appendix 5.
h	Measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994) and marine vegetation (within the meaning of that Part), and their habitats.	It is recommended that a detailed construction management plan is implemented to conserve fish and marine vegetation against the potential impacts of the construction and on-going operation of the proposed marina. This recommendation has been included within the Draft Statement of Commitments (refer Section 10 "GENERAL"). A full investigation under The Threatened Species Conservation Act is provided within the Aquatic Ecology report within Appendix 5.
i	Existing wildlife corridors and the impact of development on these corridors.	The proposal will not affect any identified wildlife corridor.
j	The likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards.	The expansion of the marina will have little effect on the existing coastal processes with no changes to the hydrodynamic, morphological and water quality setting being likely. A full coastal processes investigation is provided within the Coastal Process Report within Appendix 6 and certain recommendations have been included within the Draft Statement of Commitments (refer Section 10: 34-40).
k	Measures to reduce the potential for conflict between land-based and water-based coastal activities.	The area immediately landward of the marina will be operated by the same company and will be run in conjunction with the existing restaurant. With this in mind the two activities will operate in harmony with neither impacting upon the other in a negative sense.
l	Measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals.	Consultation with the Aboriginal stakeholders did not identify any cultural values that pertain specifically to the development site. This recommendation has been included within the Draft Statement

		of Commitments. A full investigation in this regard is provided within the Aboriginal Cultural Heritage & Historical Archaeological Assessment within Appendix 7.
m	Likely impacts of development on the water quality of coastal water bodies.	The proposed marina will create an increase in the concentration of boats in the area with this likely to result in an increase in contaminants in the sediment in the immediate vicinity. Contamination of sediments that does occur is unlikely to have substantial negative environmental consequences due to the high levels of boating activity currently in Brisbane Water in general and in the immediate area around the proposed marina (including numerous swing moorings). The risk and extent of boat derived contamination can be reduced through basic control measures with these being outlined in detail within the Aquatic Ecological Report within Appendix 5 and included within the Draft Statement of Commitments (refer Section 10: 2-15).
n	The conservation and preservation of items of heritage, archaeological or historic significance.	No items of historical heritage value (State or local), including shipwrecks, have been identified in the development area. A full investigation in this regard is provided within the Aboriginal Cultural Heritage & Historical Archaeological Assessment within Appendix 7.
o	Only in cases in which a council prepares a draft local environmental plan that applies to land to which this Policy applies, the means to encourage compact towns and cities.	Not applicable.
p(i)	The cumulative impacts of the proposed development on the environment.	The proposal is not considered to have any adverse cumulative impacts on the environment.
p(ii)	Measures to ensure that water and energy usage by the proposed development is efficient.	Electricity and water will only be necessary for lighting, fire hoses and incidental boat washing.

Taking the above into consideration the Project achieves the Aims and Objectives and the matters listed under Clause 8 and as such complies with the provisions of the SEPP.

6.2.5 Gosford Planning Scheme Ordinance

The subject site is unzoned under Gosford Planning Ordinance Scheme 2008 (see Figure 12).

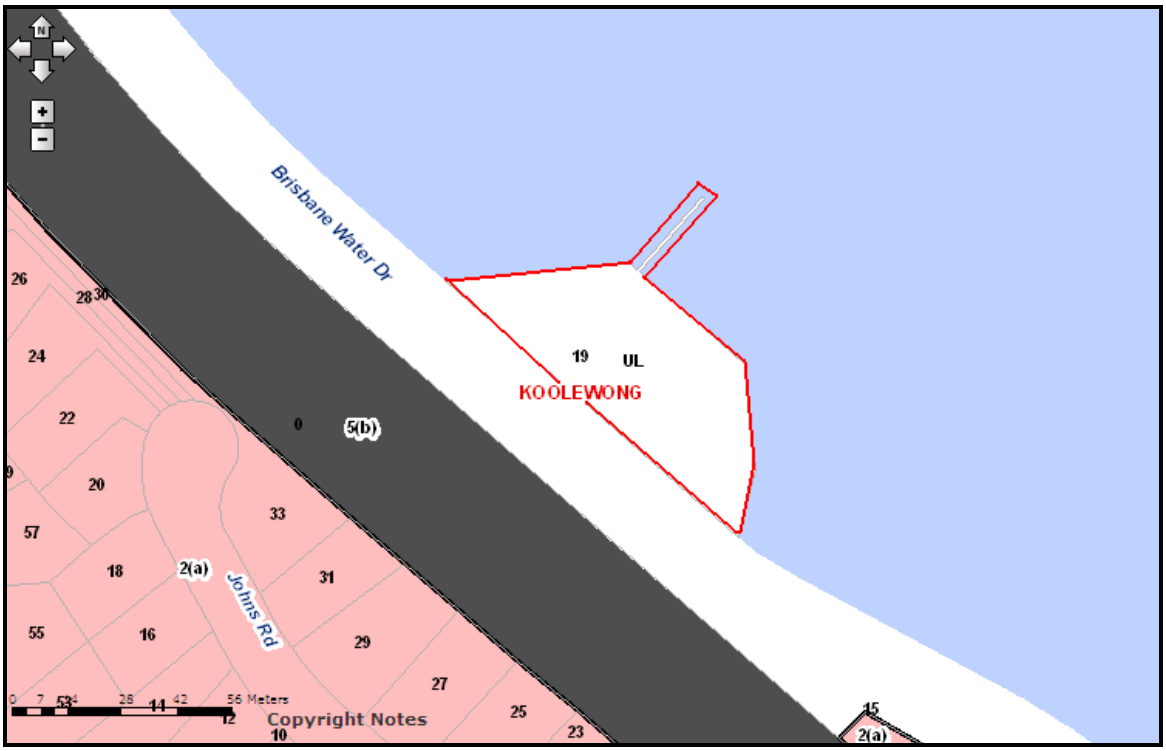

Figure 12: Zoning Plan (source Gosford City Council)

Given that the subject land is unzoned, the proposed marina requires development consent under Clause 49 of the Gosford Planning Scheme Ordinance 2008 (GPSO).

Clause 49 states:

Development on the bed of lakes and rivers, applies to the subject site as Crown Land adjoins the subject site below the high water mark (HWM).

"(1) Despite any other provision of this Ordinance, a person must not, without the consent of the Council:

(a) carry out development on any land that is within the City of Gosford that was shown uncoloured on the Scheme map on the date this Ordinance commenced, being 24 May 1968, forming part of or adjacent to or adjoining the bed of harbour, bay, lake, river, lagoon, creek or any other natural watercourse which land, in the case of tidal waters, was shown on the Scheme map at that date as land below high water mark, or

(b) use the land described in paragraph (a) for any purpose other than for a purpose for which it could lawfully be used immediately before the commencement of Gosford Local Environmental Plan No 404.

(1A) In considering whether to grant consent under subclause (1), the Council must take into account the estuary management principles in the Estuary Management Manual (State Government), available for inspection at the office of the Council.

Comment: The Applicant is seeking consent through the Minister for Planning and as such meets Clause 49.

Taking the above into consideration the Project complies with the provisions of the GPSO.

6.2.6 Draft Local Environmental Plan 2009

The subject site is zoned *RE1* and *W2 Recreational Waterways* under the draft Gosford Local Environmental Plan 2009 (DLEP). The proposed works to the car park are within the RE1 zone, with the marina being within the W2 zoned area (see Figure 13).

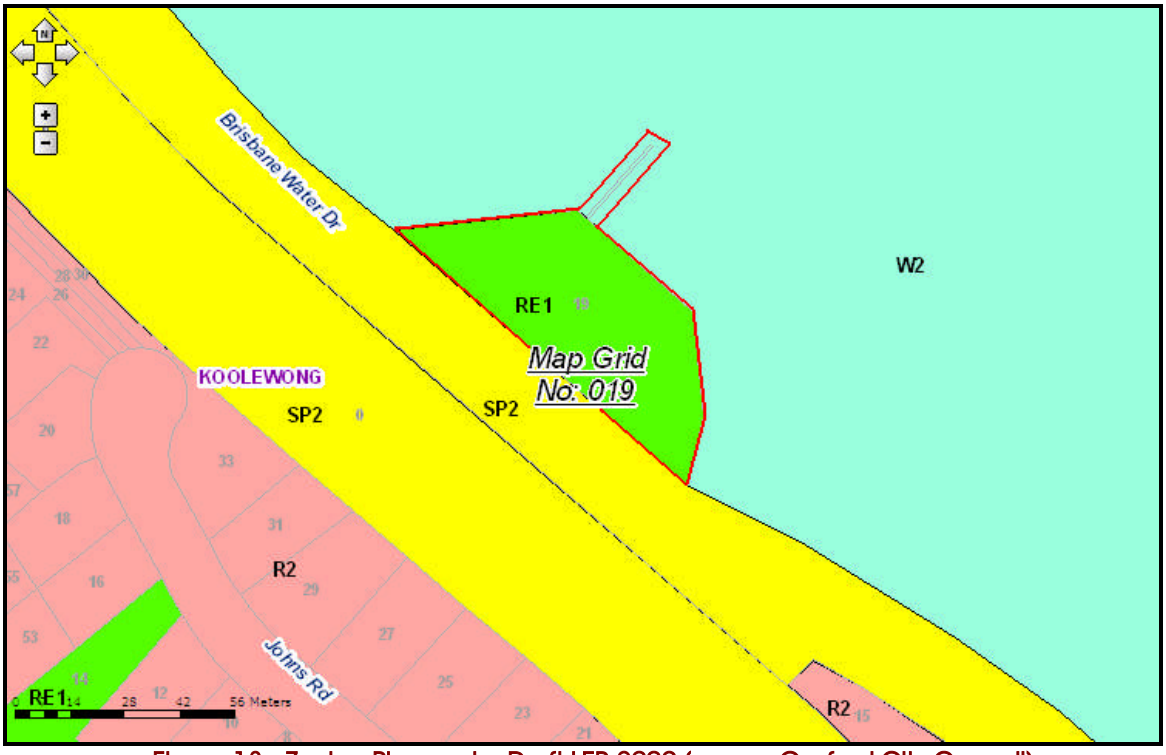

Figure 13: Zoning Plan under Draft LEP 2009 (source Gosford City Council)

The proposal is defined pursuant to the draft LEP as a "*marind*", which is defined as follows:

> "***marina*** *means a permanent boat storage facility (whether located wholly on land, wholly on the waterway or partly on land and partly on the waterway) together with any associated facilities, including:*
>
> *(a) any facility for the construction, repair, maintenance, storage, sale or hire of boats, and*
>
> *(b) any facility for providing fuelling, sewage pump-out or other services for boats, and*
>
> *(c) any facility for launching or landing boats, such as slipways or hoists, and*
>
> *(d) any associated car parking, commercial, tourist or recreational or club facility that is ancillary to a boat storage facility, and*
>
> *(e) any associated single mooring".*

A "marina" is permissible with consent within the W2 Recreational Waterways zone.

The following objectives of the W2 Recreational Waterways Zone are relevant:

- *"To protect the ecological, scenic and recreation values of recreational Waterways".*
- *"To allow for water-based recreation and related uses".*
- *"To provide for sustainable fishing industries and recreational fishing".*

Comment: The proposed marina will have minimal impact on the ecological and scenic quality of Brisbane Water. The provision of the additional berths will also allow existing swing moorings to be removed. In relation to recreational values, a fifty (50) berth marina will further facilitate recreational use of the waterway.

Clause 5.7 Development Below Mean High Water Mark is applicable and states:

"(1) The objective of this clause is to ensure appropriate environmental assessment for development carried out on land covered by tidal waters.

(2) 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)".

Comment: As mentioned above, numerous detailed investigations have been undertaken to assist in the development of the proposed marina ensuring that minimal environmental impact is felt within Brisbane Water. The applicant has commissioned an Aquatic Ecology Report (refer Appendix 5) and a Coastal Processes Investigation (refer Appendix 6) to ensure a thorough environmental assessment is undertaken.

Taking the above into consideration the Project complies with the provisions of the DLEP.

6.2.7 Development Control Plan

Gosford City Council Development Control Plan is the only Development Control Plan (DCP) applicable to this site and proposal. In meetings with Gosford Council, the following Chapters were advised as being applicable to the proposed development:

- Development Control Plan – 89 Scenic Quality
- Development Control Plan – 106 Waste Management Controls
- Development Control Plan – 111 Car Parking
- Development Control Plan – 119 Wharves and Jetties

6.2.7.1 Chapter 89: Scenic Quality

The subject site falls within the Landscape Unit of *East Gosford, Point Clare – Koolewong* which has a "local" level of scenic significance.

An assessment of the proposal against the provisions of Chapter 89 is included in the table below.

CHAPTER 89	Development Objectives	Proposed
1	Restrict zoning density of development to current levels on higher slopes, particularly steep land zoned areas and waterfront areas not already zoned for medium density development.	N/A
2	Opportunities for increases in densities and scale are available in areas not subject to visibility constraints or other physical constraints. Visually constrained lands includes waterfront lands and lands on higher slopes.	Whilst the subject land is located on waterfront lands, the proposed development will not increase existing development densities and has been designed to be sensitive to existing views of Brisbane Water. The slope of the area and low profile nature of the marina will ensure important views are maintained.
3	Prevent extension of residential areas by way of rezoning within the Point Clare – Koolewong landscape units on land viewed from more than the immediate area.	N/A
4	Recognise importance of Brisbane Water Escarpment with its visual integrity and naturalness being valuable assets which need to be protected from development involving rezonings which increase densities and/or increase the range of uses permissible.	The proposed development does not require rezoning.
5	High rise development in and around the Gosford Town Centre should be of a scale that when viewed from Brisbane Water and waterfront areas is contained within the ridgelines provided by Rumbulara Reserve and Presidents Hill.	N/A

Taking the above into consideration the Project complies with the development objectives of Chapter 89.

6.2.7.2 Chapter 106: Waste Management Controls

The proposed method of waste disposal during site preparation, construction and throughout the life of the proposal will be undertaken in accordance with Chapter 106: Waste Management Controls.

Given the nature of the project, the anticipated volume of waste generated is considered to be relatively minor in comparison to the existing operations and can be summarized as follows:

Site Preparation:

- Removal of some existing pavers will be required for the reconfiguration of the existing car park; and

- Timber from the existing jetty will require removal and can be used in smaller jetties.

During Construction:

- All standard general construction waste will be collected and disposed of by a private contractor to an approved waste handling facility.

Ongoing Operation:

- Given that the proposed marina does not include any pump-out facilities, recreational boat users will be required to use off-site facilities for waste water;

- Taking the above into consideration, the only waste likely to be produced will be from general recreational boat use such as drink containers, food wastes, etc. These can be disposed of in existing recycling and general waste containers already in place;

- Boat users wishing to wash or generally maintain boats will be required to use environmentally friendly cleaning products which will not damage the water quality of Brisbane Water; and

- No mechanical operations or general maintenance will occur on site either above or below MHWM.

An external contractor will collect all on-site wastes 1 to 2 times per week for both the existing and proposed operations.

Refer to Appendix 22 for the Waste Management Plan.

Taking the above into consideration the Project complies with the development controls of Chapter 106.

6.2.7.3 Chapter 111: Car Parking

The existing consent (DC 21637/97) for the operation of the restaurant and offices on the site shows car parking for 33 vehicles. An initial review of this consent and the Gosford Council car parking requirements indicates that based on the respective floor areas, these uses only generate a requirement for 18 spaces. Accordingly, it is considered that a credit of 15 spaces currently exists on the site.

The Project also involves the conversion of an existing office (43.3m^2) into an amenities room for marina users thus creating an additional credit bringing the total to 16 spaces being available. It is proposed to use this credit toward parking facilities for the marina; along with the additional 11 spaces being provided as a result of the reconfiguration to the car park area.

Car parking for the marina berths is to be provided at the ratio of 0.3-0.6:1, as per AS 3962-2001 (Guidelines for Design of Marinas). Based on this and the above the 27 car spaces available for the marina, this allows for up to a maximum of 90 berths, however, it has been decided to limit the number of berths to 50.

