JSPARSONS STRUCTURAL CONSULTANTS PTY LTD ACN OOO2O1347 ABN 69481143003

SUITE 36, 330 WATTLE STREET, ULTIMO, SYDNEY NSW AUSTRALIA 2007

P. 9282 9926 F. 9282 9927 M. 041 602 8413

REVIEW OF AN ENVIRONMENTAL ASSESSMENT

ON

THE PROPOSED REDEVELOPMENT OF CRONULLA MARINA

AT:

60 Waratah Street, Cronulla

SUBMITTED BY: **J.S.PARSONS STRUCTURAL CONSULTANTS PTY LTD**

ADDRESS: **SUITE 36, 330 WATTLE STREET**
ULTIMO NSW 2007

PHONE: **(02) 9282 9926**
(02) 9282 9927 (FAX)
0416 028 413 (MOBILE)

ON BEHALF OF: **NSW DEPARTMENT OF PLANNING**
Representative: David Kitto, Director, Major Development Assessment.
23-33 Bridge Street, Sydney NSW 2000

Date of Issue: **Issued as a Draft Document for Comment: Wednesday, February 04, 2009 Final Amendment June 02, 2009.**

TABLE OF CONTENTS

JSPARSONS STRUCTURAL CONSULTANTS PTY LTD ACN OOO2O1347 ABN 69481143003
SUITE 36, 330 WATTLE STREET, ULTIMO, SYDNEY NSW AUSTRALIA 2007
P. 9282 9926 F. 9282 9927 M. 041 602 8413

REVIEW OF AN ENVIRONMENTAL ASSESSMENT – Cronulla Marina Redevelopment – DA Submittal to the NSW Department of Planning.

1.0 INTRODUCTION

J.S.Parsons Structural Consultants Pty Ltd (JSP) has been engaged by the Director General of the NSW Department of Planning to complete a review of the proposed redevelopment of Cronulla Marina. JSP are specialist marina planners, designers and project managers and have extensive experience in the planning and design of commercial marinas. JSP's design experience includes the structural design for construction of commercial marinas.

1.1. The Project

The Project to be reviewed is known as the redevelopment of Cronulla Marina. Major aspects of the proposed redevelopment as represented by the Proponent include;

- The relinquishing of 42 swing moorings;
- Increasing the extent of the fixed floating marina by an additional 38 berths;
- Retaining four (4) fore-&-aft moorings;
- Extending the existing slipways landward.

The proposed redevelopment is sited in Gunnamatta Bay and has a Southwesterly aspect. The site is identified as part Lot 1224 in DP 729324, part Lot 1219 in DP 727774 and part Lot 7053 in DP 1060600 within Sutherland Shire Council Government Area. The proposed slipway and floating marina upgrades are sited on Lot 1224 in DP 729324. This Lot and DP constitute the Wetlands Lease Area for the existing development, established in 1988.

1.2. The Brief

JSP's advice is based on a four point analysis of the proposed marina redevelopment. The four points of review are;

- the design of the marina and whether it is consistent with relevant guidelines and policies, including Australian Standards and NSW Maritime guidelines for marine structures;
- whether the design of the berthing structure has been adequately justified, particularly in regards to the bathymetry of Gunnamatta Bay and existing ferry / boat movements;
- whether the size (bulk and scale) of the proposal is appropriate for the locality; and
- adequacy of environmental controls for the proposed boat maintenance/repair facility, fuel berth and sewage pumpout.

JSP's review and advice is limited to the proposed redevelopment of the floating marina and two cradle slipways. We note that;
Traffic and parking requirements fall outside of JSP's scope of works;
Visual Assessment and Impact fall outside of JSP's scope of works.

1.3. Methodology

JSP's review and advice on the proposed redevelopment of Cronulla Marina is based on a set methodology that includes;

- A review of all documentation submitted to the Department of Planning in support of the proposed redevelopment. This then leads into a Desk Top Assessment and the;
- Identification of current & relevant Codes & Standards that may or should be applied to the proposed redevelopment.
- Identification of key criteria and design requirements from relevant Codes & Standards that may or should be applied to the proposed redevelopment.
- A review of the proposed redevelopment against relevant criteria in theses Codes and Standards where applicable.
- A review of the proposed redevelopment against expected industry standards, controls and requirements.
- The completion of two (2) site inspections undertaken to ensure

that the Desk Top Assessment accurately reflects site conditions and the siting of the project.

- Comment and advice on the proposed redevelopment of Cronulla Marina. This comment includes identification of areas where the level of information supplied by the Proponent falls short of being sufficient to complete a thorough review along with advice on the proposed design and layout, suitability and whether or not we believe that consent should be given to the current development proposal.

1.4. Documents Reviewed

The following documents were provided by the NSW Department of Planning for assessment and review;

- Appendix 1 - Lease (Lease Number 1988-2).pdf
- Appendix 2 - Notification of Major Project & Director General's Requirements .pdf
- Appendix 3 - Landowner's Consent -Department of Lands.pdf
- Appendix 4 - Lot 7053 of DP 1060600 - Tonkin Street Reserve.pdf
- Appendix 5 - Site Analysis.pdf
- Appendix 7a-Fig2.pdf
- Appendix 7a-Fig3.pdf
- Appendix 7a-Figure1 .pdf
- Appendix 7b-Figure2.pdf
- Appendix 7c-Figure3.pdf
- Appendix 7d-Figure4.pdf
- Appendix 7e-Figure5.pdf
- Appendix 7f-Figure6.pdf
- Appendix 7g-Figure7.pdf
- Appendix 7-Visual Impact Assessment.pdf
- Appendix 7-Visual Impact Assessment-figures.pdf
- Appendix 8A_Final Report - 150708 parta.pdf
- Appendix 8B_Final Report - 150708 partb.pdf
- Appendix 9 - Coastal Maritime Engineering Aspects.pdf
- Appendix 9a- Coastal Maritime Engineering Figures .pdf
- Appendix 9b - Coastal Maritime Engineering Appendices .pdf
- Appendix 10 - Land Transport .pdf
- Appendix 11 - Notification of Public Meeting.pdf
- Appendix 12 - Engineering Services Assessment v3.pdf

- Appendix 13 - Noise Impact Statement Stage R2.pdf
- Appendix 14-Statement of Commitments.pdf
- Appendix_6_DWG 001-002 .pdf
- Appendix_6_DWG 003-005 .pdf
- Appendix_6_DWG 006-010 .pdf
- Cronulla Marina Environmental Assessment Report 17-09-08 Figures 1 to 6.pdf
- Cronulla Marina Environmental Assessment Report 17-09-08.pdf
- Cronulla Marina Environmental Assessment Report.pdf

2.0 VESSEL No.s

2.1. Existing Vessel Numbers As Represented by the Proponent

The Proponent has identified the Marina as having the following vessel numbers;

- 28 fixed berths in an existing floating concrete marina system.
- 42 swing moorings spread throughout Gunnamatta Bay.
- 2 slipways.
- Excluding the two (2) slipways the Marina is designated by the Proponent as a 70 Berth Marina.
- Including the two (2) slipways the Marina is designated by the Proponent as a 72 Berth Marina.

2.2. Existing Vessel Numbers As Determined Under the EP&A Act

The Environmental Planning and Assessment Regulation 1994 (with Amendments) (Schedule 3 "Marinas or Other Related Land & Water Shoreline Facilities") is specific as to what, in a marina, is designated as a berth. We note that *Casual Berths* or *Casual Berthing* would, under the Act, be classified as a berth when calculating a marinas existing number of berths as the Act does not distinguish between permanent and temporary berthing. Given this interpretation we note that;

- Arm A has 12 (twelve) vessels as Berths in Pens and the potential for two (2) casual berths on the outer 'T' head.
- Arm B has 14 (fourteen) vessels as Berths in Pens and the

potential for two (2) casual berths on the outer 'T' head.

- The Main Walkway with refueling and pumpout facilities can casually berth upwards of four (4) 10m vessels.
- The small domestic style pontoons adjacent to the boardwalk can berth upwards of two (2) 10m vessels.
- The existing slipways have one (1) cradle on the northern rails and two (2) cradles on the southern rails. At this stage we are assuming that the two (2) cradles are needed for longer vessels and that the total slipway capacity is not three (3) but remains at two (2) vessels.
- We are accepting the Proponents count of 42 swing moorings despite our count of 47 from their Proponents DA submittal.

The Marina should therefore be designated as an 80 Berth Marina in its existing layout.

Fig. 2.2 – Cronulla Marina Existing Vessel Berth Count to EP&A Act.

2.3. Proposed Vessel Numbers As Represented by the Proponent

The Proponent represents the marina development as having;

- 28 existing berths.
- 38 new floating berths.

- Four (4) fore-&-aft moorings.
- For a total of 70 Berths

Excluding the two (2) slipway berths the proposed development of the Marina maintains the Proponents existing berth count.

2.4. Proposed Vessel Numbers as Determined Under the EP&A Act

The proposed marina development should maintain a vessel count consistent with the EP&A Acts definition of a "Berth". We note that the proposed development has a proposed lease area offset 5m from the marina structure. This would infer that the Proponent intends to use the outer face of 'T' heads and lengths of main walkways for either casual or permanent berthing, as there would be available lease area outside of the structure to permit this use. Additionally Arm A appears to have been made available for casual berthing. As such we determine the proposed marina Development has having the following vessel count.

- Arm A – Four (4) Casual Berths.
- Main Walkway / Fuel / Pumpout Facility – Four (4) Casual Berths.
- Slipways – Two (2) berths up to 18m.
- Long Pontoon fronting the Proposed Restaurant – Two (2) Casual Berths.
- Arm B – 25 Floating Permanent Berths. We note that two (2) may / can be used on a casual basis.
- Arm C – 27 Floating Permanent Berths. We note that four (4) may / can be used on a casual basis.
- Arm D - 22 Floating Permanent Berths. We note that four (4) may / can be used on a casual basis.
- Fore-&-Aft Moorings – Four (4) are proposed
- We calculate that under the EP&A Act the total number of berths proposed in this development is 90, Ten (10) more than the existing number of Berths.

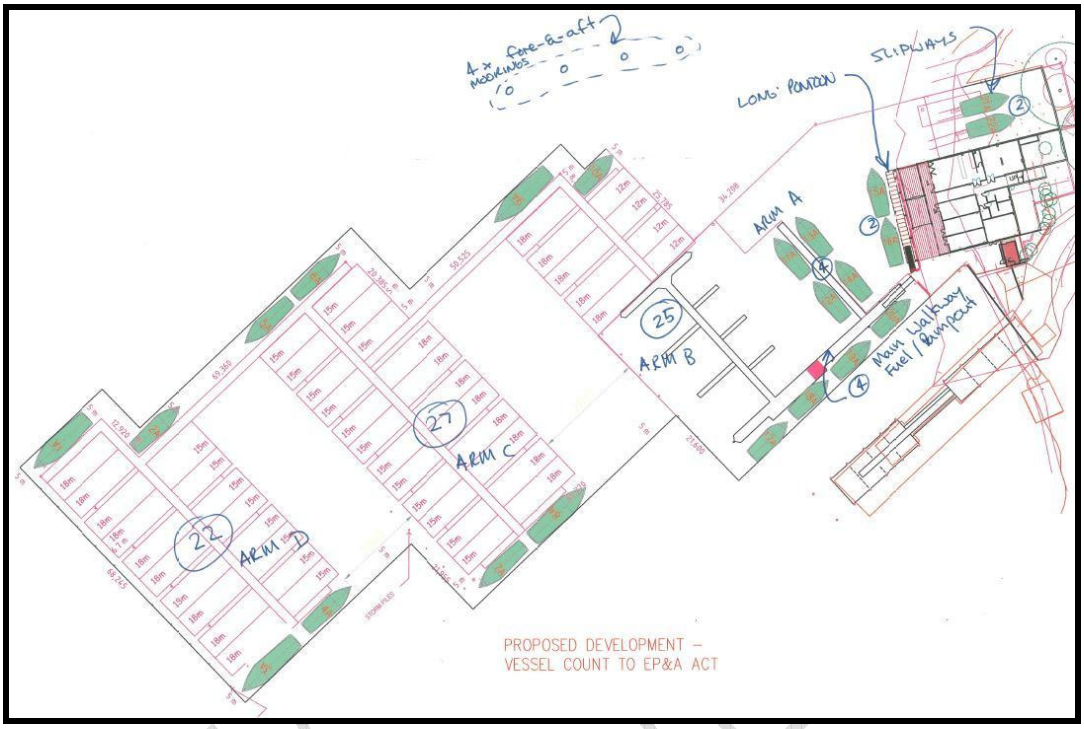

Fig. 2.4 – Proposed Marina Development Vessel Count Consistent with the EP&A Act.

2.5. Recommendations

We recommend that the count for the existing and proposed number of berths be amended to 80 Existing (78 if slipway storage is excluded from the count) and 90 Proposed (88 if slipway storage is excluded from the count). We recommend that the Development be determined based on the above mentioned vessel counts.

3.0 EXISTING & PROPOSED LEASE AREAS

3.1. Existing Lease Areas

The Department of Lands has specified an existing lease area of 5,513m². By importing the Department of Lands drawings into AutoCAD and excluding the office hardstand we arrive at an existing lease area of 4,428m².