The table below summarises the car parking requirements required under Chapter 111 for the existing restaurant/office building:

Land-Use	Parking Requirement	Parking spaces required	Parking spaces provided	Compliance
D Commercial - Retail				
Restaurants 114.2m^2 GLA (restaurant) 41.5m^2 (kitchen) 66.4m^2 (enclosed verandah used for restaurant purposes)	1 space per 16m^2	13.7 spaces	33 spaces	Yes
Offices 181.1m^2 GLA	1 space per 40m^2	4.5 spaces		
TOTAL	18 spaces			

The table below summarises the car parking requirements under Chapter 111 for the existing restaurant/office building and proposed marina:

Land-Use	Parking Requirement	Parking spaces required	Parking spaces provided	Compliance
D Commercial - Retail				
Restaurants 114.2m^2 GLA (restaurant) 41.5m^2 (kitchen) 66.4m^2 (enclosed verandah used for restaurant purposes)	1 space per 16m^2	13.7 spaces	**44 spaces**	**Yes**
Offices 137.8m^2 GLA (conversion of one office to amenities for marina users).	1 space per 40m^2	3.4 spaces		
Marina 50 berth	0.3 – 0.6 spaces per wet berth.	15-30 spaces		
TOTAL	**Min = 32 spaces, Max = 47 spaces, Ave = 40 spaces**			

Chapter 111 does not provide a required rate of parking for marinas. The Australian *Standard 3962 – 2001 Guidelines for Design of Marinas* requires a rate of between 0.3 and 0.6 car parking spaces per wet berth.

The proposal meets both the minimum and average car parking requirements and if the 4-6 on road parking spaces available on Brisbane Water Drive approximately 300 metres north of The Boathouse Restaurant are taken into account, then the proposal also meets the maximum requirements.

Given the proximity of the Great Northern Railway and nearby station as well as the numerous bus services which run between Woy Woy and Gosford along Brisbane Water Drive, it is considered appropriate to apply either the minimum or average parking requirement under Australian *Standard 3962 – 2001 Guidelines for Design of Marinas.* Add to this the fact that approximately 10-15% of restaurant patrons come by boat as oppose to car. With this in mind, the number of proposed available parking spaces (27) should be able to accommodate a marina of between 60 and 90 wet berths. The applicant however has decided to provide ample parking for boat users and as such has limited the proposal to 50 berths.

A full Traffic Assessment providing further detailed information on car parking configuration and traffic generation has been provided within Appendix 9.

Taking the above into consideration the Project complies with the development controls of Chapter 111.

6.2.7.4 Chapter 119: Wharves & Jetties

The table below summarises the main numerical requirements of DCP 119 against the proposal. It must be noted that the jetty portion of the proposal will remain essentially unchanged aside from replacing the decking, widening and raising by 500mm. The location of existing piles and length remains as is.

DCP 119 Development Standard	Required	Proposed	Compliance
7.3 Visual Character and Natural Landscape			
7.3.3.a Visual Impact Assessment Assessment	A Visual Impact Assessment has been prepared and reveals that the proposed development will not hinder any significant existing views and will sit naturally into the nautical environment.		Yes
7.3.3.b Natural Landscape Elements: Access Facilities to Brisbane Water to avoid any alteration of the natural ground level of the foreshore.	The proposed marina will be built off the existing jetty which is located approximately 30m off shore and will therefore not involve any alteration to the ground level of the foreshore.		Yes
7.3.3.c Building Materials: Building materials used both in, and for the construction shall include only plantation grown timber and timber removed with approval from State Forests.	Main construction material consists of metal and plastic. Any timbers used during or within the construction will be State approved plantation grown timber and can be enforced through the implementation of a condition of consent		Yes
Non-reflective surfaces, and colours. Natural tones and finishes.	Hollow metal piles with black poly sleeve and capping and plastic non-reflective decking and pontoons.		Yes
The outermost piles of the structure shall be painted white above high water mark. Reflectors shall be provided on the structure as required by the Maritime Services Board.	This can be dealt with through the implementation of a condition of consent.		Yes

7.4 Management Guidelines and Standards			
7.4.1.a Jetties and wharves for short stay by vessels to provide for embarking, disembarking, loading and unloading;	The jetty portion of the development will not be used for the long term mooring of vessels.		Yes
7.4.1.b The length of any jetty/wharf structure should not exceed the dimensions as set out in the Appendix 1.	Not exceed average length nearby jetties (30m-50m)	Existing jetty length to remain at 30m.	Yes
7.4.1.c To maximise the free flow of water beneath the structure a wharf/jetty must not be constructed of solid fill, but must be constructed on piles with a minimum longitudinal spacing of 3 metres	The piles for the jetty will remain with piles for the marina exceeding the minimum longitudinal spacing of 3 metres.		Yes
7.4.1.e Height above MHWM	Min 0.75m above MHWM/1.15AHD	1.75m AHD	Yes
7.4.1.f Jetty Width	0.9m - 1.2m	1.5m	No*
7.4.1.g Handrail	1 side only	2 sides	No**
7.4.1.i Gates or similar devices will not be permitted.	A gate will control access to the marina for security reasons.		No***
7.4.1.j Lighting minimal and for safety of users only	Lighting located along the jetty and marina will be for the safety of users only and will not cause nuisance through light spill to any Brisbane Water users or any land based residents.		Yes
7.4.1.k Davits and derricks will not be permitted.	None proposed		Yes
7.4.1.m Jetties shall be adequately maintained .	This can be dealt with through the implementation of a condition of consent.		Yes
7.4.2 Foreshores designated by a dotted black line on the attached map.			
Clause 7.4.2 is not applicable as the existing and proposed rebuilt jetty is not an owner shared responsibility.			

* Given that a 50 berth marina catering for vessels up to 21 metres in length will extend beyond the jetty it is necessary to widen the jetty access to 1.5 metres. In order to maintain the quality of the nearby seagrass, the existing wooden decking will be replaced with a more visually permeable material. It must be noted that the seagrass located underneath the existing structure is currently flourishing and as such it can only be assumed that the replacement decking will aid to this. Taking this into consideration the proposed jetty will continue to meet the following relevant objective of Chapter 119:

h) ensure that development has regard for and does not adversely affect important estuarine flora including seagrasses, mangroves and saltmarshes or fauna habitats and fishing grounds which may be in proximity to the proposed development;

**Following on from the above point, the fact that a 50 berth marina will be connected to the jetty means that pedestrian traffic along the jetty will be markedly increased from the existing situation or a standard private jetty situation. With this in mind it is considered appropriate to provide two handrails for the safety of boat users. In addition to this is the fact that the proposed jetty will be raised 500mm and widened to 1.5m and therefore two handrails is considered necessary for people passing each other. The provision of two handrails will not affect The Projects ability to meet the prescribed objectives of Chapter 119.

***Again, as the jetty is connected to a marina it is necessary to provide a secure gate for private boat owners.

Taking the above into consideration the Project complies with the development controls of Chapter 119.

6.2.7.5 Chapter 159: Character Statement

The proposed marina being situated below MHWM is not located within any character precinct of Chapter 159 and through discussion with Gosford City Council it is not required to be addressed. Despite this, the nearest precinct to the development is Precinct 8 'Transit Corridor' which includes the Great Northern Railway, Brisbane Water Drive, parklands and public open space along the foreshore. While the proposal is not located directly within this precinct, consideration has been given to the potential visual impact the development may have on the locality. A Visual Impact Statement has been undertaken which concludes that the marina will not impact on the on the scenic quality of the precinct. In fact a floating marina as opposed to one developed within the shoreline is often a desirable focal point with residents wishing to be able to access views of the moored boats.

The marina is considered to be of a scale and intensity that is consistent with the surrounding land uses within the area given the numerous moorings located both north and south. The marina will make a positive contribution to the Koolewong area and is an ideal use within the proposed location.

A detail visual assessment is provided within Appendix 11.

Taking the above into consideration the Project complies with the development controls of Chapter 159.

6.2.8 Brisbane Water Plan of Management

Brisbane Water is a tidal arm of Broken Bay located approximately 50 kilometres north of Sydney. The area is strategically located on the established Great Northern railway and freeway network between Sydney and Newcastle. Due to these factors, the location has experienced significant growth. In the past decade the permanent population of the Central Coast has almost doubled from 90,000 to around 170,000. With this in mind the goals of the Brisbane Water Plan of Management Committee are:

1. Protect, enhance and maintain Brisbane Water and its surrounds;

2. Minimise the urban influence on the aquatic environment;

3. Reverse undesirable impacts using catchment management principles by control of development and carrying out improvement works; and

4. Adopt management policies for all public open space.

The following guidelines are relevant to the Project:

<u>Estuarine Habitat Management</u>

b) …Council will not support development proposals which will result in the destruction or degradation of fringing wetlands (Swamp Oak and Swamp Mahogany), mangroves, saltmarsh or seagrass beds identified around Brisbane Water…

Comment: The proposal does not impact upon any wetlands, mangroves or salt marshes. The proposal has the potential to impact on nearby sea grasses however suitable mitigation methods will be adopted to ensure their protection.

c) In instances where development is proposed adjacent to mangrove areas and seagrass beds, the Council will require that adequate buffer zones are provided between the development and the subject habitat area. Reference should be made to the Estuarine Habitat Management Guidelines prepared by the NSW Fisheries with assessment of adequate buffer zones to minimise any adverse impacts of any structures or detrimental uses may have on mangrove, saltmarsh and seagrass areas.

Council will not support development within any specified buffer zones outlined with the Estuarine Habitat Management Guidelines unless the applicant can substantiate to the satisfaction of Council and any relevant government estuarine management authority, that the objectives of this plan are not compromised.

Comment: The existing jetty is located over sea grass beds (see Figure 7) with the proposed marina within close proximity, and as such it is impossible to provide the suggested buffer zone. Extensive investigations have been undertaken to ensure that there will be no detrimental impacts on the nearby sea grasses (refer Appendix 5).

d) Proposed development within or adjacent to Brisbane Water is to have regard for any adjoining important estuarine habitats at all times, particularly during the construction phase. In all instances, Council will require that any impact upon estuarine habitats within Brisbane Water especially mangroves, saltmarsh and seagrass beds is minimised.

Comment: Various mitigation methods will be implemented during the construction phase to ensure minimal impact is felt upon the abovementioned sea grasses; these being discussed at length within Section 10 of the EA.

g) Council will require that all major boat accommodation facilities (such as commercial or club marinas and commercial or club boat sheds) provide adequate boat sewage, maintenance and rubbish disposal facilities capable of satisfying Council's standards, in order to minimise the extent of any adverse impact caused by the direct discharge or disposal of effluent and rubbish into Brisbane Water.

Comment: The Project does not propose to install boat sewerage disposal facilities for the following reasons:

- Gosford Sailing Club has facilities which only get used approximately once per month;
- Council also provides a free service within the bay;
- 90% of water craft in Brisbane Water do not have holding tanks as oppose to larger vessels seen more frequently in Sydney waters;
- Proximity to oyster farms – any potential leaks or spill would have a detrimental effect on the oyster industry;
- Smell in proximity to restaurant; and
- Proximity to nearby sea grasses.

It is considered that the locality has adequate pump out facilities to not warrant the additional potential environmental impacts of creating another one.

The site contains existing adequate rubbish disposal facilities to accommodate any further demand from boat users.

Water Quality

b) Seagrass and mangrove wetlands be protected and activities likely to damage this vegetation be strictly controlled to maintain their role as nurseries and improve water quality by stabilising sediments and functioning as biological filters of pollution.

Comment: One of the possible impacts of the proposed marina is increased sedimentation of water which can block sunlight to nearby sea grasses. This impact has been realised and suitable mitigations methods will be adopted both during and after construction to ensure sea grasses are protected; these being discussed at length within Section 10 of the EA.

Heritage within Brisbane Water

No items of Aboriginal cultural heritage or historical archaeology have been identified on site (refer Appendix 7).

Water Use and Occupations within Brisbane Water

b) All development for public recreational purposes shall maintain and enhance public foreshore access. Council shall not permit any reduction in the availability of public access along the foreshores of Brisbane Water.

Comment: The proposed development will enhance public access along the foreshore by developing an improved public jetty and 50 berth marina facility.

c) All development for public foreshore access and recreational facilities is to be of a standard which is sympathetic to the natural character of Brisbane Water.

d) Building materials are to be of low reflectivity, with colours and textures that are sympathetic to the natural environment of Brisbane Water.

f) The scale and character of any development associated with public foreshore access and recreational facilities, in terms of its height and bulk, shall be low key.

Comment: The proposed marina will be in keeping with existing structures below the mean high water mark in that it will be low profile and in a location which will not impact upon the natural beauty of Brisbane Water. Construction materials will be of those generally seen in floating marina construction and have been chosen for their durability as well as their positive impact on nearby sea grasses. Sea grass friendly pontoons and jetty decking will replace the existing wood used in the jetty to increase light penetration to nearby sea grasses.

j) Maintenance of vessels on or adjacent to any of the beaches along the foreshores of Brisbane Water other than on approved boat maintenance facilities will not be permitted.

Comment: The proposed marina will not involve any facility for mechanical boat maintenance.

l. In recognition of the finite nature of Brisbane Water as a source for boating recreation purposes, limits on the maximum number of moorings and endorsed management

strategies for respective mooring areas are provided in accordance with Table 3 (130 for Koolewong).

Comment: NSW Maritime (Gosford Office) advised that Koolewong currently has approximately 150 approved moorings, twenty over the recommended number. Taking this into consideration, the proposed marina, providing 50 berths, is considered to encourage boat users away from private moorings which take up considerable space to using more space efficient facilities such as the proposed. In addition, as part of the marina proposal three swing moorings will be surrendered.

Tourism and Transportation

c) The transport usage of Brisbane Water be encouraged and the Public Wharves suitable for transportation use be maintained to a satisfactory standard for use as a transport facility.

Comment: The proposed 50 berth marina and upgraded jetty will encourage transport usage of Brisbane Water as it will provide the only facility in the area which can accommodate deep berthing water craft.

Commercial and Club Waterfront Development

11.2 Management Guidelines
a) Encourage selected locations of small boat berthing facilities around Brisbane Water for up to ten (10) boats as part of encouraging the removal and reduction of the need for individual private jetties and moorings.

Comment: The project proposes a 50 berth marina. Whilst this is over the suggested ten, the facility has been developed based on a thorough economic analysis and it is believed that the area warrants a larger permanent berthing facility and one which can accommodate deep berthing water craft. In addition and as mentioned above, a facility of this size will substantially alleviate the demand for space consuming private jetties and moorings, particularly swing moorings (of which two will be removed as part of the proposal) which have substantial environmental impacts. Furthermore, the site does not have to rely on public car parks or on-street parking.

11.3 General Design and Siting Guidelines
g) All proposed development is to have regard for environmental influences and coastal/estuarine processes that are active within the locality of the proposed development as well as undertaking full biological and environmental assessment of the area and its effect on the proposed development as well as the effect of the development on the environment. Specifically, applicants are to provide with any development application, a detailed statement from a suitably qualified engineer concerning the likely effects of:

(i) Wind generated waves; beach and pressure waves
(ii) Swell;
(iii) Tidal fluctuations; and
(iv) Localised currents.
(v) Other relevant marine and estuarine processes

Applicants must certify that the development will not be adversely affected by such forces and processes or that the proposal itself is likely to impact on such forces and

processes in a manner that is likely to have a detrimental impact on adjoining areas, especially in terms of possible erosion, sediment accretion or debris accumulation.

To obtain approval, applicants must agree to correct any unforeseen adverse effects.

Comment: As part of the creation of the proposed marina, a Coastal Hazards Report and Aquatic Ecology Report has been completed and reveals that the Project is in line with the above requirements. These are discussed at length throughout the EA and within Appendix 5 and 6.

11.4 Shore Based Services
b) Carparking is to be in accordance with the minimum requirements of Council's policy for carparking and the (draft) Australian Standard for Marina Design Practice as is summarised below:

(I) Carparking for marina activities;

(a) Spaces to be provided per wet berth;
- For boats 10 metres and under equals 0.6 spaces;
- For boats between 10 metres and 15 metres equals 0.8 spaces; and
- For boats greater than 15 metres equals 1.0 spaces.
(b) Spaces to be provided per dry berth equals 0.2 spaces;
(c) Spaces to be provided per swing mooring equals 0.2 spaces;
(d) Spaces to be provided per employee equals 0.5 spaces;

Since the creation of the Brisbane Water Plan of Management *The Australian Standard 3962 – 2001 Guidelines for Design of Marinas* has been adopted and requires a rate of between 0.3 and 0.6 car parking spaces per wet berth.

See Section 6.2.7.3 Chapter 111: Car Parking for the required number of spaces for the proposed marina.

c) Large visual expanses of paved carparking areas are to be avoided through the use of appropriately located planter islands and landscaping strips to provide shade and improve the amenity.

Comment: The above required parking will be accommodated within the existing car park area which will be slightly reconfigured to provide the additional spaces. This area is already suitable landscaped and located behind the existing restaurant building so as not to be visual obtrusive.

d) Council actively encourages the introduction of facilities for the removal and disposal of sewage and bilge water from boats within Brisbane Water in a manner that does not pollute the waterway. Whilst Council recognises that the State Government has not yet enacted provisions that specifically require the removal of such wastes to onshore disposal facilities, the Council strongly encourages any private owners of marinas or commercial boatsheds and clubs to provide such facilities. As any relevant State Government legislation is enacted relating to the removal and disposal of sewage from boats, Council will review this plan to ensure that it is consistent with such statutory requirements.

Comment: Discussed above within point g) of *Estuarine Habitat Management*

e) Council also encourages all commercial marinas, boating clubs and individual private boat owners to carry and use relevant bilge and oil dispersants and absorbers to avoid discharges of oils, or hydrocarbons from refuelling operations and bilges into Brisbane

Water. This will help minimise environmental damage that may occur from a large number of small discharges that can impact on a popular boating and fishing waterway such as Brisbane Water.

Comment: The Project does not involve any refueling or mechanical service.

f) Garbage receptacles are to be provided on proposed commercial operations and marina walkways and have self closing lids to prevent escape or rubbish by way of wind, birds or other animals. A separate appropriate solid waste container is to be provided for any workshop area.

Comment: This can be addressed through the imposition of a suitable condition of consent.

g) Minimal and energy efficient lighting shall be provided for safe pedestrian access to berths and for safe navigation in and out of the facility. All lighting is to be shielded or focussed and located in such a manner that makes it safe for navigation and minimises any likely adverse visual impact when viewed from:

- *Brisbane Water;*
- *Any adjoining public land; or*
- *Adjoining residences.*

Proposals for external lighting require the consent of Council. Details concerning the height of proposed lights and the spill of lighting must be provided to Council with the development application.

Comment: A lighting plan detailing low profile lights along the marina has been provided within Appendix 1. The proposed lighting is of a height where there will be no light overspill nuisance.

11.5 Specific Mooring Design Considerations
a) Where practicable Council prefers the use of low profile pontoon walkways or similar to facilitate access to boats. In instances where jetties are considered necessary they are to be no higher than 0.75 metres above mean high water mark.

b) The use of piles to jetties, pontoon support piles or free standing berthing piles should be minimised in order to obviate any likely visual impact that may result.

c) Council will discourage the use of berthing piles in view of their greater visual impact. As an alternative, Council would consider the use of low profile, berthing systems involving the use of mooring structures as illustrated in Figure 32 in view of their lesser visual impact.

Comment: The proposed 50 berth marina is designed to be able accommodate deep hull boats and is of a size where a low profile berthing system would be structural impractical. The marina however will not be visually obtrusive given its location behind and existing restaurant and piles have only been used where structurally necessary and reduced where possible.

d) Proposals for marinas are to include the number of proposed berths and the maximum size of boat that can be accommodated per berth.

Comment: Refer Appendix 1 and Section 3.1

11.6 Public Access
a) All proposed commercial and/or club waterfront development is to incorporate public access along the foreshore
b) Council will not support any proposals which are likely to lead to a loss of existing public foreshore access.
c) Public foreshore access which is available at commercial or club waterfront facilities is to be sign posted, indicating its availability, and be maintained at all times.

Comment: The subject site is located entirely on reclaimed land and as such there is no current access to the foreshore with the proposed marina not affecting this situation. Public boating access and emergency service access to the jetty will be improved through the improved and widened structure and development of the marina. A suitable condition of consent requiring signposting can be applied indicating the availability of the jetty for boat users.

Taking the above into consideration the Project complies with the guidelines of the Brisbane Water Plan of Management.

6.2.9 Draft Subregional Strategy for the Central Coast Subregion 2006

The 2031 employment capacity target for the Central Coast is more than 45,000 new jobs. The local government area of Gosford is identified, along with Wyong, as being in the Central Coast Subregion. Gosford is identified as the regional city for the subregion, with an expected 6000 new jobs by 2031.

The proposed marina development is seen to be in line with the subregional strategy by providing further employment opportunities both during and after construction. In addition to this, with the area expecting significant population growth particularly within the ageing community, an additional marina is considered warranted given the likely increase in recreational boating users.

6.3 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

The *POEO Act* exerts control over the activities of certain uses to ensure that likely environmental impacts are eliminated or reduced to harmless levels and monitored to prevent the degradation of the environment and human health. The *POEO Act* provides a single licensing arrangement to replace the different licenses and approvals under existing separate Acts relating to air pollution, water pollution, noise pollution and waste management.

Pursuant to Section 91 of the *EP&A Act,* the Project is **not** a 'scheduled activity', and does not require approval pursuant to Clause 48 of the *POEO Act* as the proposed marina provides less than 80 berths.

6.4 ENVIRONMENT PROTECTION AND BIODIVERSITY ACT 1999

The *EPBC Act* was introduced in 1999, and replaces several dated Environmental Protection and Conservation Acts. The *EPBC Act* aims to protect seven matters of national environmental significance being:

- World Heritage Properties;
- National Heritage Places;
- Wetlands of International Importance (Ramsar Wetlands);

- Threatened Species and Ecological Communities;
- Migratory Species;
- Commonwealth Marine Areas; and
- Nuclear Actions (including uranium mining).

It is not considered that the proposed marina would have a significant impact on migratory wading birds, diving birds or raptors protected under the *EPBC Act*. The proposal would not have any significant direct or indirect impacts on the habitat of these birds or result in invasive species that are harmful to wading birds becoming established in estuaries. Potential impacts during construction of the proposed marina would have a minimal short term impact on any migratory birds roosting or feeding in the area. There are no breeding or nesting areas known to occur within the study area.

6.5 THREATENED SPECIES CONSERVATION ACT 1995

The *TSC Act* provides a framework for the listing and declaration of threatened species, populations, endangered ecological communities, key threatening processes and critical habitat. The *TSA Act* deals with marine birds, mammals and reptiles.

An 'Assessment of Significance' for threatened species, populations and communities listed under the *TSC Act* reveals the following:

1. Green and loggerhead turtles may occur within Brisbane Water on occasion. The proposed marina may result in the following impacts:

    - Increased risk of boat strike.

        Mitigation measure – Boat strike is not considered to be a current issue within Brisbane Water and would be mitigated through existing zoning of appropriate boat speeds within the estuary and around the proposed marina.

    - Impacts to seagrass habitat and reduction in water quality

        Mitigation measure - Given the existing level of boating activity within Brisbane Water, the addition of the marina at Koolewong would be very unlikely to exacerbate the overall risk. A construction management plan would be developed to control the impacts on surrounding seagrass habitat and manage turbidity levels.

    Taking the above into consideration and implementing the suggested mitigation methods (refer Section 10: 2, 7, 16-23 & GENERAL), no significant impacts on marine turtles is expected.

2. Several species of estuarine bird (including waders, diving birds and raptors) have been recorded within the study area. The construction and operation of the marina is not, however, considered likely to have an effect on the habitat utilised by these species such that it would cause any observable alteration to their behaviour or habitat requirements.

A full Aquatic Ecology Report providing further detail with regards to the above is provided within Appendix 5.

6.6 FISHERIES MANAGEMENT ACT 1994

The *FM Act* seeks to conserve fish stocks, key fish habitats and threatened species, populations and ecological communities of fish and marine vegetation. Consistent with those objectives is the aim to ensure social, cultural and economic benefits to commercial, recreational and Aboriginal fisheries as well as the wider community of NSW.

Marine vegetation including seagrasses, mangroves and algae is also protected in NSW and a permit is required from NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS formally I&I NSW, fisheries) to undertake works or activities that may harm them. State legislation requires that developments likely to have a significant effect on threatened species prepare a Species Impact Statement (SIS).

An 'Assessment of Significance' for threatened species, populations and communities listed under the *FM Act* reveals the following:

- Sea grasses were observed within the survey area (but not within the area of proposed works) including *Posidonia australis*, *Zostera capricorni*, and *Halophila sp*. The proposed marina may result in the following impacts:

    - Physical damage (from boat propellers, anchors and moorings).

        Mitigation measure – A construction management plan should be adopted clearly identifying areas of *Posidonia* with these being marked through on-shore signage to avoid disturbance. Where possible anchors and equipment should not be deployed in these areas.

    - The weed species *Caulerpa taxifolia* was observed within the survey area (but not within the area of proposed works). The proposed marina may result in the spread of this invasive pest alga.

        Mitigation measure - A construction management plan should be adopted clearly identifying areas of *Caulerpa taxifolia* with these being marked through on-shore signage to avoid disturbance. Where possible anchors and equipment should not be deployed in these areas. Equipment should be inspected before and after use to avoid the spread of *Caulerpa.* Any *Caulerpa* collected on gear should be removed, bagged disposed of with general refuse in accordance with DPI recommendations.

    - Reduction in water quality.

        Mitigation measure - Silt curtains may need to be used around pile driving works to ensure suspended sediments are contained and water clarity of adjacent seagrass beds is maintained.

Taking the above into consideration and implementing the suggested mitigation methods (refer Section 10: 2-29 & GENERAL), no significant impacts on sea grasses is expected and therefore a species impact statement is not required.

As seagrass would not be directly affected during the proposed construction or operation of the proposed marina at Koolewong, a permit to harm marine vegetation under Section 37 of the *FM Act* would not be required.

A full Aquatic Ecology Report providing further detail with regards to the above is provided within Appendix 5.

6.7 COASTAL DESIGN GUIDELINES FOR NSW

The *Coastal Design Guidelines for NSW* was developed to be used by coastal local councils, communities and developers in order to create urban design solutions that capture the economic and social needs of the growing population, while protecting the unique coastal environment.

The Project is located within the Coastal village of Koolewong where the guidelines provide the following relevant desired future character statements:

1. Relationship to the environment

b. Separation between settlements is maintained by excluding urban development from surrounding rural and natural lands.

Comment: The Project is proposed for an existing developed site away from nearby rural and natural lands.

d. New buildings and other urban development are located within the boundaries of the village.

Comment: The Project is located on an existing commercial allotment containing an existing jetty and restaurant located within the township boundaries of Koolewong.

e. Land with high ecological, agricultural and visual integrity surrounding the village is protected.

Comment: The geographical nature of Koolewong is such that the proposed marina will not be visually dominant and will maintain the visual integrity of the coastal village. Additionally, the jetty and marina have been developed to minimize any impacts to the sensitive ecologically important waters of Brisbane Water.

f. Aboriginal and European places and relics are protected.

Comment: Significant studies have revealed that there are no Aboriginal or European relics within the vicinity of the site.

g. Total water cycle management and water sensitive, urban design initiatives are implemented.

Comment: The nature of the development is such that water usage is considered minimal. Water will be required for fire hoses and boat washing only and likely to be less than that of a standard dwelling.

k. Invasive plant species are removed from ecological areas.

Comment: As mentioned above, mitigation measures will be adopted ensuring the avoidance of spreading *Caulerpa taxifolia*.

2. Visual sensitivity

a. Visual character is critical in coastal villages. New development responds sensitively in form and character to the village and to the existing proportions and materials of existing buildings.

Comment: A Visual Impact Statement has been prepared which analyses various important views from both the public and private realm. The Statement concludes that the location and nature of development is such that no significant views will be affected by its construction and the size and materials used responds to the existing development on site and the nautical environment in general.

3. Edges to the water and natural areas

a. Foreshore access in proximity to primary streets and public places within the village are reinforced.

Comment: the proposed development will improve the existing jetty available for the boating public and will maintain existing access to the foreshore through the cycle way/pedestrian path adjacent to the site.

6.8 NSW COASTAL POLICY 1997

The NSW Coastal Policy 1997 aims to manage the coast in an ecologically sustainable way and protect and conserve the coast for future generations. It's a broad based document which essentially provides similar guidelines to the abovementioned and discussed legislation/guidelines. The document discusses the principles of ecologically sustainable development with these been elaborated upon within Section 9.10 of the Report.

7.0 Requirements of the Director General of the NSW Department of Planning

Details of the Director General's Requirements (DGRs) were provided by letter from the Department of Planning, dated 20 December 2010.

The following table outlines the DGRs and where they have been addressed in the EA.

Director General's Requirements (DGRs)	Section of EA where addressed
General Requirements: The Environmental Assessment (EA) for the Project Application must include:	
1. An executive summary.	See page v – Executive Summary
2. A detailed description of the proposal, including: • any development options; • justification, consideration of any environmental impacts, site suitability and whether the project is in the public interest; and • various components and stages of the project.	See Section 8.0 – Alternatives Considered See Section 4.0 – Justification for Project See Section 3.0 – The Proposed Development
3. A thorough site analysis, including constraints mapping and description of the existing environment.	See Section 2.0 – The Site and Surrounding Environment
4. Consideration of any relevant statutory and non-statutory provisions and identification of any non-compliances with those provisions, particularly in environmental planning instruments, Regional Strategies (including draft Regional Strategies) and Development Control Plans.	See Section 6.0 – Statutory Context and Planning Controls
5. Consideration of consistency of the project with the objects of the *Environmental Planning and Assessment Act 1979* (NSW).	See Section 6.2 – Environmental Planning and Assessment Act 1979
6. Consideration of impacts, if any, on matters of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).	See Section 6.4 – Environment Protection and Biodiversity Conservation Act 1999
7. Assessment of the project's potential impacts and provision of a draft Statement of Commitments outlining environmental management, mitigation and monitoring measures to be implemented to minimise the project's potential impacts.	See Section 10 – Draft Statement of Commitments
8. The plans and documents at Attachment 2. • Existing site survey plan • Aerial photograph • Site Analysis Plan • Locality/context plan • Zoning plan: • Landscape plan	• Refer Appendix 1a – Plans/Drawings • Refer Appendix 1a – Plans/Drawings • Refer Appendix 1a – Plans/Drawings • Refer Appendix 1a – Plans/Drawings • See Section 6.2.5 – Gosford Planning Scheme Ordinance, Figure 12: Zoning Plan • Refer Appendix 1a – Plans/Drawings

• Architectural drawings • Construction Management Plan	• Refer Appendix 1a – Plans/Drawings • Refer Appendix 23 – Construction Management Plan
9. A signed statement from the author of the EA certifying that the information contained therein is neither false nor misleading.	See page 3
10. A Quantity Surveyor's Certificate of Cost verifying the capital investment value of the project.	Refer Appendix 21 – Quantity Surveyors Report
11. Assessment of the key issues specified below and a table referencing their discussion in the EA.	See below
1. Strategic Planning	
1.1 Justify the proposal against relevant local, regional and State planning strategies and justify any inconsistencies.	See Section 6.2.9 – Draft Subregional Strategy for the Central Coast Subregion 2006.
2. Design, Layout and Desired Future Character	
2.1 Demonstrate the consistency of the proposal with the character of existing development in the locality. Provide details of the type and length of proposed berths.	See Sections 2.4 – Surrounding Context and 4.1 – Description of Proposed Development
2.2 Address the compatibility of the proposed uses with surrounding land uses and potential amenity impacts. Provide details of proposed hours of operation, and measures to mitigate impacts on surrounding uses, particularly adjacent residential areas.	See Sections 2.4 – Surrounding Context and 4.2 – Operational Details
2.3 Demonstrate the consistency of the marina design and layout with the *Coastal Design Guidelines for NSW*, *NSW Coastal Policy 1997,* and *SEPP 71 – Coastal Protection*.	See Sections 6.7 – Coastal Design Guidelines for NSW, 6.8 – NSW Coastal Policy 1997 and 6.2.4 – State Environmental Planning Policy 71 (Coastal Protection)
2.4Address existing and future opportunities for pedestrian, and public and emergency access to and along the foreshore.	See Section 4.2 – Public Benefit
3 Water Cycle Management	
3.1 Provide the following details for construction and operation; proposed erosion and sediment controls; disturbance of contaminated sediments; proposed stormwater management system, including best practice measures for Integrated Water Cycle Management based on Water Sensitive Urban Design principles; and management/environmental measures to contain pollutants (e.g. fuel and sewage).	Refer Appendix 5 – Aquatic Ecology Report, Section 9.1 – Soils, Sediment and Water and Section 10 – Draft Statement of Commitments.
3.2 Identify site water demands in terms of volume and timing for the life of the project, including details or any water reticulation infrastructure/vehicles which supply water to the site.	See Section 9.12 – Infrastructure Provisions
3.3Demonstrate that existing and proposed water licensing requirements are in accordance with the Water Act 1912 and the Water Management Act 2000.	The Project requires only the use of reticulated water and as such does not require any licenses under either the Water Act 1912 or the *WM Act*.