3.2. Proposed Lease Areas

The Proponent has forwarded through to our office, via the Department of Planning, AutoCAD drawings detailing the proposed development. From these AutoCAD drawings we have calculated the following proposed lease areas.

- Lease Area 'A' – Slipway & Clubhouse totals 3,205m²
- Lease Area 'B' – Main Marina totals 12,956m²

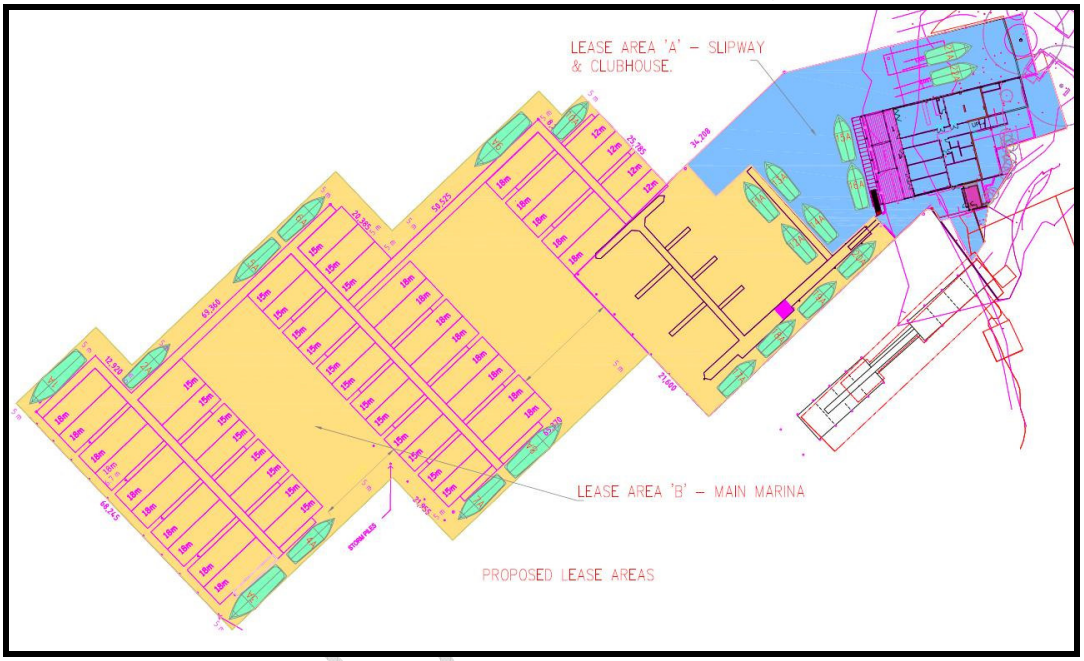

Fig. 3.2 – Proposed Lease Areas.

- We note that the proposed development, in plan footprint, has an area of 16,161m² or 293% larger than the Department of Lands calculation of the existing lease area.

We believe that the lease area is excessive and that there remains scope to further consolidate the required number of marina berths in a smaller lease envelope. We recommend that the Proponent revises the design to minimize the increase in lease area. This item is covered further in this document under Vessel Mix.

4.0 DESIGN OF THE PROPOSED MARINA

4.1. Marina Water Depths

AS3962-2001 Clause 3.2 sets water depth requirements for vessels in mooring pens or vessels using fairways or navigation channels. The required water depth for each berth is as follows;

- Draft of the vessel using the berth/fairway/navigation channel (Set by Clause 3.1) plus.
- Half the significant wave height (we are assuming a significant wave height for a 1:50 year storm of Hs = 1.2m) plus.
- A minimum of 300mm clearance to soft seabed or 500mm clearance to hard seabed.

The following table sets the minimum water depth required for each vessel type proposed by the Proponent and confirms whether or not the marina sections meet the requirements of AS3962/2001.

Clause 3.2 AS3962-2001				
Item	**Depth Required**	**Existing Seabed Depth**	**Comments**	**Pass / Fail**
Long Pontoon	Pontoon Draft (0.3m) plus 0.5Hs = 600mm plus 0.3m Clearance = 1.2m below zero tide.	0.0m to + 0.5m above zero tide.	Dredging is required for this structural element. Currently not proposed in the DA.	Fail
Slipways	N/A	N/A	N/A	
Arm A Pontoon	Pontoon Draft (0.3m) plus 0.5Hs = 600mm plus 0.3m Clearance = 1.2m below zero tide.	1.5m below zero tide.	N/A	Pass
Arm A four by 10m vessels	Powerboats – 1.9m below zero tide. Yachts – 2.7m below zero tide.	1.5m to 1,7m below zero tide.	Suitable for casual berthing but not at all tides for yachts or Powerboats. Permissible under AS3962-2001.	Pass

Arm B, Arm C and Arm D pontoons	Pontoon Draft (0.3m) plus 0.5Hs = 600mm plus 0.3m Clearance = 1.2m below zero tide.	A minimum of 3.0m below zero tide.	N/A	Pass
12m Vessels Arm B East	Power Boats – 1.9m below zero tide. Yachts 2.9m below zero tide.	A minimum of 2.75m below zero tide. 3.0m below zero tide for the two (2) western twin pens.	Either dredge or limit all pens designated 3 to 10 on Proponent Dwg. No. 001 to 12m Power Boats.	Pass*
18m Vessels Arm B West	Power Boats – 2.4m below zero tide. Yachts 3.8m below zero tide.	Generally 3.5m below zero tide.	Pens 11 to 16 on Proponent Dwg. No. 001 must be limited to Power Boats or dredging is required.	Pass*
18m Vessels Arm C East	Power Boats – 2.4m below zero tide. Yachts 3.8m below zero tide.	A minimum of 4.0m below zero tide.	Likewise the 15m vessels on Arm C West & East pass water depth requirements.	Pass
18m Vessels Arm D West	Power Boats – 2.4m below zero tide. Yachts 3.8m below zero tide.	A minimum of 4.0m below zero tide.	Likewise the 15m vessels on Arm D East pass water depth requirements.	Pass

Fig. 4.1 – Water Depth Compliance.

As noted in Figure 4.1 there is sufficient depth in all of the proposed marina for all of the proposed vessels if managed properly. The Long Pontoon sits in too little water and the Proponent needs to amend the DA to include dredging in this locality. The Proponent also needs their Environmental Consultant to comment on the extent and effect of dredging.

4.2. Marina Freeways

The Marina has five (5) floating pontoon Arms known as;

- Long Pontoon. Casual Berthing for two (2) vessels up to 10m in length.
- Arm A. Casual Berthing for four (4) vessels up to 10 m in length
- Arm B. 12m vessels East & 18m vessels West.
- Arm C. 18m and 15m vessels East and 15m vessels west.
- Arm D. 15m vessels East and 18m vessels west.