3.4 Demonstrate that construction of works within 40m of watercourses will be in accordance with Water Management Act 2000 Guidelines for Controlled Activities: riparian corridors.	The Project is exempt from requiring a "Controlled Activity Approval" under the *WM Act* pursuant to Section 75U of the *EP&A Act*. Additionally, given that the Project involves mainly water based development with the proposed marina being attached to an existing jetty there will be no impact on riparian corridors. Further substantial investigations in this regard have been undertaken within Appendix 5.
3.5 Describe and assess and potential requirement to intercept groundwater, including predicted dewatering volumes, zone of drawdown and associated impact, water quality and disposal methods. Provide details of adequate mitigating and monitoring requirements to address surface and groundwater impacts.	The proposed development will have no impact or requirement to intercept ground water.
4. Flora and Fauna	
4.1 Provide a flora and fauna assessment in accordance with the *Threatened Biodiversity Survey and Assessment Guidelines Working Draft* (DEC, 2004), *Threatened Species Assessment Guidelines: The Assessment of Significance* (DECC, 2007), and *Draft Guidelines for Threatened Species Assessment* (DEC and DPI, 2005). Outline potential impacts from construction and operation (including construction and maintenance dredging/reclamation, and propeller damage and boat wash) on aquatic and terrestrial flora and fauna, (including Posidonia australis), and their habitats, the potential introduction of marine pests, (including *Caulerpa taxifolia),* and relevant measures to mitigate, rehabilitate or compensate.	Refer Appendix 5 - Aquatic Ecology Report, Section 9.2 – Flora & Fauna & Section 10 – draft Statement of Commitments.
4.2 Outline measures for the conservation of any existing wildlife corridor values and/or connective importance of any vegetation on the site. Address measures to protect and manage the riparian corridors and adjacent aquatic habitats.	Refer Appendix 5 - Aquatic Ecology Report, Section 9.2 – Flora & Fauna & Section 10 – Draft Statement of Commitments.
5. Visual Impact	
5.1 Provide a visual impact assessment and view analysis of the proposal in the context of local and regional area. The assessment must address potential impacts from adjoining properties and uses, residential properties on Brisbane Water Drive, foreshore and waterway, Brisbane Water Drive, and vantage points around Brisbane Water. Identify and demonstrate the potential level of visual impact (supported by visual aids such as scale model and photomontages), including cumulative impacts. Address the amelioration of visual impacts and provide details of	Refer Appendix 11 – Visual Impact Statement and Section 9.3 – Visual Impact.

mitigation measures.	
6. Hazard Management and Mitigation	
Coastal Processes	
6.1 Address coastal hazards and the provisions of the Coastline Management Manual. In particular consider impacts associated with wave and wind action, coastal erosion, climate change, sea level rise and more frequent and intense storms. Address flushing, coastal processes and impacts on the hydrodynamics of the water body from construction and operation of the proposal particularly from maintenance dredging and reclamation. Provide hydrographic survey and modelling details and an assessment of the hydrodynamic processes within the water body in order to quantify impacts of the proposal.	Refer Appendix 6 – Coastal Process Investigation, Appendix 1a for hydrographic survey and Section 9.4 – Hazard Management and Mitigation.
6.2 Address foreshore erosion and any necessary rehabilitation/remediation works during construction and operation.	Refer Appendix 6 – Coastal Process Investigation, Section 9.1 – Soils, Sediment & Water, Section 9.4 – Hazard Management and Mitigation and Section 10 – Draft Statement of Commitments.
Contamination	
6.3 Identify any contamination on site and appropriate mitigation measures in accordance with the provisions of *SEPP 55 – Remediation of Land*. Provide details of the method of disposal of any contaminated fill from the site.	See Section 9.1 – Soils, Sediment and Water and Section 10 – Draft Statement of Commitments.
Acid Sulfate Soils	
6.4 Identify the presence and extent of acid sulfate soils on the site and, where relevant, appropriate mitigation, management and disposal measures.	See Section 9.1 – Soils, Sediment and Water
Geotechnical	
6.5 Provide an assessment of any geotechnical limitations that may occur on the site, any proposed filling, and if necessary, appropriate design considerations to address any limitations.	See Section 9.4.1 – Geotechnical
Flooding	
6.6 Provide an assessment of any flood risk on the site (for the full range of floods, including events greater than the design flood, up to probable maximum flood; and from coastal inundation, catchment-based flooding or a combination of the two) with consideration of any relevant provisions of the *NSW Floodplain Development Manual 2005*. Determine the flood hazard in the area; and address the impact of flooding on the proposed development, the impact of the development on flood behaviour of the site and adjacent lands, and adequate egress and safety in a flood event.	Refer Appendix 6 – Coastal Process Investigation, Section 9.4 – Hazard Management and Mitigation and Section 10 – Draft Statement of Commitments.

6.7 Assess the potential impacts of sea level rise and an increase in rainfall intensity on the flood regime of the site and adjacent lands with consideration of *Practical Consideration of Climate Change – Floodplain Risk Management Guideline (DECC, October 2007)* and the relevant documents at 'Coastal planning' at Attachment 3.	Refer Appendix 6 – Coastal Process Investigation and Section 9.4 – Hazard Management and Mitigation.
Bushfire	
6.8 Address the requirements of *Planning for Bush Fire Protection 2006* (RFS).	Section 9.4 – Hazard Management and Mitigation.
7. Traffic and Access	
7.1 Prepare a traffic impact study in accordance with Table 2.1 of the RTA's Guide to Traffic Generating Developments which addresses matters, including:	Refer Appendix 9 – Traffic Assessment Report and Section 9.5 – Traffic and Access.
• The capacity of the road network to safely and efficiently cater for the additional traffic generated, including the impacts on traffic flow and safety on Brisbane Water Drive;	• See Sections 2.1 – Surrounding Road Network, 2.2 – Observed Traffic Conditions, 3.2 – Predicted Traffic Generation Rates, 3.3 – Effect on the Road Network and Car Park Operation & 4 – Recommendations and Conclusions.
• Suitable mitigation measures, if required, to ensure the efficient functioning of the road network;	• No mitigation methods necessary.
• Access to and within the site;	• See Sections 2.1 – Surrounding Road Network.
• Servicing and parking arrangements and requirements for all existing and proposed uses on the site, including parking surveys for all existing uses;	• See Sections 3.1 - Car Parking Requirements & 3.3 – Effect on the Road Network and Car Park Operation. See also Attachment "A" – Car Park Weekly Inbound Traffic Survey.
• Intersection site distances;	• The nearest intersection with Brisbane Water Drive is 350 metres south with Lara Street – this intersection will have no impact on the proposed marina.
• Provision of access for pedestrians and cyclists. And identify measures to manage potential conflicts; and	• See Section 3.3 – Effect on the Road Network and Car Park Operation.
• Public transport usage and infrastructure usage relative to the proposal.	• Two bus services operate within the vicinity of the subject site with a bus stop located 350 metres south. These services can run independently or in conjunction with the Great Northern Railway Line, with Woy Woy station being the closest to the subject site. Given the type of development proposed, it is unlikely that users of the

	marina will significantly utilize these public transport services however staff of the existing restaurant and offices do.
7.2 An intersection analysis (such as SIDRA) for the site's access location and Brisbane Water Drive to determine the need for intersection and mid-block capacity upgrades. The analysis must include: • Current traffic counts and 10 year growth projections; • With and without development scenarios considered; • 95th percentile back of queue lengths; • Delays and level of service on all legs for the relevant intersections; and • Electronic modelling files for RTA review.	• See Section 3.3 – Effect on the Road Network and Car Park Operation and Appendix 9.
8. Noise, Air and Odour Quality	
8.1 Address potential construction, operation and traffic noise in terms of air quality and odour impacts; and appropriate mitigation measures.	Refer Appendix 8 – Noise Impact Assessment, Section 9.6 – Noise, Air and Odour and Section 10 – Draft Statement of Commitments.
9. Waste Management	
9.1 Identify all potential sources of liquid wastes as defined in the *Waste Classification Guideline* (DECC, 2008). Identify any waste proposed to be stored, separated or processed on the site, and proposed procedures to manage such wastes.	Refer Appendix 22 – Waste Management Plan and Section 9.7 – Waste Management.
10. Aquaculture	
10.1 Assess impacts from construction and operation of the proposal on local aquaculture and recreational fishing (particularly from any construction and maintenance dredging) against *State Environmental Planning Policy No 62 – Sustainable Aquaculture*, and the *NSW Oyster Industry Sustainable Aquaculture Strategy.*	Refer Appendix 5 – Aquatic Ecology Report, Section 9.2 – Flora & Fauna and Section 6.2.3 – State Environmental Planning Policy (SEPP) 62: Sustainable Aquaculture.
11. Heritage and Archaeology	
11.1 Identify whether the site has significance to Aboriginal cultural heritage and appropriate measures to preserve any significance in accordance with the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (*DEC 2005*).*	Refer Appendix 7 – Aboriginal Cultural Heritage & Historical Archaeological Assessment and Section 9.9 – Heritage and Archaeology.
11.2 Identify any items of non-indigenous heritage significance and, where relevant, provide measures for the conservation of such items. If there is a known heritage impact, provide a Heritage Assessment of the non-indigenous heritage values of the site, including any built, archaeological,	Refer Appendix 7 – Aboriginal Cultural Heritage & Historical Archaeological Assessment and Section 9.9 – Heritage and Archaeology.

landscape and moveable items of potential significance. A draft Statement of Heritage Impact is to be submitted detailing and evaluating any impacts that the development concept would have on the non-indigenous heritage significance of the site.	
12. Ecologically Sustainable Development	
12.1 Identify how the project will incorporate ESD principles in the design, construction and ongoing operation.	See Section 9.10 - Ecologically Sustainable Development
13. Navigation and Safety	
13.1 Provide a detailed navigation assessment, including: • details of existing and proposed navigation channels, including passive recreation zones; • details of any servicing of vessels; • appropriate environmental measures to ensure the protection of the waterway and marine environment; and • details of lighting and provision of 'life' rings.	See Section 9.11 – Navigation and Safety
14. Infrastructure Provision	
14.1 Address existing capacity and requirements of the development for sewerage, including sewer pump-out, water, electricity, waste disposal, telecommunications and gas in consultation with relevant agencies. Identify and describe staging, if any, of infrastructure works.	See Section 9.12 – Infrastructure Provision
14.2 Address the ability of berths to dispose of effluent into a shore-based sewerage system, the demand for such a service, and any consequence of not having such a service.	See Section 9.12 – Infrastructure Provision
14.3 Address and provide the likely scope of any planning agreement and/or developer contributions with Council/Government agencies.	The project does not require the payment of any contributions under Council's Section 94 Contributions Plan nor does it require a planning agreement with any Government Agencies. Water and Sewer contributions can be applied as a condition of consent.
15 Social and economic Impacts	
15.1 Address the potential impacts on commercial fishing grounds and popular recreational fishing sites and provide details of public fishing access incorporated into the proposal.	Refer Appendix 5 – Aquatic Ecology Report and Section 9.13 – Social and Economic Impacts.
16 Consultation	
You should undertake an appropriate and justified level of consultation with the following agencies during the preparation of the EA: (a) *Agencies or other authorities:* • Gosford City Council;	

• Department of Environment, Climate Change and Water; • Industry and Investment; • Office of Water; • Roads and Traffic Authority; • NSW Maritime; • Hunter-Central Rivers Catchment Authority; • Rural Fire Service; • NSW Police; • Local Aboriginal Land Council/s and other Aboriginal community groups; and • Relevant service providers.	(a) See Sections 5.2 – Agency Consultation.
(b) *Public:* Document all community consultation undertaken or the proposed strategy for such consultation, including any contingencies for addressing issues arising from consultation and an effective communications strategy. The consultation process and issues raised should be described in the EA.	(b) See Section 5.1 – Community Consultation

8.0 Alternatives Considered

The following options were considered during the development of the proposed marina:

1. Keep Existing Structure;
2. Develop a 29 berth marina;
3. Using a fixed structure in lieu of a floating structure; and
4. Swing moorings.

8.1 KEEP EXISTING STRUCTURE

When compared with the proposed marina, maintaining the existing situation results in:

- Demand for "wet berths" in this portion of Brisbane Water remaining unsatisfied; and
- Ecological benefits of replacing the existing jetties cladding unfulfilled.

8.2 DEVELOP A 29 BERTH MARINA

The proposed marina was originally for a 29 berth facility however it was considered that a structure of this capacity would not cater for the demand so at minimal comparative cost it was decided to increase the berths to 50 from an economic and demand sense.

8.3 FIXED STRUCTURE IN LIEU OF A FLOATING STRUCTURE

A fixed structure against which all vessels would berth would be at a set level compared with a floating structure which changes level with the changing water level. As a result the fixed structure would:

- Have a greater visual impact;
- Take longer to construct;
- Would be more difficult to remove;
- Would required more piles; and
- Would cost more than the floating structure.

8.4 SWING MOORINGS

Swing moorings consist of riser chains attached to mooring blocks and require ten times the water space of a wet berth in a floating structure and is therefore an inefficient use of water space. This type of berthing method also allows a vessel to move under the influence of wind and currents resulting in the holding chains causing significant disturbance to the sea bed.

9.0 Environmental Assessment

This section investigates and makes assessment of the key environmental issues associated with the site and the proposed development, including having regard to the Director General's Requirements. Conclusions from various expert reports have been summarized within relevant sub-sections and suggested environmental mitigation methods have been identified and listed according to corresponding number within the *Section 10 Draft Statement of Commitments*.

9.1 SOILS, SEDIMENT AND WATER

Acid Sulfate Soils

Gosford City Council's Constraints Mapping (2011) indicates that there is a 'High Probability' of occurrence of acid sulfate soils within the area for the proposed marina.

Given that the works will not involve excavation or pile removal an acid sulfate management plan will not be required.

RISK MANAGEMENT: Given that the works will not involve excavation or pile removal there is no risk of uncovering acid sulfate soils.

Erosion and Soils

Minimal works are proposed on land as part of this project with these being limited to the minor reconfiguration of the existing car park. Standard conditions can be imposed on any future consent in order to prevent the erosion of soils.

With regards to the proposed marina and existing jetty, the surrounding shoreline at the site is protected by a rock revetment and therefore is in no danger of erosion as a result of the proposed works.

RISK MANAGEMENT: the risk associated with the minor extent of work required to reconfigure the existing carpark is insignificant however will be managed through the adoption appropriate erosion and sedimentation controls such as providing silt fences, sediment inlet traps around storm water pits and the provision of an all weather construction access.

Mitigation Measure: 1, 50-56

Sediment and Water

As mentioned above, the proposed marina has the potential to decrease water quality in the vicinity through the mobilization of sediments caused by pile displacement, constructional boat use and on-going recreational boat use.

RISK MANAGEMENT: The risk associated with mobilization of sediments can be significantly reduced by enforcing a 'no wash' speed limit for vessels, vessels with deeper drafts being housed on the outer arm and using hollows piles within the construction of the marina.

Mitigation Measure: 2-8 and GENERAL

Contamination

Relatively low levels of contamination were recorded with mercury being slightly elevated in the sediment samples. Contamination of benthic sediments within the footprint of the proposed marina may be an issue if existing sediments are disturbed during pile driving and/or from the corrosion of anti-fouling agents used on boat hulls and jetty piles. Contaminants may be ingested by benthic invertebrates and assimilated up the food chain to shorebirds, diving birds and raptors.