There are requirements for internal fairway between each arm set by Clause 3.1.2 of AS3962-2001. Conformance of the design is detailed in Figure 4.2 following.

Clause 3.1.2 AS3962-2001

Item	Fairway To:	Proposed Fairway Width	Width Required	Pass / Fail
Long Pontoon	Arm A (minus an offset of 3.7m on both the Long Pontoon & Arm A for 10m berths)	The pond created by these two pontoons converges. 16m down to 10m	1.5x10 = 15m. We note that good management will see this pond conform.	Pass Subject to Good Marina Practices
Arm A Pontoon	Arm B Pontoon	Assuming the Western face of Arm A has 10m vessels berthed then 12.2m. Should this Western Arm A face be free then 16m.	1.5x12 = 16m.	Pass Subject to Good Marina Practices
Arm B Pontoon	Council Boat Ramp.	18m	1.5x12 = 16m	Pass
Arm B Pontoon	Arm C Pontoon	27.150m	1.5x18 = 27m	Pass
Arm C Pontoon	Arm D Pontoon	22.63m	1.5x15 = 22.5m	Pass
Arm D Pontoon	West Into the Bay	Unlimited	1.5x18 = 27m	Pass

Fig. 4.2 – Fairway Width requirements & conformance.

4.3. Navigation Channels Around the Marina

Navigation Channels and their required widths are set by AS3962-2001 Clause 3.1.1 and the NSW Maritime Authority.

We are of the opinion that the Public Ferry to the immediate east of the proposed Marina has sufficient water and navigation channel width to safely and securely navigate Gunnamatta Bay and Cronulla Ferry Wharf without being impeded by the new development. This item is discussed in detail in Section 4.8.

The relevant navigation channels that need to conform to current Australian Standards are southeast of the Marina and northwest of the marina. Southeast of the proposed development is a large extent of open water (made available by the relinquishing of swing moorings) and as such the maximum requirement of 27m is easily reached.

Northwest of the Marina is the existing navigation channel running to the public boat ramp and additionally, access to domestic marine facilities to the immediate northwest. In calculating the minimum navigation channel width requirements we assumed the following;

- The maximum size vessel to be launched at the public boat ramp would be an 8m vessel of a beam no greater than 2.4m.
- The existing boat ramp has a navigation channel of 10.35m, set by the Proponents slipways and sedimentation at the end of the Bay. Unless Council dredge said sedimentation, that the largest vessel that can use the public boat ramp is restrained to 6m in length (L x 1.5).

The minimum navigation channel width north of the proposed marina is 21m (subject to the four (4) fore-&-aft berths being removed). The current maximum requirement for public vessels is 12m and for the marina is 15m. Moving west from Arm B to Arm D the navigation channel increases in width to 68m with an average width of over 50m, more than sufficient for all expected vessel movements in this area of the Bay. We are of the opinion that the proposed development meets all navigation channel width requirements as set out in AS3962-2001 Clause 3.1.1.

We note the proposed location of the four (4) fore-&-aft moorings and

given the frequency of vessel use associated with the existing public boat ramp, the Proponents slipways and the Long Pontoon and Arm A casual berthing facilities there would be a significant reduction of navigation channel width should these fore-&-aft moorings remain. We recommend their removal from the development. Secondly, the navigation channel from the public boat ramp may be further restricted by an increase in sedimentation. There is merit in the Proponent looking at either the completion of remedial dredging to the immediate west and southwest of the public boat ramp, financing an increase in width at the public boat ramp or the completion of both. The scope of the Proponents proposed development should be able to cover these works. Given that further sedimentation is expected in the Bay and that the proposed development would form a barrier preventing the public boat ramp channel from moving to suit this further sedimentation, we recommend that the Proponent be responsible for any further remedial dredging fronting the public boat ramp to ensure that this important public asset is retained.

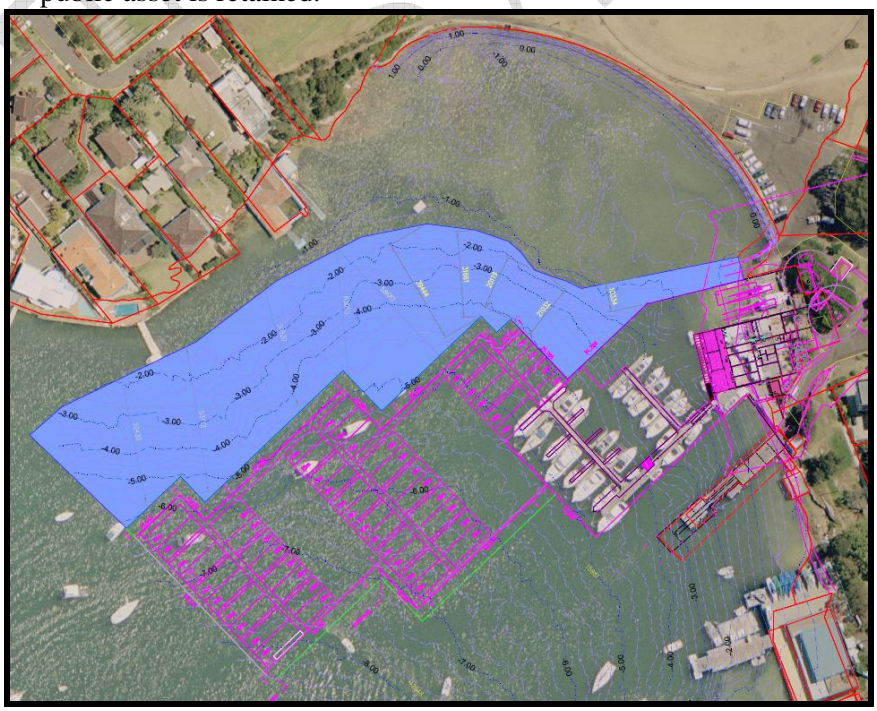

Fig. 4.3 – Navigation Channels

4.4. Marina Berth Widths

Minimum berth widths for vessels in the marina are set by AS3962-2001 Table 3.2. We are assuming at this stage that all berth widths are to be calculated based on two (2) powerboats berthed in each pen. We note that those berths that are critical in regards to pen width for designated vessel size are also critical depth wise and require dredging should one (1) ore more vessel in each pen be specified as a yacht to reduce pen width requirements. Figure 4.4 below reviews conformance of pen widths as designed by the Proponent.