RISK MANAGEMENT: Analysis of existing sediments indicates that disturbance of the existing sediments would not pose a contamination risk. All vessels berthed at the proposed marina would be less than 25m in length and hence are not permitted to use tin based anti-fouling paints. Copper based paints are less damaging to the marine environment and do not readily bio-accumulate. Given the relatively small-scale of the proposed marina the contamination impacts are likely to be negligible.

Mitigation Measure: 9 – 16 and GENERAL

A full Aquatic Ecology Report is available within Appendix 5.

Stormwater Management

No works are being undertaken which would necessitate the need for new stormwater management system. The reconfiguration of the existing car park will have minimal effect on the existing drainage systems and the proposed jetty and marina will be constructed of permeable materials allowing water to drain straight to Brisbane Water.

A Water Cycle Management Plan has been prepared and is available within Appendix 1a.

Mitigation Measure: 1

9.2 FLORA AND FAUNA

The proposed marina has the potential to affect the seagrass habitat through mobilisation of sediments and associated water quality changes, direct damage to seagrass due to boating activities, shading of seafloor through marina structures and introduction or spread of *Caulerpa taxifolia.*

RISK MANAGEMENT*:*

Construction

If construction operations are managed inappropriately there is potential for negative environmental impacts, particularly to seagrass due to its close proximity to the construction site. The risk of damage can be easily reduced to very low levels by implementation of some basic mitigation methods. Such control measures will be provided in the construction management plan documentation.

Mobilisation of sediments

Sediment mobilisation during construction will be minimised by the following measures:

- Enforcing a 'no wash' speed limit on vessels as they approach and move around the work site. The majority of construction vessels are likely to be shallow drafted barges, and are unlikely to cause sediment to be mobilised due to propeller action, particularly if a 'no wash' speed limit is adhered to;

- Sediment mobilisation during pile installation will be reduced by the use of hollow steel piles, which displace less sediment than traditional wooden piles;

- The use of silt curtains may be necessary to minimise the dispersal of sediment. However, care must be taken to ensure that the installation and operation of silt curtains does not inadvertently damage seagrass (e.g. silt curtain based chain contacting nearby seagrass);

- Monitoring of water turbidity will be considered during the installation of piles, to ensure that no sustained or widespread increases in turbidity occur.

Impacts to water and sediment quality

Potential impacts on water quality during construction will be minimised by the following measures:

- Impacts on water quality due to sediment mobilisation can be mitigated through reduction in the amount of sediment mobilised during construction;

- Accidental spillages of fuels and oils will be contained within floating booms and cleaned up as soon as possible to prevent weathering and subsequent deposition of heavy fractions;

- Construction teams will be prohibited from discharging sewage and bilge water directly into Brisbane Water and will remove oil from bilge water by using bilge removing pads.

Damage to habitats (particularly seagrass)

To minimise the potential for damage to seagrass habitats during marina installation the following measures can be included:

- Construction teams will be made aware of the presence and distribution of this environmentally sensitive area as part of the construction management plan documentation;

- The importance of seagrass habitat, and details on how and why to avoid damaging seagrass will be included;

- Construction teams will be prohibited from deploying anchors within seagrass due to the likelihood of causing damage;

- Construction teams will be made aware of the importance of avoiding navigating over seagrass, particularly in shallow areas. If movements over seagrass are necessary during construction then these will be done at high tide, while travelling slowly and ensuring that adequate clearance is maintained between seagrass and propellers;

- To ensure work vessels avoid seagrass habitat on-shore signage will be provided at the marina highlighting the presence and distribution of seagrass and creating a 'vessel exclusion zone'.

Introduction or spread of marine pests.

The risk of spreading *Caulerpa. taxifolia* around the construction site can be reduced to a low level by the following measures:

- The construction management plan documentation will include information, including maps on the presence and distribution of *C. taxifolia* at the construction site;

- Information on why the spread of *C. taxifolia* is an environmental issue and how to avoid aiding its spread will also be provided;

- Construction teams will avoid deploying anchors or other equipment in areas of *C.taxifolia;*

- Where this is necessary for construction or if *C. taxifolia* is retrieved on equipment in other areas it will be disposed of with other general refuse at land based facilities.

Ongoing Presence and Operation

The operation of a marina at the proposed Koolewong site poses some environmental risks, including damage to seagrass if boating access and movements are managed inappropriately. The risk of such damage can be easily reduced to very low levels by implementation of some basic mitigation methods. Information will be disseminated to marina users informing them of requirements regarding access and movements around the marina.

Mobilisation of sediments

Mobilisation of sediments due to boats accessing the marina will be minimised by:

- Enforcing a 'no wash' speed limit for vessels as they approach and move around the marina to be included on signage around the marina;

Based on the likely drafts of vessels intended for the marina there is unlikely to be a risk of sediment mobilisation due to propeller action, particularly if a 'no wash' speed limit is adhered to.

- Vessels with deeper drafts will be housed on the outer arm, to maintain greater vessel clearance from the seabed.

Impacts to water and sediment quality

The following mitigation measures will be implemented to reduce potential risk of water contamination from boats:

- Boat owners will be educated about the environmental problems associated with use of copper-based anti-fouling paints; discouraged from *in-situ* cleaning of boat

hulls that have been treated with copper paints and encouraged to switch to non-toxic anti-fouling paints.

Based on the fact that toxic anti-fouling paints are now prohibited on boats less than 100 feet in length, the risk of water contamination is virtually non-existent. The above mitigation method however will further emphasize this point.

- Accidental spillages of fuels and oils will be contained within floating booms and cleaned up as soon as possible to prevent weathering and subsequent deposition of heavy fractions;

- The potential for introduction of contaminants during on board washing of boats will be reduced by encouraging the use of environmentally friendly cleaning agents (i.e. those that do not contain chlorine or phosphate-based ingredients);

- Boat owners will be informed that the discharge of untreated sewage into navigable waters is prohibited and the discharge of treated sewage within 500m of aquaculture, bathing, mooring and anchoring areas, persons in the water, beaches and marinas is prohibited;

- Boat owners will be prohibited from discharging bilge water within Brisbane water and encouraged to remove oil from bilge water by using bilge removing pads;

- Marina users will be advised of the location of existing pump-out facilities in Brisbane Water.

Damage to habitats (particularly seagrass)

To minimise the potential for damage to seagrass habitats due to the movement of boats accessing the marina the following measures will be implemented:

- Information (such as signage) provided to marina users on the presence and distribution of seagrass at the marina site (including maps). The importance of this environmentally sensitive area will be outlined and details on how and why to avoid damaging seagrass provided;

- Prohibition of anchor deployment within seagrass;

- Avoid navigation over seagrass beds, particularly shallow areas;

Introduction or spread of marine pests.

To minimise the risk of *C.taxifolia* being spread around the marina site, or to other areas by the boats accessing the marina facility the following measures can be implemented:

- Information (such as signage) provided to marina users on the presence, identification and distribution of *C. taxifolia* at the marina site (including maps);

- Details on why the spread of *C. taxifolia* is an environmental issue and how to avoid aiding its spread should be included.

Shading of the water column and substratum

Shading effects of the jetty, pontoons and walkways will be mitigated by:

- Minimising the widening of the existing jetty;
- Replacing the existing jetty boarding with an " ecostyle "sea grass friendly" polypropylene decking;
- Keeping the length and width of floating structures to a minimum;
- Using mesh or similar material for floating structures to allow light penetration.

Mitigation Measures: 1, 2 - 33 and GENERAL

A full Aquatic Ecology Report is available within Appendix 5.

9.3 VISUAL IMPACT

The proposed marina is located to the east of an existing two storey building and is screened in part by numerous large trees within the car park of the restaurant. A Visual Impact Assessment reveals that the marina will not be visually dominant when viewed from key points nominated around the area. It must also be noted however that a marina of this nature is generally a key focal point itself and not a structure to deliberately "screen". The marina is made of materials similar to those used in existing structures below MHWM and is considered to add to the nautical charm of Koolewong.

Refer Appendix 11 for Visual Impact Assessment.

9.4 HAZARD MANAGEMENT AND MITIGATION

9.4.1 Geotechnical

The land is not identified as being located within a proclaimed Mine Subsidence District under the *Mine Subsidence Compensation Act 1961*. With this in mind and given the proposed construction required, detailed geotechnical investigations are not considered necessary.

9.4.2 Bushfire

The subject site is not located within a bushfire prone area. In addition the New South Wales Rural Fire Service has reviewed plans for the proposed marina and has raised no concerns or issues in relation to bush fire (refer Appendix 17).

9.4.3 Wave Climate, Sea Level Rise and Tides

Local Sea Wave Climate

Due to the orientation of the marina and its location, the most severe wave height cases occurring inside the marina would be caused by north-easterly sector winds. This is due to the large fetch in this direction, which is up to five kilometres long. This long fetch length means that the marina is particularly exposed to waves coming from the north-east despite the presence of oyster farms located 500-700m offshore that offer some protection.

The largest 'design' waves would approach from the north-east and due to the orientation of the berths, some of the moored boats would be affected by what are known as "beam" seas.

Although the strongest winds come from the south and the west, these fetches are quite short. There will be some unprotected berths on the southern side, but they would generally be subjected only to head seas and the annual wave heights will not exceed 0.3m (Hs) – the fetch to the south is in the order of 500m or less and as such that berth will meet the Marina Design Guidelines. The other berths will be protected by the proposed floating pontoon access-ways, which will act as wave attenuators.

Wave Crest Level

An appropriate planning period for marina facilities exposed to wave and wind action, as well as salt air, is considered to be 50 years. The proposed lease for the facility however is only for a period of 25 years and this is generally considered to be a more realistic marina life expectancy.

The 50-years ARI water level is 1.58m AHD with this being observed in the severe May 1974 ocean storm. Taking this into consideration the existing jetty (at 1.25m AHD) will be submerged from time-to-time.

It is important to note that the wind conditions associated with peak water levels in severe ocean storm events are likely to be from the east to south-west sector. On the other hand, the largest waves are caused by northeasterly to east-north-easterly winds. Hence, it is physically realistic to adopt a more frequent east-northeasterly wave condition (10-years ARI) to jointly occur with the 50-years ARI water level.

Combining the 50-years ARI design water level with the 10-years ARI wave crest height (0.23m) and the 2050 projected sea level rise of 0.4m leads to a wave crest level of 2.21m AHD.

RISK MANAGEMENT: Given that the occurrence of the above events will be unlikely, rather than raise the jetty to an inaccessible height from current ground level in order to prevent the above incident wave over-topping, it is more practical to adopt a reasonable jetty height increase and implement management strategies to prevent jetty access in the unlikely event of the above scenario.

With this in mind the existing jetty will be raised an additional 500mm to 1.75m AHD in line with the recommendations made within the Coastal Processes Report (refer Appendix 6). In order to mitigate any potential damage caused by waves or tidal movements the marina and jetty will be designed for horizontal and vertical wave loads and be closed when waves over-top the deck.

Mitigation Measures: 1, 34-36, 39 and GENERAL

Hydrodynamic Process/Tides

The dominant water level forcing phenomenon in the Brisbane Water Estuary is the astronomical tide, forced by the ocean semi-diurnal tidal cycle.

Hydrodynamic modeling has been used to simulate a range of processes including wind field, wave and tidal forcing.

Brisbane Water is a complex hydraulic system featuring:

- Several branches, some of which are interconnected;
- Generally shallow (water depths < 10m);
- Significant mangrove and intertidal areas;
- Mobile sand shoals; and
- Major hydraulic control at 'The Rip'.

The above has been taken into account when determining the local tide planes at Koolewong which are detailed further within Appendix 6.

There is significant attenuation of the tides between the ocean and Koolewong with most of this attenuation occurring at "The Rip", where the narrowness of the channel restricts tidal flows and results in smaller tidal ranges at sites further upstream such as Koolewong.

A 2-week spring-neap tide cycle was run in the hydrodynamic model to investigate the tidal currents in the Koolewong area. Model results for a spring tide period were then assessed with peak current speeds (depth averaged) at the marina site being in the order of 0.1m/s and likely to occur on the ebb tide. For design purposes, a current jointly occurring with waves, and with a speed of 0.1m/s is advised.

RISK MANAGEMENT: Certain design measures discussed above and elaborated upon with Section 10 and Appendix 6 will be incorporated into the marina to ensure the structure can withstand both depth and velocity of tidal movements.

Mitigation Measures: 1, 34 and 36

Further detailed investigation with regards to the above is provided within Appendix 6.

9.4.4 Estuarine Flooding

The Brisbane Water Estuary is periodically subject to river/estuarine flooding from both large catchment runoff events, and ocean storm events. Historical records show that ocean storm events and extreme tidal levels are the predominant cause of foreshore flooding, however the Brisbane Water Estuary also receives runoff from several large catchments.

Catchment Flood Events

During large catchment storm events, the Brisbane Water Estuary is likely to undergo flooding as a result of large flows entering from major creeks such as Erina, Kincumber and Narara. These creeks usually contain large amounts of runoff from local sub-catchments and thus areas in close proximity to these creeks often undergo some localised flooding. However, the proposed marina site at Koolewong is located on the foreshore of the estuary's broadwater and thus is unlikely to be affected as severely by such catchment flooding.

Catchment Flood Modelling

Peak water level results from the 2, 5, 10, 20, 50 and 100 ARI events are as follows for Koolewong.

Catchment Only Flood Results	
ARI	Peak WL (m AHD)
2	0.77
5	0.91
10	0.95
20	0.99
50	1.04
100	1.10

Climate Change Impacts

In addition to the above, modelling was conducted to examine the effects of climate change on the Brisbane Water catchment flooding scheme. Included in this assessment were various scenarios covering potential increases in rainfall intensity associated with large catchment events that may occur in the year 2100. Rainfall increases of 10%, 20% and 30% were all considered to examine the sensitivity of the catchment water levels to increases in catchment storm intensity. Additionally, 0.9m SLR by 2100 were incorporated into the hydrodynamic modelling in accordance with the NSW Sea Level Rise Policy Statement (DECCW, 2009) as follows:

Catchment Flood Results – 100yr ARI + Climate Change	
Rainfall intensity increase	Peak WL (m AHD)
0%	1.87
10%	1.89
20%	1.92
30%	1.95

It is important to note that for the climate change scenario of the 100yr ARI catchment storm with 0% rainfall increase, the flood level is not merely 0.9m greater than the current 100yr ARI level (1.10m). This is because as the mean water level in the estuary increases, so does its storage. This means that the same volume of water pumped into the estuary as catchment runoff will result in a smaller flood level in 2100 than in 2011 (under NSW government sea level rise projections).

Ocean Storm Events

As identified by historical records, ocean storm events and extreme tidal levels are the predominant cause of foreshore flooding in this estuary. To quantify the nature of these phenomena both hindcast and hypothesised storm events were simulated using the Delft3D model system.

Design Ocean Storm Events

Simulations for design ARI events conditions were undertaken for 2, 5, 10, 20, 50, 100, 200, 500-years ARI and a PMF event, assumed to be equivalent to a 10,000-years ARI event. The basis for their selection as representing these ARI was the analysed Fort Denison water level data, analyses of long term offshore Botany Bay wave data and Sydney Airport wind data, all in terms of probability of exceedence.

Although these events were selected to represent the abovementioned ARI events, the joint probability of all factors contributing to elevated water levels may result in the return period for the combined selected met-ocean parameters being greater, especially in Brisbane Water; even though there is some correlation between them. For the waves and

wind, it was assumed that peak conditions must persist for six hours to ensure that water levels could propagate into the estuary. This is because an elevated ocean water level of short duration will not have time to 'fill' Brisbane Water.

Peak water level results from the 2, 5, 10, 20, 50 and 100 ARI events are as follows for Koolewong.

Ocean Storm Results	
ARI	Peak WL (m AHD)
2	1.23
5	1.34
10	1.41
20	1.48
50	1.58
100	1.66

These results demonstrate that ocean storm events are the predominant cause of flooding in the Koolewong Foreshore Area.