Table 3.2 AS3962-2001

Item	Vessel Size	AS3962-2001 Required Pen Width	Designed Pen Width	Pass / Fail
Long Pontoon	10m Casual Berth	N/A	N/A	Pass Subject to Good Marina Practices
Arm A Pontoon	10m Casual	N/A	N/A	Pass Subject to Good Marina Practices
Arm B Pontoon	12m Berth 3 to Berth 10 Dwg.001	9.8m	8.865m	Fail
Arm B Pontoon	12m Berth 17 to 20 Dwg.001	9.8m	11.465m	Pass
Arm B Pontoon	All 18m Pens	11.8m	11.87m	Pass
Arm C Pontoon	All 15m Pens	11.0m	11.06m	Pass
Arm C Pontoon	All 18m Pens	11.8m	11.87m	Pass
Arm D Pontoon	All 15m Pens	11.0m	11.06m	Pass
Arm D Pontoon	All 18m Pens	11.8m	11.87m	Pass

Fig. 4.4 – Berth Pen Width requirements & conformance.

We note that Berths numbered 3 to 10 on the Proponents drawing numbered Dwg.001 are specified as being made available for 12m vessels. AS3962-2001 permits these pens to be used by a maximum vessel length of 9.8m. Given the pen design width we recommend that

the Proponent downsize the vessel specification for these pens to a maximum of 9.5m.

4.5. Marina Finger Widths & Lengths

Australian Standards require that fingers be of a length 0.8 times the length of the largest vessel to berth in said pen. As such the following finger lengths are required.

Finger Length For Mooring Pens

Item	Vessel Size	Standard Requirement	Designed Finger Length	Pass / Fail
Arm A	10m	8.0m	7.82m	Pass Subject to Good Marina Practices
Arm A	12m	9.6m	10.57m	Pass
Arm A, B & C	15m	12.0m	11.17m	Pass Subject to Good Marina Practices
Arm A, B & C	18m	14.4m	13.59m	Pass Subject to Good Marina Practices

Fig. 4.5 – Finger Lengths

Currently the design of the 10m fingers (downgraded from 12m pens) is seen as acceptable, 12m vessel fingers are acceptable, 15m vessel fingers are 830mm short and 18m vessel fingers are 810mm short. While these figures are not critical and finger design may have been submitted based on a Suppliers proprietary marina system the Proponent should make comment on the reduction on finger length. We do not believe however that the reduction in finger length as noted above would adversely effect safe and secure berthing at the proposed facility.

4.6. Marina Plan Footprint

As discussed earlier there is a significant increase in plan footprint proposed by the Proponent in the new marina design. The total lease area increases from 5,513m² to approximately 16,161m² or an increase of 293%. We note that 38 swing moorings are being relinquished freeing up a sizeable area of Gunnamatta Bay for passive and active public recreation. In general we are of the opinion that the proposed marina footprint makes best use of the bathymetry of Gunnamatta Bay ensuring safe navigation both to the east and west of the proposed facility. We do recommend however that the marina footprint be reduced in size, pulled landward and reduced in width. The poor mix of vessels heavily weighted towards larger vessels and the lease area falling outside of the plan footprint all leave scope for a reduction in marina size.

4.7. Marina Vessel Mix

We have spent an extensive amount of time looking at the best vessel mix for Cronulla Marina. There is no set Australian Standard or NSW Maritime Authority Guideline for vessel mix and as such we have used the following criteria.

- Demand – Is there a demonstrateable demand for the pen sizes specified by the Proponent?
- Future Demand – Do we expect that vessel and hence mooring pen demand will, in the future, match the current design?
- Locality – Does the vessel mix as designed conform to the current local vessel mix?
- Industry Standards – What is the vessel mix ratio for other marinas in Sydney or waters similar to Cronulla Marina and does this mix support Cronulla Marinas design?

4.7.1 Demand

The current Vessel Mix proposes 14 by 12m berths, 23 by 15m berths and 29 by 18m berths. The Proponent has not specified the existing Vessel Mix but we are of the opinion that the current Mix includes 2 by 6m vessels, 8 by 8m vessels, 2 x 10m

vessels, 13 x 12m vessels, 1 by 13m vessel, 2 by 14m vessels and what appears to be 1 by 16m vessel. Currently the vessel mix averages 10.66m in vessel length per berth. We note also that the majority of vessels on the 38 swing moorings are equal to or less than 12m in length. Note that;

- The current demand is for vessels averaging 10.66m.
- The Proponent has not submitted any supporting information for an increase in demand for vessels above 15m in length.
- There is a real and recognizable demand for vessels up to and including 10m in length.
- Historically Gunnamatta Bay has provided either fixed berths or swing moorings for vessels predominantly less than 12m long.
- The Marina has a social obligation to provide berths suitable for those vessels likely to more in Gunnamatta Bay or for local residents likely to use the marina.

We contacted a number of marina managers throughout the Port Hacking, Georges River and Pittwater to determine a suitable vessel mix and what the current demand is for these vessel mixes. The Marina Managers at RMYC Pittwater and SMBC Georges River reported that demand was greatest for vessels ranging in size from 8m to 12m and that additionally; these vessel sizes sore the highest frequency of use. The Marina Manager at St. George Motor Boat Club stated that he could fill the entire marina again with 8m, 10m and 12m vessels. Current "Demand" at SMBC (close to Cronulla Marina) is as follows.

Vessel Demand – St. George Motor Boat Club	
Vessel Size	**Waiting List**
8m	30 plus
10m	30plus
12m	30 plus
15m	10 approximate
18m	3
20m & Above	1

Fig. 4.7.1.1 – SMBC Vessel Demand

Vessel Demand – Royal Motor Yacht Club - Pittwater		
Vessel Size	**No. of Berths**	**Waiting List**
7m	4	-
8.5m	12	1
9.5m	28	3
10m	12	10
11.5m	20	12
12m	75	10
14m	43	12
16m	12	6
19m	2	2
20m	10	1
23m	2	1

Fig. 4.7.1.1 – RMYC Vessel Demand

The current waiting list for both of the above mention marinas favours vessels of vessel length 15m and below with a clear demand for vessels of between 10m and 12m in length. The average vessel length for RMYC is 12.38m.

4.7.2 Future Demand

The Proponent has proposed a future demand with an average vessel length per berth for the marina of 15.68m. Currently and due to the fact that SMBC is an adjacent marina and as such reflects expected occupancy rates and vessel length demand at Cronulla Marina, we can expect the majority of vessels requiring berths at Cronulla Marina to be 12m long or shorter. Cronulla Marina may pick up the 3 by 18m vessels waiting to berth at SMBC and in addition the 10 by 15m vessels also waiting for berths at SMBC. Given that the swing mooring relinquished will also need berthing at the marina and that the current berthed vessels will need a future berth we see little demand for vessels over 15m in length and believe the Proponent should focus on vessel lengths of 10m to 15m. We do not recommend a vessel mix that includes 29 by 18m vessels.

4.7.3 Locality

Gunnamatta Bay is a small boat harbour. Unlike Sydney Harbour the Port Hacking does not have the same number of large private vessels. We expect that the locality lends itself to vessels ranging from 8m to 15m in length with the majority averaging 10.5m, and equivalent average length to Cronulla Marinas current vessel mix.

4.7.4 Visual Impact

Although Visual Impact is outside of our scope of works in determining the suitability of the current design as proposed by the Proponent there is an overlap between visual impact and vessel mix. Vessels of a length up to 12m are generally of a significantly lower profile when compared to vessels of 15m to 18m in length. This means that when viewed from the waterways or the foreshore the side cross section of vessel potentially blocking a public or private view is increased as the vessel length increases.

AS3962-2001 Table 4.4 sets the CSA (Cross Section Area) for 12m vessels at 29m² and for 18m vessels at 64m². Despite one vessel being just 50% longer than the other the CSA increases by 220.7%. Should the vessel mix be modified in the proposed development to reflect current measurable vessel demand then we would expect the western face of Arm B and the eastern face of Arm C to remove the 18m berths and install 12m berths. The reduction in blocked view across the marina is significant. The Proponent proposes a design that blocks off 128m² of foreshore to foreshore view. By reducing these berths to 12m pens the total area of blocked view is reduced to 58m² or a reduction of blocked view to just 45.3% of the current proposal. Appendix 'A' details an alternate design that amends vessel mix to suit current and future demands and visual impact.

A point to note is the fact that the Proponent has not submitted Visual Assessment drawings (Fig 6-1 to Fig 6-7) showing 18m vessels. All visual assessment drawings show 9m to 12m vessels in mooring pens. The visual assessment drawings need to be amended showing appropriately sized vessels with their appropriate bulk to permit a complete and accurate assessment of the visual impact.

4.8. Ferry Movements Around the Marina

We have studied the ferry movements around Gunnamatta Bay and movements into and out of Cronulla Ferry Wharf. We note that;

- The Ferry Operators have no issue with the proposed redevelopment of Cronulla Marina.
- Relinquishing swing moorings frees up a large extent of water adjacent to the ferry wharf allowing for ease of ferry movement.
- When studying the ferry berthing and disembarking from Cronulla Ferry Wharf the ferry stays east or in line with the existing fuel berth at Cronulla Marina.
- The proposed staggering of Arms B, C and D ensures that there

is ample water available for the ferry.

- We used Mosman Bay Marina as an example in determining the effect of having a commercial marina adjacent to a public ferry wharf and whether or not this was either dangerous or limited ferry maneuvering. We note that the vessel on the southern arm of Mosman Bay Marina is just 14.5m away from the northern beam of the Sydney Ferry (Port Beam). The Sydney Ferry does not have a vessel arrestor and must navigate and maneuver within the small confines of Mosman Bay and around Mosman Bay Marina. There are no current navigation or safety issues associated with this Marina / Ferry Wharf relationship despite the fact that the Ferry is used far more frequently, has tighter running schedules and a significantly reduced pond in which to turn around after berthing and head south when compared to Cronulla Ferry Wharf and the proposed design.

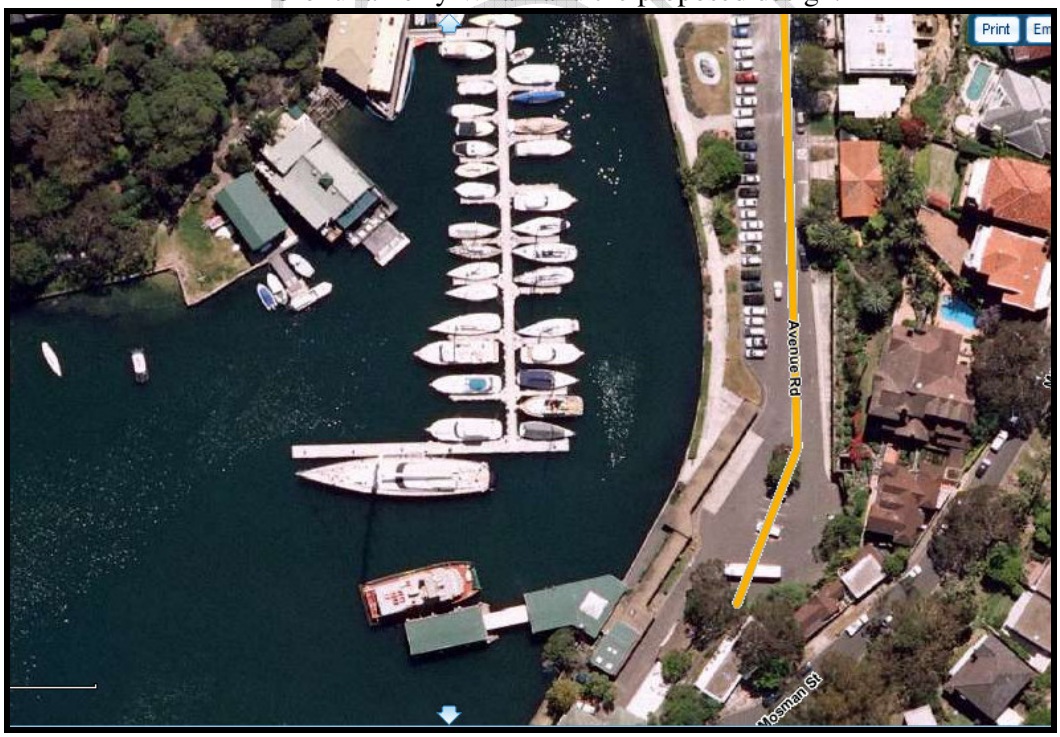

Fig. 4.8 Mosman Bay Marina & Ferry Wharf and Ferry (Bottom middle).

4.9. Use of Gunnamatta Bay

There are six (6) clearly defined high frequency Users of Gunnamatta Bay and these are;

- Cronulla Marina.
- The Public boat ramp.
- Cronulla Ferry Wharf.
- Cronulla Sailing Club.
- Swing Moorings privately held.
- Public undertaking passive boating and water based activities (includes Gunnamatta Park and Baths) .

Fig 7 provided by the Proponent in the Environmental Assessment details a before and after view of the proposed development. JSP has already recommended a reduction in vessel size and vessel footprint which would further reduce the visual impact and plan footprint while maintaining a more realistic vessel mix and the required vessel count. Subject to the swing moorings being relinquished and not retained by the NSW Maritime Authority we note that;

- A sizeable area of water should be opened up for all commercial and recreational boating users. This is of significant benefit to the Bay.
- Views in areas with a high number of swing moorings should be opened up.
- Cronulla Sailing Club should have a larger pond area for club members to sail in. Removing swing moorings reduces floating obstacles making it easier for the novice sailor and younger Club members to navigate the Bay.
- We see no net loss to the public using the boat ramp should the proposed four (4) fore-&-aft moorings be removed from the proposed development and should seabed depths be maintained or improved. Channel markers will be needed and there is merit in increasing the current public boat ramp facilities.
- Some of the current swing mooring clients at Cronulla Marina will be unable to afford fixed floating berths. This factor does need to be reviewed.