Climate Change Impacts

In addition to this, modelling was conducted to examine the effects that climate change may have on the extent of ocean storm flood levels in Brisbane Water. This involved simply adding 0.9m to the previously analysed ARI ocean storm surge levels. Whilst it would be expected that this would simply raise the flood levels by 0.9m, it was possible that changes in mean water level in the estuary may affect the attenuation of storm surge through the estuary.

Peak water level results from the 2, 5, 10, 20, 50 and 100 ARI events including climate change are as follows for Koolewong.

Ocean Storm Results + Climate Change	
ARI	Peak WL (m AHD)
2	2.13
5	2.24
10	2.31
20	2.38
50	2.48
100	2.56

These results showed that the attenuation of storm surges through the estuary were not affected and thus flood levels under the 2100 climate change scenario were 0.9m greater than the present day levels.

<u>Joint Occurrence of Catchment Floods and Ocean Storm Events</u>

Adopting a 2-years ARI catchment flood jointly occurring with the 50-years ARI ocean storm event, consistent with analyses of past event joint occurrence in Brisbane Water, causes a negligible increase to the ocean storm caused water level at Koolewong (<5cm). This is because the volume of catchment runoff is small up to the 5-years ARI catchment flood and large areas of Davistown and Saratoga are flooded in such an ocean event and the effect of the increase in water volume is reduced by the flood plain storage. The most likely situation would be much less catchment rainfall and runoff than a 2-years ARI event.

RISK MANAGEMENT: For the purposes of this assessment, it has been assumed that the Koolewong marina would have a design life of up to 50 years, which is representative of a typical design life for a similar structure. As noted above however, the proposed lease for the facility is only for a period of 25 years and this is generally considered to be a more realistic marina life expectancy. With this in mind the flood risk management and planning assessment, including the assessment of flood hazard, is therefore based on a 2050 sea level rise planning horizon and this is considered conservative and unlikely to occur in the lifetime of the proposed marina.

Design Flood Levels

The coincident catchment and ocean storm flood levels on both the estuarine and terrestrial portions of the site are a function of:

- Elevated estuarine water levels due to coastal inundation/elevated ocean water levels;
- Minor increases in estuarine water level due to catchment flooding elsewhere in the Brisbane Water catchment; and
- Sea level rise (for climate change scenarios).

Taking the above into consideration, the majority of the land-based portion of the site lies above the 100 year ARI level (present day) of 1.71m AHD. Portions of the car park for the site would be inundated generally by approximately 0.4m for the 100 year ARI (2050) scenario of 2.11m AHD; however this is more realistically likely to be around 0.2m given the 25 year lease.

Based on consideration of probability of co-occurrence, the 20-year ARI wave conditions (with a crest height of 0.25m) would typically occur during a 100-year ARI estuarine flood event. This would result in inundation to levels of 1.96m AHD for the present day 100 year ARI and 2.36m AHD for the 2050 100 year ARI event.

The marina itself would be on pontoons and would rise with the estuarine water levels, such that it is not submerged during the 100-years ARI estuarine flood event. The duration of inundation for the land based portion of the site is approximately 3 – 4 hours for the 2050 scenario (i.e. the time at which inundation occurs via overtopping of the foreshore).

Flood Impact Assessment

Due to the fact that the site is dominated by estuarine flooding as opposed to catchment flooding, the proposal will not have any impact on flood levels either on the site itself, or on any neighbouring sites.

Provisional Flood Hazard

Flood hazard has been considered for the proposed jetty, marina and land based infrastructure and evaluated by considering the provisional hazard guidelines within the *Floodplain Development Manual.*

For the present day, the 100-years ARI estuarine flood levels are lower than the crest of the rock wall (which ranges from 1.85 – 2.26m AHD, except for a small portion near Brisbane Water Drive (which ranges between 1.56m AHD and 1.72m AHD). Therefore the terrestrial portion of the site would not be inundated for a flood level of 1.71m AHD and would have minor inundation for the event with wave breaking on the rock wall (of the

order of 0.1 m). Presuming the deck of the jetty is set at 1.75m AHD, the deck of the jetty would be inundated by wave action (up to 1.96m AHD, i.e. a depth of 0.21m).

During an estuarine flood event, some waves of up to 20cm in height may also propagate through the site at a velocity of up to 2m/s. These waves are not expected to change the level of hazard on the jetty or in the car park. Small waves may also be generated by any cars passing on Brisbane Water Drive.

For the 2050 planning horizon (i.e. with 0.4m sea level rise), the site would also be subject to low hazard under the 100-years ARI estuarine flood event.

Flood Risk

Under day-to-day operational conditions, there is a very low risk from coastal or flood hazard on the subject site due to the existing elevation of the site, which sits above the HHW level of 0.6m AHD. The gradual rise in estuarine water levels associated with projected sea level rise in the planning horizon for the proposed marina would progressively reduce this freeboard, however, at 0.4m sea level rise the terrestrial portion of the site would still sit above the approximate HHW level of 1.0m AHD.

There is an existing level of risk from estuarine flooding on the overall site under the 100-years ARI event. The proposal is not expected to substantially increase the level of risk during an estuarine flood event because the proposal would not alter flood levels or extents, and would result in only a minor increase in the number of people that may be present on the site at any one time.

Based on the existing deck levels, the jetty is submerged in a 100-years ARI estuarine flood event and patrons of the marina would have difficulty walking between the marina and the foreshore. This risk is considered extremely low given that the small size of Brisbane Water would allow ample time for boating patrons to reach the jetty before waters rose to this level (bearing in mind it would take 6 hours for Brisbane Water to fill – discussed in detailed with Section 6.2.1 of Appendix 6).

Design parameters for the marina pontoons have been recommended in accordance with the requirements of the Australian Standard Guidelines for design of marinas (AS3962), and there is a low level of risk to any vessels (or passengers or crew) berthed at the marina during a storm event.

For the 2050 planning horizon (and based on the existing levels of the jetty and car park), the jetty would be submerged in a 100-years ARI estuarine flood event, as would the low-lying portions of the car park, which would be inundated up to around 0.4m depth; however given the 25 year lease of the site, this is more likely to be 0.2m. Patrons would be able to take refuge on higher ground on the foreshore (or within the building, where the ground floor level is 2.23m AHD), but would have significant difficulty transiting the jetty between the floating pontoons and the foreshore. It is also likely that the site would become isolated for 3 - 4 hours due to inundation of parts of Brisbane Water Drive, until such time as the tide drops and the estuarine water levels recede.

To manage the flood risks (to persons and property) it is recommended that a flood emergency response plan be prepared for the site, noting that there will be a site manager located at the facility 8am – 8pm (seven days a week) at normal operating times and available 24/7 in the event of a flood. The flood emergency response plan should cover a range of matters including the relocation of vehicles from the car park and the management of boat owners and visitors in the event of a flood.

Taking the above into consideration, the Coastal Processes Report within Appendix 6 has provided recommendations to reduce the level of risk from flooding through the detailed design process and these have been elaborated within Section 10.

Mitigation Measures: 1, 38-40 and GENERAL

A full detailed investigation with regards to the above is provided within Appendix 6.

9.5 TRAFFIC AND ACCESS

The proposed development is likely to generate 68 trips inbound and 68 trips outbound on a typical peak summer weekend, with this number not affecting the level of service along this road.

The combined Marina and Restaurant traffic outward peak at 2% growth over 10 years does not cause unacceptable queues for turn movements and performance remained acceptable

The predicted traffic generation for the site is not expected to cause any undue safety concerns with cyclists or pedestrians on the designated pedestrian/cycleway.

The Project meets the parking requirement for both the proposed marina and existing restaurant against the relevant standards.

The Applicant's Traffic Consultant has not recommended any further changes or upgrades be made with regards to the existing road network, pedestrian/cycleway or proposed car park configuration.

A full Traffic Assessment is available within Appendix 9.

9.6 NOISE, AIR AND ODOUR QUALITY

Noise - Operational

An assessment has been carried out into the potential for adverse noise impacts arising from the proposed marina and reconfiguration of the car park. The assessment considered noise emissions from vessels entering, leaving and manoeuvring around the marina as well as noise from people accessing the marina and using the car park.

The closest residential property to the proposed marina is located at 29 Johns Road, Koolewong being 160 metres to the west of the development. This property however is located only 60 metres to the west of the Great Northern Railway Line where freight trains passing approximately every hour far exceed any potential construction or operational noise.

RISK ASSESSMENT: The Noise Impact Assessment reveals that there will be no noise disturbance from the abovementioned sources on nearby residents.

Noise - Constructional

The most significant noise emissions from construction activities will occur during the earthworks associated with the reconfiguration of the car park and the piling works associated with the marina construction.

RISK ASSESSMENT: The Noise Impact Assessment reveals that there will be minimal noise disturbance from the abovementioned sources on nearby residents provided mitigation methods are employed.

Mitigation Measures: 41-49 and GENERAL

A full Noise Impact Assessment outlining detailed investigation with regards to the above is provided within Appendix 8.

Air/Odour - Operational

There will be only minor impacts on the air quality of the immediate marina vicinity through the start up of boat motors, however this is considered inconsequential when compared to other nearby vehicle activity such as cars along Brisbane Water Drive and commuter and freight trains using the Great northern Railway.

RISK ASSESSMENT: Insignificant, mitigation methods not deemed necessary.

Air/Odour - Construction

There will be only minor impacts on the air quality of the immediate marina vicinity during construction through the running of machinery and barges and potentially through dust creation.

RISK ASSESSMENT: The risk of significant air pollution is minor provided mitigation methods are employed.

Mitigation Measures: 57-59 and GENERAL

9.7 WASTE MANAGEMENT

The proposed marina will create minimal waste for the following reasons:

- The proposed marina is essentially a "parking lot for boats" requiring no maintenance facilities, pump-out or slip ways.
- The Boating Industry of Australia provides that the average boat gets used approximately 50 hours per year with the majority of this being "on the water" as opposed to within the marina.
- The proposed marina will provide sites for up to a maximum of 50 boats with an anticipated 10% of these being fitted with waste holding tanks and requiring pump-out facilities.

General Waste

Given the proposed nature of the project and ongoing operations of the marina, minimal waste will be created both during and after construction. The existing waste facilities for the restaurant will be sufficient to handle any additional waste created by recreation boat operators. A Waste Contractor has been consulted with regards to the anticipated general waste to be generated with an "on-needs" service to be provided and collection frequency able to be increased if deemed necessary(see Appendix 24).

A Waste Management Plan has been provided which goes into further details with regard to specific volumes and methods of waste disposal/waste recycling (refer Appendix 22).

Mitigation Measures: 1, 60 and GENERAL

Liquid Waste
No liquid wastes related to boat maintenance will be produced for reasons detailed above.

The marina operator does not want to provide pump-out facilities given the risk associated with the proximity to the nearby oyster farms.

A free 24 hour self serve pump out facility is available at Gosford Wharf which is less than six kilometres to the NE. This facility provides detailed instructions on how to pump-out your sewerage and is a convenient and under used facility.

RISK ASSESSMENT: The risk associated with an "illegal dump" of wastewater into Brisbane Water and how this risk would be minimised and managed has been assessed within the development of the marina. Given that there is a free 24 hour pump-out service within such close proximity to the proposed marina, there is absolutely negligible risk of an illegal pump-out in relation to any of the boats proposed to be stored at the Koolewong marina. It would be highly irregular for a boat owner to risk getting caught illegally dumping their waste into Brisbane Water when a more convenient and legal method of waste disposal is so close at hand.

Taking the above into consideration, the risk of environmental damage to water quality and associated dependents through providing pump-out facilities is considerably higher than the risk of not providing them considering the proximity to the nearby oyster farms. Risk associated with providing these facilities can range from spills during pump-out to holding tank leakages. By diverting people to an established free Council run facility, you are minimising the risk to not only the nearby oyster farms but Brisbane Water in general.

To ensure boat owners are aware of the free service at Gosford Wharf, a sign and map will be provided on site as well as this information being included within the standard marina regulations each occupier will receive on purchasing a berth.

As mentioned within the original Environmental Assessment, only 10% of boats are anticipated to require a pump-out service. Gosford City Council has been contacted to ascertain whether their facilities have the capacity to accommodate an additional five boats, with their confirmation being provided within Appendix 20.

In addition to the above a marina manager will be present on site 7 days a week in the unlikely event of an illegal pump-out with a contact number for the Office of Environment and Heritage as well as the marina manager to be provided on signage during after dark hours.

Taking the above into consideration, provided mitigation methods are employed there will be an insignificant risk of water pollution through wastewater spills/illegal dumps.

Mitigation Measures: 1, 11-16, 60 and GENERAL

9.8 AQUACULTURE

Brisbane Water is an important estuary for the oyster industry and contains areas classified as priority oyster aquaculture areas based on their environmental condition suitability. The oyster industry contributes approximately $3.3 million to the region annually.

The main issue of concern in terms aquaculture for new developments in marine and estuarine habitats regards potential increases in the contaminant load of the water and sediments. Deterioration in water quality can lead to contamination of shellfish which in turn can make them unsuitable for human consumption.

RISK ASSESSMENT: The proposed marina is unlikely to result in substantial changes to water and sediment quality in Brisbane Water provided mitigation methods are employed.

Mitigation Measures: 1, 2-23 and GENERAL

A full Aquatic Ecological Assessment outlining detailed investigation with regards to the above is provided within Appendix 5.

9.9 HERITAGE AND ARCHAEOLOGY

A search of heritage databases, a field inspection and consultation with the Aboriginal Community did not identify any constraints to the proposed development in terms of Aboriginal cultural heritage or non-indigenous heritage.

RISK ASSESSMENT: There is no risk of impact on items of Aboriginal cultural heritage or non-indigenous heritage as a result of the proposed marina.

A full Aboriginal Cultural Heritage & Historical Archaeological Assessment outlining detailed investigation with regards to the above is provided within Appendix 7.

9.10 ECOLOGICAL SUSTAINABLE DEVELOPMENT

The following ecologically sustainable development principles as set out in the Schedule 2 of the *EP & A Regulations* have been considered in the development of the proposal:

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

The application of these principles to the development is discussed below.

Precautionary Principle

The precautionary principle means "*if there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation".*

The potential environmental impacts of the development have been carefully evaluated and, where considered necessary, mitigating measures have been proposed.

Intergenerational Equity

Intergenerational Equity means that the *"present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for benefit of future generations".*

The propped marina, which aims to provide boat storage facilities and services to meet demand for a range of vessel sizes and incorporate environmental controls during

construction and operation, is consistent with the objective of social equity, including intergenerational equity.

Conservation of Biological Diversity and Maintenance of Ecological Integrity

Biological diversity refers to the diversity of genes, species, populations, communities and ecosystems and the linkages between them.

The long term impacts of the proposal on flora and fauna on the site and in the area were found to be minimal and, in some cases positive through the replacement of existing wooden decking with "sea grass friendly" materials.

Improved Valuation and Pricing of Environmental Resources

This principle is a component of "intergenerational equity" and establishes the need to determine economic values for services provided by the natural environment.

The assessment of environmental impacts has recognised the value of environmental resources, with these impacts being relatively minor in comparison to the overall economic benefit.

9.11 NAVIGATION AND SAFETY

Navigation Channels

Figure 14 below provides the existing navigational channels within proximity to the site with no new navigational channels proposed or expected. As can be seen, the proposed marina is at least 200 metres away from the nearest channel being the Woy Woy to Gosford Channel. Furthermore and as mentioned above, NSW Maritime have view the plans and have provided their support.