- Passive recreation users should have a larger pond area in the Bay for their use.

4.10. Recommendations

Our recommendations regarding the proposed design of Cronulla Marina are;

4.10.1 Dredging needs to be undertaken to provide minimum seabed clearances under the hardstand pontoon known as the "Long Pontoon". The Proponent needs to supply amended plans detailing this dredging and the EA needs to take said dredging into account.

4.10.2 We recommend the removal of the four (4) fore-&-aft moorings. These berths should be incorporated into the marina footprint if required.

4.10.3 We recommend that the Proponent reviews dredging the immediate surrounds of the existing Public boat ramp to increase accessibility, amenity and safety. The Proponent should be made responsible for remedial dredging of the navigation channel to the public boat ramp to maintain channel depths.

4.10.4 We recommend that the Proponent places three (3) navigation markers running along the north western edge of the navigation channel from the public boat ramp to a line perpendicular to Arm 'B' and that these be located by the NSW Maritime Authority.

4.10.5 We recommend that the Proponent look at increasing the width of the public boat ramp as part of the proposal.

4.10.6 We recommend that berth No.3 to berth No.10 on Arm 'B' be reduced to a maximum of 9.5m in length.

4.10.7 We recommend that the existing Arm 'B' floating marina be replaced or re-aligned to permit ease of berthing and accommodate vessels as specified.

4.10.8 We recommend that the Proponent make comment on the reduced finger length in pens.

4.10.9 We recommend a significant reduction in vessel size and mix and the accompanied reduction in marina footprint. At a minimum the marina should be reduced in size to the plan as detailed in Appendix 'A'. The Proponent will still need to justify a Vessel Mix as JSP believes that there is further scope to reduce 15m berths to 12m berths.

4.10.10 We recommend that the Proponent revise all supporting drawings and photomontages used in support of their visual impact argument, replacing vessels as shown with accurate representations of vessels as specified for relevant berths and arms.

4.10.11 We recommend that a statutory declaration be gained by the Proponent from the Ferry Operator stating that the proposed redevelopment will in no way affect the safe and secure navigation and operation of the ferry service.

5.0 DESIGN OF THE PROPOSED SLIPWAY

5.1. Slipway Slope & Structural Requirements

The EPA first issued "Best Management Practices for Marinas & Slipways" in 1997. This document set dimensional controls for slipway design and included a requirement for vessels to be slipped onto hardstands with a minimum finished level of 1.525 AHD. 150mm of bunding was also a set requirement.

In June 2007 the DECC issued "Environmental Action for Marinas, Boatsheds and Slipways". This document according to the DECC replaces the 1997 document and;

- Does not require the hardstand at RL. 1.525 AHD.
- Does set global requirements for Slipway use and management. These items are discussed in Section 5.2 to Section 5.3.

At this stage, although a hardstand and slipway solution is preferable, sloped slipways are permissible subject to further controls.

We note that a shed is proposed for the existing slipway but find little detail and no dimensioned drawings for said proposed shed. Full architectural drawings do need to be submitted for this structure to permit DA assessment and determination.

5.2. Slipway Operations

In general we believe that the Environmental Assessment falls well short of meeting the statutory requirement of providing sufficient detailed information in the EA to permit the environmental assessment of all relevant issues associated with the slipway or to permit the assessment of required levels of environmental management and monitoring for the proposed slipway.

An engineering services report on Cronulla Marina has been completed by Martens Consulting Engineers. We note that;

- Clause 3.2 of this report, titled "Existing Water Cycle Management" does not actually discuss the existing water cycle management. We would like to know what this WCM is.
- Clause 3.2 comments that the slipway has been audited twice. We note that previously Marina Operators would minimize the extent to which a slipway was upgraded as upgrades could prove costly. Previously a change in processes and operation methods was an acceptable level of slipway redevelopment. Given the size of the project we believe that scope exists to significantly improve the current slipway and ensure conformance of all activities and structures.
- The Proponent should include the existing slipway audits in the EA and discuss how the current design mitigates all issues raised.
- We recommend that a Water Cycle Management plan be submitted.
- We recommend that the Environmental study for the project as completed by the Ecology Lab includes the current and proposed slipway works and management of said works.

Clause 3.3 proposes a water cycle management plan to meet DECC compliance but this plan should be submitted by the Proponent in the DA. Detailed plans are just not detailed enough. It is hard to determine levels along the slipway and tanks and grates are not dimensioned. Fully dimensioned slipway drawings should be submitted separate to the restaurant drawings, clearly detailing and dimensioning all works.

We spent some time liaising with the DECC determining the exact requirements for the proposed slipway upgrade. We note that the waist collection and runoff collection system should;

- Be able to take a first flush of 10mm followed by capture and recycling.
- Grated drains must sit high enough to not capture wave action from the Bay. We recommend a 1st and 2nd drain system with the lower drain at RL.1.275 AHD and the higher grated drain having its lowest edge at RL.1.525. Both drains need to be plumbed to the holding tank.
- A grated drain at RL.1.000 AHD will be flooded at a tide above 1.925 (ISLW) or a 1.9m tide. Given the frequency of vessel wash associated with the public using the adjoining boat ramp we would expect a weekly overtopping of RL.0.700 AHD. The current location of the proposed grated drain is not seen as acceptable.

Clause 3.4 of the Martens report deals with the level of water treatment. The Proponent proposes dumping treated storm water into Gunnamatta Bay. In discussions with Greg Newman and Denis Pascal of the DECC we note that no storm water or treated waste water is to be discharged into the Bay. We recommend the capture of all waste water products, treatment and re-use or disposal with Sydney Water.

We note also that the Ecology Lab or an approved equivalent should set the levels of toxins and wastes remaining in treated water prior to disposal or re-use.

5.3. Noise

We are unaware of maximum levels of noise pollution currently existing on site. We believe that;

- Noise levels should be set in any conditions of DA consent.
- Working hours should be set in any conditions of consent.
- The maximum size and number of vessels to be slipped should be set in any DA consent.

A noise report should be submitted with the current DA outlining all current slipway activities, proposed slipway activities, their time frames and associated levels of noise.

5.4. WorkCover Authority Requirements

We have previously discussed the lack of clear concise fully dimensioned drawings detailing the extent of proposed slipway works. We note also that;

- The WorkCover Authority set a minimum clearance from the outside edge of any vessel or cradle to any solid structure. Hence the cradles need to be detailed and the Proponent needs to demonstrate that the slipway design maintains 600mm clear distance between the bow of any vessel and the winch or landward boundary fence and;
- 600mm clearance between the sides of cradles and boundary walls and;
- 600mm clearance between vessel cradles.
- We note also that the Proponent should be able to demonstrate that any vessel slipped on the slipways will meet the above dimensional requirements and not extend below the highest grated drain.