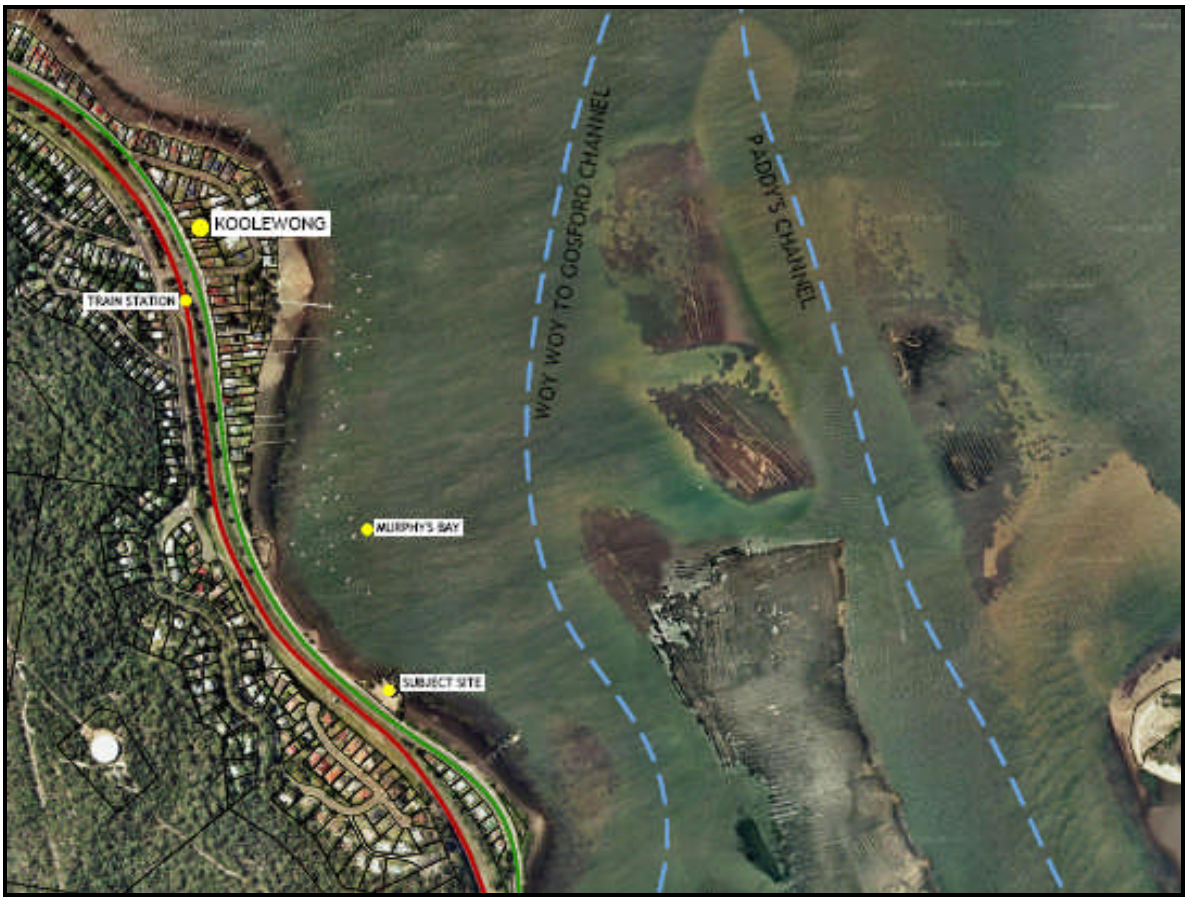

Figure 14: Navigation Channels

Vessel Servicing

The Project does not include any facilities for the servicing of vessels.

Protection of Waterway and Marine Environment

The proposed marina will have minimal if any impact on the waterway and marine environment. This has been discussed at length throughout the report with mitigation methods being provided within Section 11. Detailed ecology and coastal processes reports have been undertaken further ensuring this fact.

Lighting and Life Rings

A lighting and fire hose plan has been provided within Appendix 1 – ten provided in total. Life rings will be provided as necessary and can be included within a suitable condition of consent.

9.12 INFRUSTRUCTURE PROVISION

The proposed marina will create minimal additional load on existing infrastructure for the reasons listed within *Section 9.7 Waste Management*.

Sewer

The site is currently connected to Council's sewer system through an internal private line via a small private sewer pump unit. This sewer pump unit discharges via a private sewer

rising main to Councils sewer reticulation system and was originally installed to service an oyster processing facility which never went ahead.

The sewer pump unit comprises two pumps which operate alternately providing an extremely efficient system. In the event that one pump breaks down, the system is fitted with an alarm and lights to notify the operator to enable an expeditious solution. In the meantime, the other pump continues to operate as usual.

The connection of this private sewer pump unit was conditional at the time of installation for the oyster depuration plant and as such would require an updated consent should the marina be approved. With this in mind however, the proposed operations will put far less load on the system than would an oyster depuration plant and as such the current private system and Council's system will be more than capable of handling the development.

As mentioned above, the proposed marina will not be providing a pump-out facility. It is anticipated that approximately 90% of future users will have smaller boats with no holding tank. The only additional sewer load would be from marina patrons requiring use of the existing toilet facilities within the building. Given that the average boat is used 50hrs per year, with most of this time spent on the water, additional toilet use will generally be by boat users either preceding their boating use or prior to leaving the facility. The restaurant is closed Mondays and Tuesdays and some Sundays depending on bookings. The most frequented period is Saturday night between 7.00pm to 11.00pm, followed by Friday night and this is a time when the marina will generally be empty of patrons. With this in mind, the additional toilet use requirements will be staggered between day usage (marina) and night usage (restaurant).

The marina does not propose to increase the number of wastewater fixtures within the building or as part of the development more generally. Essentially the design fixture demands remain unchanged from a wastewater perspective. The pump rate for the existing private pump would not require increasing if it were previously designed and approved in accordance with the fixture loading requirements of AS3500 and as such would not increase loads to councils system.

Gosford City Council is the Water & Sewer Authority and they have been consulted and did not raise any concerns within the Pre-DA Meeting aside from requiring a Water and Sewer Certificate in accordance with the Water Management Act 2000 and this is generally added as a condition of consent. Evidence in this regard has been provided within Appendix 20.

Further specific consultation into sewer servicing has been undertaken between the applicants Civil Engineer and Council's Water and Sewer Department however as consent for the development has not yet been issued, Crown Lands are not able to issue a new Lot and Deposited Plan for the proposed marina boundaries. With this in mind Gosford City Council are unable to comment any further on specific sewer servicing requirements until consent is issued and a new Lot and DP created.

In summary Gosford City Council are unable to provide any kind of advice unless a formal application is lodged under the WMA. A formal application cannot be lodged until the marina is included within the current or new Lot and DP and this cannot occur until consent is issued by the Department of Planning and Infrastructure. Despite this, expert Engineering advice has provided that the proposed marina will not increase the existing pump rate and would not increase loads to Council's system.

Consultation in this regard is attached within Appendix 26.

Mitigation Method: 62

Water

The marina will provide water connection to moored boats for washing and general use as well as for firefighting purposes with fire hoses being installed. The applicant is willing to upgrade the existing water main to a 100mm connection for one hundred metres to the site in order to supply the required water usage if deemed necessary. As part of these works a fire hydrant will be installed near the entrance of the site to be used by the fire brigade.

Gosford City Council is the Water & Sewer Authority and they have been consulted and did not raise any concerns within the Pre-DA Meeting aside from requiring a Water and Sewer Certificate in accordance with the Water Management Act 2000 and this is generally added as a condition of consent. Evidence in this regard has been provided within Appendix 20.

Further specific consultation into water servicing has been undertaken between the applicants Civil Engineer and Council's Water and Sewer Department however as consent for the development has not yet been issued, Crown Lands are not able to issue a new Lot and Deposited Plan for the proposed marina boundaries. With this in mind Gosford City Council are unable to comment any further on specific sewer servicing requirements until consent is issued and a new Lot and DP created.

In summary Gosford City Council are unable to provide any kind of advice unless a formal application is lodged under the WMA. A formal application cannot be lodged until the marina is included within the current or new Lot and DP and this cannot occur until consent is issued by the Department of Planning and Infrastructure. Despite this, expert Engineering advice has provided that upgrading of the existing water service can easily be provided if warranted through Water and Sewer application process.

Consultation in this regard is attached within Appendix 26.

Mitigation Method: 62

Electricity

Moored boats will have access to electricity provided at 240 volt capacity with larger boats being able to access three phase power. Power will be installed through the extension of existing mains however is not anticipated to generate significant demand considering most boats will only be connect during recreational use as oppose to requiring constant connection.

Waste Disposal

Given that the marina simply provides a floating structure to house up to fifty boats and does not provide any pump-out facilities, slip-ways or maintenance facilities it is anticipated to create only general waste, generally food/drink related. The reason for not providing these other services is due to the close proximity of the site to nearby oyster farms. It is the proponents desire to provide a facility which will have the least possible impact on the water quality of Brisbane Water for this reason.

Taking the above into consideration, liquid wastes such as paint products, anti-fouling agents and other chemicals used in boat maintenance will not be present on site. The marina will provide no slip-way and as such no possible way of removing boats from Brisbane Water from this site in order to maintain them. Maintenance of boats will have to be undertaken off-site and can be done at the numerous existing locations within Brisbane Water such as Empire Bay Marina, Machan's Marina, Booker Bay Marina, Killcare Marina or Anderson's Marina – all facilities which accommodate maintenance and are located away from oyster farms.

As mentioned above the only waste will be general waste from recreational boating activities and can be accommodated and stored on-shore within existing bins. Given that the average boat is used approximately 50 hours per year and the maximum boats accommodated at the marina will be fifty, the anticipated general waste is considered to be very minor. The operator of the marina has an agreement with a private waste contractor to collect the bins on an "on-needs" basis seven days a week (refer Appendix 24). This arrangement provides the best possible method of waste disposal as oppose to the standard Council collection given that waste can be collected at the operators requirements.

Mitigation Methods: 1 & 60

Telecommunications

The marina will not provide additional telecommunication connections. An existing service is provided in relation to the restaurant which can be used in the case of an emergency; however in general, public usage of the site's telecommunications service will not be supplied.

Gas

The marina will not provide gas connection or gas bottle filling facilities and as such there is no requirement for a gas service for the proposed marina.

9.13 SOCIAL AND ECONOMIC IMPACTS

General Benefits

The proposed marina and widening and re-decking of the existing jetty will have the following social and economic benefits:

- Improved jetty access for the boating public;
- Improved recreational fishing through the likelihood of increased fish populations within the vicinity of the marina piles;
- Emergency services access through deep berthing availability;
- Increased support to the existing restaurant facility and surrounding business within Koolewong and Woy Woy from marina berth occupiers; and
- Employment opportunities both during and after construction.

Overall, the proposed development will provide a positive social and economic contribution to the locality and Koolewong/Woy Woy, generally.

Public Access

Existing Situation

Despite the site being Crown land, it is leased privately to Gemsted P/L. At present only restaurant patrons are permitted to use the site facilities including the existing jetty; as would be the case with any privately owned parcel of land or jetty. The site is located on reclaimed land and in physical terms is raised around 1.5metres above Brisbane Water with this reinforced through a rock retaining wall. With this in mind there is currently no opportunity for the pedestrian public to gain foreshore access through the subject site; however the boating public can access the existing jetty.

Proposed Situation – Restaurant Patrons

As part of the proposed marina the existing jetty will be upgraded, widened and will provide handrails with restaurant patrons still being able to use this facility but unable to access the marina.

Proposed Situation – Boating Public

Given the shallow depth of water at the jetty and the presence of sea grass, boats will be unable to moor at the jetty but will be able to temporarily moor at the marina and walk across the jetty to gain on-shore access. The security gate will control access to the marina from the jetty, so there will be no restriction if accessing the marina from the water. In able to gain access to their boat from the shore, a temporary access card will be issued or the on-site marina manager will be able to open the security gate.

Proposed Situation – Emergency Services

Emergency services will have access to the marina via a key card. Key cards will be issues to the Water Police and NSW Maritime Services on completion of the marina to enable 24 hour access in times of emergency (see Figure 15).

Mitigation Method: 61

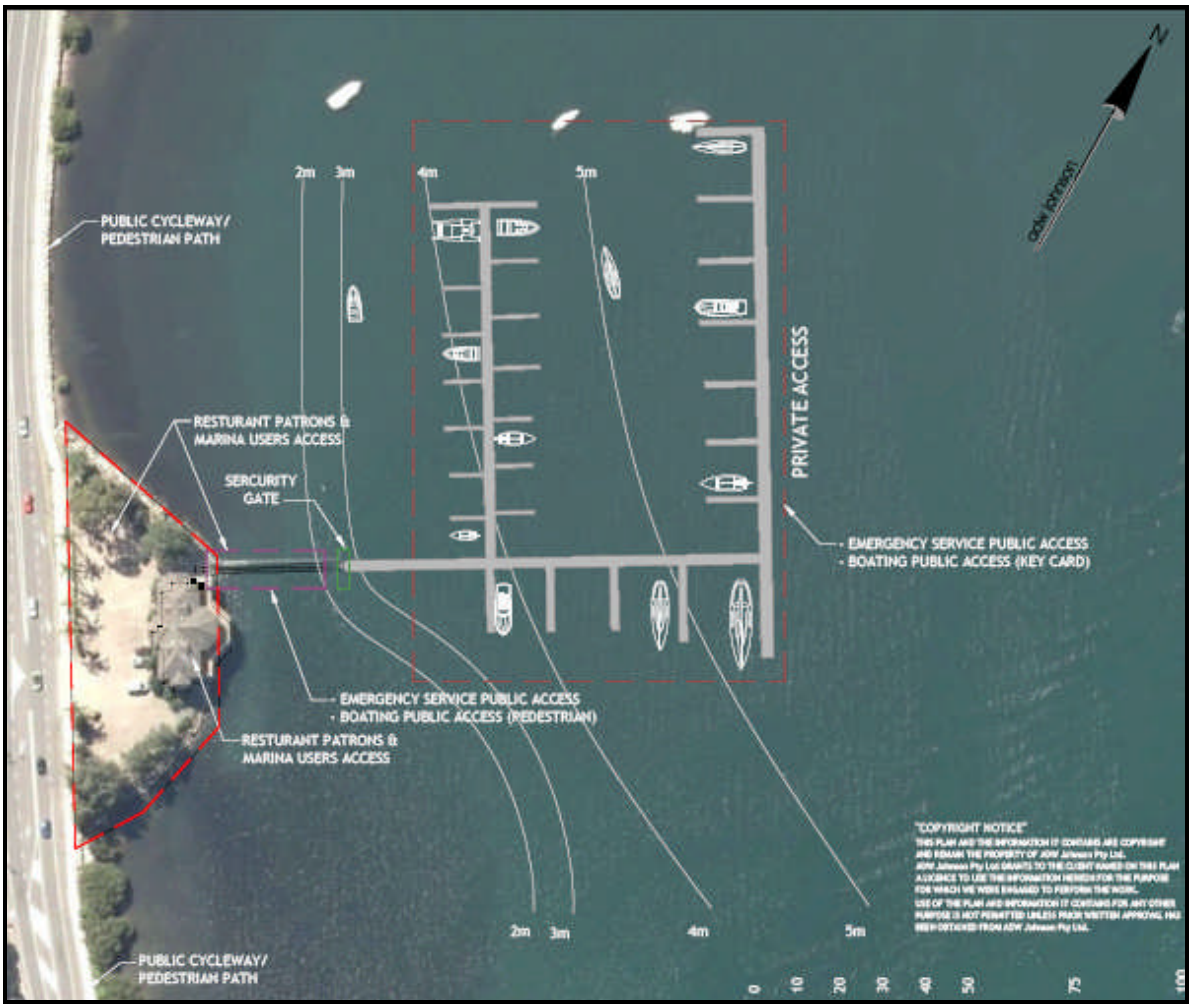

Figure 15: Public Access Plan

As can be seen within Figure 15, there is a pedestrian/cycleway running along the western boundary of the site, with this remaining unaffected by the proposal.

Recreation/Fishing

The northern portion of Brisbane Water is characterised by very shallow waters close to the foreshore and as such fishing opportunities from the land are very limited. There are a number of public recreation areas north of the proposed site however again these are rarely used as fishing spots for the reasons mentioned above. The most popular on-land fishing spot is located at Woy Woy bridge where waters start to become deeper; the proposed marina will have no effect on this.

The Surrounding Environment Plan included within Appendix 1A provides details of all nearby recreational areas and fishing locations.

Despite the above, the proposed marina will have the beneficial effect of improving boating fishing in that the additional marina piles create habitat and protection for fish. Given the length of the marina it will jut out into deeper waters where fishing beings more prosperous.

9.14 CRIME AND SAFETY

The proposal has been designed in accordance with the Crime Prevention through Environmental Design principles with the following relevant sections being highlighted:

Car Park

The existing and proposed reconfigured car park is landscaped with tall trunked trees as oppose to dense shrubbery allowing passive surveillance from Brisbane Water Drive and residents to the west. Appropriate lighting is in place from the car park area to the existing restaurant as well as to the proposed marina structure. The car park is small enough to be able accommodate passive surveillance to the entire area from not only ground level but also the first floor of the existing building.

Natural Lines of Sight

As mentioned above, the existing landscaping is such that passive surveillance is accessible from both Brisbane Water Drive and residences beyond. Given the topography of the area, the natural line of sight from residences to the west is towards the water. The proposed marina will create an additional icon of interest and as such will further enhance this and consequential passive surveillance.

The proposed car park reconfiguration and development of the marina will not involve the installation of any structures creating blind corners.

Lighting and Street Lighting

Lighting can be conditioned to meet minimum Australian Standards and to be directed onto access areas for people using the site and away from neighbouring properties. The nature of the lighting for the proposed marina is such that it will not cause light spill.

Lighting in the car park will be illuminated during hours of operation and given the open configuration of the car park, lighting will not produce shadows or provide spots of opportunity for crime.

Toilet facilities

Amenities for the marina users will be within the existing restaurant building as oppose to the standard stand alone "toilet block". With this in mind, natural staff and customer surveillance will be available to any users of these facilities and thus providing an extremely safe environment.

Walkways and Pathways

A pedestrian/cycle path exists along the Brisbane Water Drive boundary with this being sufficiently illuminated for not only the safety of users but also providing a clear lit path for users of the marina and restaurant. Internal paths to the restaurant from the car park are also illuminated and clear of vegetation. The existing jetty and proposed marina will be clearly visible from the patrons of the restaurant as well as commuters along Brisbane Water Drive.

Fencing

The proposed marina will have gates preventing access from the jetty to private vessels. These gates will be constructed as a see through structure providing considerably more than 50% transparency.

Entrances and Exits

There is one existing access point to the car park and restaurant and this will remain unchanged with the proposal. This point is sufficiently illuminated and has access to significant passive surveillance from the commuters along Brisbane Water Drive and the restaurant. The access point for the jetty and marina will also be significantly illuminated and will have passive surveillance opportunities from restaurant patrons as well as Brisbane Water users.

9.15 APPROVALS AND LICENCES

The Project requires the following approvals and licenses:

1. Approval from the Minister for Planning;
2. Owner consent from LMPA; and
3. Water & Sewer Certificate required from Gosford Council.

10.0 Draft Statement of Commitments

The following section outlines the proponent's commitments to implement construction and operational strategies relating to environmental management and mitigation measures. The section details how the proposal and its environmental safeguards will be implemented and managed in an integrated and feasible manner.

10.1 PLANS, DOCUMENTS AND APPROVALS

1. The Project will be completed in accordance with the submitted plans and descriptions of proposed development provided in this EA Report.

10.2 MOBILISATION OF SEDIMENTS

Construction

Sediment mobilisation during construction will be minimised by the following measures:

2. Enforcing a 'no wash' speed limit on vessels as they approach and move around the work site. This will form part of the final detailed construction management plan documentation.

3. Sediment mobilisation during pile installation will be reduced by the use of hollow steel piles, which displace less sediment than traditional wooden piles;

4. The use of silt curtains may be necessary to minimise the dispersal of sediment. However, care must be taken to ensure that the installation and operation of silt curtains does not inadvertently damage seagrass (e.g. silt curtain based chain contacting nearby seagrass);

5. Monitoring of water turbidity will be considered during the installation of piles, to ensure that no sustained or widespread increases in turbidity occur.

6. Silt fences and erosion control measures will be placed around the site for the car park.

Ongoing Presence and Operation

Mobilisation of sediments due to boats accessing the marina will be minimised by:

7. Enforcing a 'no wash' speed limit for vessels as they approach and move around the marina. This will be included on signage around the marina; and

8. Vessels with deeper drafts will be housed on the outer arm to maintain greater vessel clearance from the seabed.

10.3 IMPACTS TO WATER AND SEDIMENT QUALITY

Construction

Potential impacts on water quality during construction will be minimised by the following measures:

9. Accidental spillages of fuels and oils will be contained within floating booms and cleaned up as soon as possible to prevent weathering and subsequent deposition of heavy fractions; and

10. Construction teams will be prohibited from discharging sewage directly into Brisbane Water and bilge water before removing any oils using bilge pads.

Ongoing Presence and Operation

The following mitigation measures will be implemented to reduce potential risk of water contamination from boats:

11. Boat owners will be educated about the environmental problems associated with use of copper-based anti-fouling paints; discouraged from *in-situ* cleaning of boat hulls that have been treated with copper paints and encouraged to switch to non-toxic anti-fouling paints;

12. Accidental spillages of fuels and oils will be contained within floating booms and cleaned up as soon as possible to prevent weathering and subsequent deposition of heavy fractions;

13. The potential for introduction of contaminants during on board washing of boats could be reduced by encouraging the use of environmentally friendly cleaning agents (i.e. those that do not contain chlorine or phosphate-based ingredients);

14. Boat owners will be prohibited from discharging sewage directly into Brisbane Water and bilge water before removing any oils using bilge pads;

15. Marina users will be advised of the location of existing pump-out facilities in Brisbane Water to help mitigate any impacts arising from the disposal of sewage; and

16. A Marina Manager or representative is to be present on-site 7 days a week from 8am to 8pm to ensure the above mitigation measures are upheld. Outside of these hours contact details of the Office of Environment and Heritage (131 555) and off-site contact details of the Marina Manager are to be provided on signage.

10.4 DAMAGE TO HABITATS

Construction

To minimise the potential for damage to seagrass habitats during marina installation the following measures will be followed:

17. Construction teams will be made aware of the presence and distribution of this environmentally sensitive area as part of the detailed construction management plan documentation. This documentation will include the importance of seagrass habitat, and details on how and why to avoid damaging seagrass;

18. Construction teams will be prohibited from deploying anchors within seagrass due to the likelihood of causing damage; and

19. Construction teams will be made aware of the importance of avoiding navigating over seagrass, particularly in shallow areas. If movements over seagrass are necessary during construction then these should be done at high tide, while travelling slowly and ensuring that adequate clearance is maintained between seagrass and propellers.

Ongoing Presence and Operation

To minimise the potential for damage to seagrass habitats due to the movement of boats accessing the marina the following measures will be implemented:

20. Information (such as signage) will be provided to marina users on the presence and distribution of seagrass at the marina site (including maps). The importance of this environmentally sensitive area will be outlined and details on how and why to avoid damaging seagrass provided;

21. Boat owners to be prohibited to deploy anchors within seagrass;

22. Boat owners to avoid navigation over seagrass beds, particularly shallow areas; and

23. On-shore signage will be provided at the marina highlighting the presence and distribution of seagrass and creating a 'vessel exclusion zone'.

10.5 INTRODUCTION OR SPREAD OF MARINE PESTS

Construction

The risk of spreading *Caulerpa. taxifolia* around the construction site will be reduced through the following measures:

24. The constructional environmental management plan documentation will include information on the presence and distribution of *C. taxifolia* at the construction site (including maps);

25. Information on why the spread of *C. taxifolia* is an environmental issue and how to avoid aiding its spread will also be provided;

26. Construction teams will avoid deploying anchors or other equipment in areas of *C.taxifolia;* and

27. Where this is necessary for construction or if *C. taxifolia* is retrieved on equipment in other areas it will be disposed of with other general refuse at land based facilities.

Ongoing Presence and Operation

To minimise the risk of *C.taxifolia* being spread around the marina site, or to other areas by the boats accessing the marina facility, the following measures will be implemented:

28. Information (such as signage) provided to marina users on the presence, identification and distribution of *C. taxifolia* at the marina site (including maps); and

29. Details on why the spread of *C. taxifolia* is an environmental issue and how to avoid aiding its spread should be included.

10.6 SHADING OF THE WATER COLUMN AND SUBSTRATUM

Ongoing Presence and Operation

Shading effects of the jetty, pontoons and walkways will be mitigated by:

30. Minimising the widening of the existing jetty;

31. Replacing the existing jetty boarding with ecostyle "sea grass friendly" polypropylene decking;

32. Keeping the length and width of floating structures to a minimum; and

33. Using mesh or similar material for floating structures to allow light penetration.

WAVE/TIDE/ESTURINE FLOODING/SEA LEVEL RISE HAZARD MITIGATION

Ongoing Presence and Operation

Impacts of wave/tide/estuarine flooding/sea level rise will be mitigated by:

34. The existing jetty will be raised by no less than 0.5m from its existing level (to a minimum level of 1.55m AHD for the underside and approximately 1.75m AHD for the deck level); and

35. The proposed jetty will be designed for horizontal and vertical wave loads and be closed when waves over-top the deck.

36. Marina will be designed to withstand a current jointly occurring with waves with a speed of 0.1m/s.

37. A Flood Emergency Response Plan will be prepared for the site to address both present and 2050 flood risks for patrons of the marina.

38. The pontoons will as a minimum be designed so as to accommodate the 100-years ARI estuarine flood level for the 2050 planning horizon, by which time the structure will have reached the end of its design life.

39. The pontoons should be designed so as to attenuate wave activity in accordance with Australian Standard *Guidelines for design of marinas* (AS3962).

40. Any electrical services to be designed with estuarine flood levels in mind to ensure safety.

10.8 NOISE

Construction

Impacts of construction noise will be mitigated by:

41. The closest neighbouring residents will be notified of the proposed works. Particular emphasis should be placed on the time frame of the works. A contact name and phone number of a responsible person will be given out so that complaints can be dealt with effectively and efficiently. All complaints or communication should be answered.

42. During the liaison process notes will be made of any particularly noise sensitive times of day and care taken to avoid scheduling noisy works, particularly piling of the closest holes) at these times.

43. All personnel working on the job including contractors and their employees will be made aware of their obligations and responsibilities with regard to minimising noise emissions.

44. Contractors will familiarise themselves with methods of controlling noisy machines and alternative construction procedures. These are explained in AS2436-1981 "Guide to Noise Control on Construction, Maintenance and Demolition Sites".

45. Activities that are known or have the potential to create excessive noise will, where possible, be scheduled to occur at times to cause least annoyance to the community. Carrying out such work during early morning will be avoided. This includes start up and idling etc. of heavy machinery prior to commencement of work.

46. Mechanical plant will be silenced using best available control technology. Noise suppression devices will be maintained to manufacturer's specifications. Engines should be fitted with appropriate, well maintained, high efficiency mufflers. Particular emphasis should be placed on the use of exhaust silencers, covers on engines and transmissions and squeaking or rattling components. Excessively noisy machines should be repaired or removed from site.

47. Machines which are used intermittently will either be shut down in the intervening periods between work or throttled down to a minimum.

48. Construction for the entire project will be restricted to the following hours:
    - Monday to Friday 7:00am to 6:00pm
    - Saturday 8:00am to 1:00pm
    - No work on Sundays or Public Holidays

49. Conducting piling only after 9.00 am, and include respite periods.

10.9 TOPOGRAPHY, GEOLOGY & SOILS

Construction

Impacts of construction to topography, geology and soils will be mitigated by:

50. The Environmental Construction Management Plan (CEMP) prepared for the works will include an erosion and sediment control plan.

51. Erosion and sediment control measures will be consistent with those specified in the Blue Book - Managing Urban Stormwater: Soils and Construction (4th ed, Landcom, March 2004).

52. All erosion and sediment control measures will be established before excavation, demolition or vegetation clearance begins and are to remain in place until all surfaces have been fully restored and stabilised.

53. Sandbags will be placed at the entry points to any culverts and stormwater channels to prevent sediment entering the stormwater system.

54. 'Sediment control devices (eg silt fences, straw bales wrapped in geotextile etc) will be installed parallel with the contours of the site and immediately downslope of any areas where the natural ground surface has been disturbed.

55. Any spoil storage areas or stockpiles will have appropriate erosion control devices installed to control runoff and prevent sedimentation.

56. Sediment and erosion control devices will be inspected regularly, maintained to ensure effectiveness over the entire duration of the project, and cleaned out before 30% capacity is reached.

10.10 AIR QUALITY

Construction

Impacts of construction on air quality will be mitigated by:

57. Machinery and vehicles will not be left running or idling when not in use.

58. Odour or air pollutant emission complaints will be dealt with promptly and the source will be eliminated wherever practicable.

59. All work sites, general work areas and stockpiles will be closely monitored for dust generation and watered down (with clean water) or covered (via seeding or tarpaulins) in the event of dry and/or windy conditions.

10.11 WASTE MANAGEMENT

Ongoing Presence and Operation

60. Waste management on site will be in accordance with Gosford City Council's Development Control Plan 106 (Waste Management Controls) and Waste Classification Guidelines (EPA 2008), Environmental Guidelines: Best Management Practice for Marinas and Boat Repair Facilities (EPA 1999) and in accordance with

the requirements of the Marine Industries Association of Australia: Clean Marinas Handbook.

10.12 EMERGENCY SERVICES

Ongoing Presence and Operation

61. Upon completion of the marina, access keys will be provided to the NSW Water Police and NSW Maritime to ensure the marina is available for 24 hour emergency access.

10.13 APPROVALS

Ongoing Presence and Operation

62. To identify the requirements for water and sewer services for the development, the developer will submit an application under Section 305 of the Water Management Act 2000 to Gosford City Council's Water and Sewer Department for their formal requirements for the issue of a Certificate of Compliance for water and sewer services under Section 307.

GENERAL

Construction

The above commitments and mitigation methods will be described in full and detailed along with any further requirements of the Department of Planning and Infrastructure within a Constructional Environmental Management Plan to be prepared prior to the issuance of a Construction Certificate.

Ongoing Presence and Operation

The above commitments and mitigation methods will be described in full and detailed along with any further requirements of the Department of Planning and Infrastructure within an Operational Environmental Management Plan (OEMP) to be prepared prior to the issuance of a Construction Certificate. As part of the OEMP, Koolewong Marina Regulations will be created detailing guidelines for berth owners to conform to current legislation and regulations as provided by the following:

- *Work Cover Guidelines,*
- *Occupational Health and Safety Act 2000,*
- *Environmental Protection Agency,*
- *Department of Environment & Conservation*
- *Protection of the Environment Operations Act 1997*

11.0 Conclusion

The Project, including reconfiguration of the car park, upgrade to existing jetty and the construction of a 50 berth marina, is considered appropriate to accommodate the demands for water based berth storage in the locality given the developments ability to appropriately balance environmental, social and economic factors.

The Environmental Assessment concludes that:

- The proposed Koolewong marina is a timely response to the much sought after on-water vessel storage facility within Brisbane Water.
- The Project is consistent with all relevant National, State and local statutory controls.
- In addressing the environmental impacts of the Project and the suitability of the site, the specialist reports have demonstrated that any environmental impacts of the marina are minimal and can be suitably managed and mitigated.
- The site is easily accessible, has sufficient area and dimensions, and is suitable to accommodate the Project.
- The Project does not restrict the navigation channel for other waterway users or impact on the existing and future opportunities for public recreation.

Appendix 1a

Plans of the Proposed Development

Appendix 1b

Existing Approved Plans

Appendix 2

Director Generals Major Project Confirmation

Appendix 3

Copy of Director General's Requirements and Compliance Table

Appendix 4

Land Owners Consent from the Land & Property Management Authority

Appendix 5

Aquatic Ecology Report

Appendix 6

Coastal Processes Investigations

Appendix 7

Aboriginal Cultural Heritage & Historical Archaeological Assessment

Appendix 8

Noise Impact Assessment

Appendix 9

Traffic Assessment Report

Appendix 10

Business Case

Appendix 11

Visual Impact Assessment

Appendix 12

Community Consultation

Appendix 13

Correspondence from NSW Maritime

Appendix 14

Correspondence from NSW Fisheries

Appendix 15

Correspondence from NSW Office of Water

Appendix 16

Correspondence from RTA

Appendix 17

Correspondence from Rural Fire Service

Appendix 18

Correspondence from Industry & Investment

Appendix 19

Correspondence from Department of Climate Change & Water

Appendix 20

Correspondence from Gosford City Council

Appendix 21

Quantity Surveyors Quote

Appendix 22

Waste Management Plan

Appendix 23

Construction Management Plan

Appendix 24

Correspondence from Waste Contractor (Environmental Solutions)

Appendix 25

Water Cycle Management Plan

Appendix 26

Water & Sewer Negotiations