5.5. Recommendations

We recommend that;

5.5.1 Recommendations No. 1 to No.12 as set out by Peter Barber from and on the behalf of Sutherland Shire Council are addressed in full by the Proponent.

5.5.2 We recommend that amended slipway drawings detailing cradle sizes, WorkCover clearances and two (2) capture grated drains at levels as recommended in Section 5.2 be submitted by the Proponent.

5.5.3 We recommend that a suitably qualified Hydraulic Engineer design the proposed water collection system to ensure collection and treatment of all water born waste at the slipway and in accordance with a 10mm first flush.

6.0 STURCTURAL SUITABILITY OF THE MARINA

6.1. Loading

JSP are of the opinion that marina products exist that could easily carry any current and relevant load combination that may exist at this site. We do not believe that excessive environmental or vessel loading would restrict a marina extension at this locality.

6.2. Serviceability

As noted in Section 6.1 the locality does not preclude the construction of a floating marina product that could and should achieve, subject to a suitable design and maintenance, an acceptable design life.

6.3. Recommendations

6.3.1 We recommend that the proposed marina extension be designed so as to carry all documented and expected environmental and vessel loading associated with Gunnamatta Bay.

7.0 RELEVANT CODES & STANDARDS

7.1. List of Relevant Codes & Standards

Documents reviewed when accessing the proposed marina development included;

- Design Guidelines for Wharves & Jetties 1990 – NSW Public Works.
- Engineering Standards & guidelines for Maritime Structures – NSW Maritime Authority.

- Marina Guidelines 1987 – NSW Public Works.
- Environmental Action for Marinas, Boatsheds And Slipways – DECC.
- AS3962-2001 Guidelines for Design of Marinas.
- AS 4997 - 2005 Guidelines for Design of Maritime Structures.

8.0 PUBLIC REPSONSE TO THE DEVELOPMENT

8.1. A Review of Responses 1-14 Submitted to Planning NSW

8.1.1 Michael Chapman – is the President of the BOA and was at one time the head of the NSW Maritime Authority. We believe that Michaels letter is in general, in favour of the proposed development. We note that the undercover slipway and disabled access are not detailed to any extent in the submittal. No further comment needed.

8.1.2 Respondent 2 – Resident. Concern re surety of a reduction in swing moorings. This is a valid point and needs to be taken up with the NSW Maritime Authority. Although the expansion is considerable a reduction in vessel size and a better mix will mitigate some of the concerns associated with the proposed development. Aquatic Fauna and Flora issues have been reviewed by the Ecology Lab. Floating marinas do create floating reef habitat and the proposed development will create a floating fish sanctuary. We will not comment further here on visual impact. Bar visual impact (always associated with the relinquishing of swing moorings) we see no real concerns regarding this response.

8.1.3 Respondent 3, Cronulla – General arguments re planning policy. Arguments and support of sediment being associated with the storm water channels. Swing moorings will disturb this sediment far more readily than the marina upgrade. No real valid concerns above not wanting new development.

8.1.4 Respondent 4 – Local resident. We respond as follows;

1. We understand that there will be an effect on views associated with a marina upgrade. Yes there will be a view change but no expected loss in property value or lifestyle. CYC in Sydney

Harbour has a significant visual effect on all surrounding residents but property values and lifestyles are maintained.

2. Vessel noise can be managed through low wash and low noise zones.
3. Do not support fumes comment.
4. Do not support 65m as being undeniably close. Yes there is a change in view.
5. We do not believe that the marina will cut the size of the Bay.
6. Yes, boat ramp vessels can only use the 65m navigation channel fronting the Respondents property.
7. The intensity of use will be on the eastern side of the development. There should be no real increase in vessel wash and wash at the velocities applicable to this locality should not affect the Respondents jetty if it is properly maintained.
8. What oil slick? We are sure that any marina upgrade would include first rate management procedures.
9. We doubt the marina would be anything but anal when it comes to pollution. Most pollution in the Bay would be storm water or public generated.
10. Most marinas are used for storage only and the frequency of vessel use does not increase when swing moorings are upgraded to fixed berths. The marina manager can far easily police a fixed floating system when compared to swing moorings. We see no relevance here.
11. Loss of property value is yet to be supported.

Again bar visual impact and not wanting a change in view we see no real concerns.

8.1.5 Australian Marina Management Pty Ltd – Ian McAndrew – Is also the NSW representative of Walcon, a British based marina fabricator. Ian is very pro marinas. We do however concur that there is a demonstrateable demand for new berths on the Port Hacking River.

8.1.6 Department of Water & Energy – Jeff Hunt – Stability of the shore line is their real concern. We see no proposed works that are likely to destabilise the existing foreshore.

8.1.7 Cronulla Sailing Club – Respondent 7 – Has some valid points. We are of the opinion however that as long as the swing moorings relinquished under the proposed development are not returned then there should be no real impact on the sailing club and a large open pond should be beneficial.

8.1.8 Respondent 8 – Local businessman and boat owner. I agree that the proposed redevelopment will benefit the locality and boating industry financially. Again relinquished swing moorings need to stay relinquished.

8.1.9 Respondent 9 – Local resident and in support.

8.1.10 Respondent 10 – Resident in Tonkin Street – We are yet to see supporting documentation for a huge increase in traffic. We understand that no intensification is proposed and generally vessel numbers remain unchanged. We address his points as follows;

1. Parking is outside our scope of works.
2. Fore-&-aft moorings do need to be removed. Public boat ramp access should be otherwise unaffected.
3. Visual impact is outside of our scope. A reduction in the number of 18m vessels will reduce this impact. I have yet to see any published data on a reduction of property values associated with this type of development and properties adjacent to marinas such as CYC, RSYS etc are highly sort after.
4. We are of the opinion that air quality will not be affected by vessel movements at this locality. A marina of this size would expect, in general, a daily frequency of use of just 20 vessel movements.
5. Light pollution may be an issue. Lights should be limited to navigation lights (coloured to suit location) at the northern and southern corners of the marina and standard 1m high max height service pedestals with down lights only.
6. We are yet to see significant levels of noise pollution generated from this style of development. The slipway does need noise and work limits set into the DA conditions of consent. The marina itself should have low noise levels. Noise can be

managed form the marina office and facilities like RMYC Pittwater with 220 vessels and upwards of seven (7), one (1) week stay over vessels at any one time have few if any noise issues.

8.1.11 Respondent 11 – In support but no idea who he is.

8.1.12 Respondent 12 – Residents. Yes the swing moorings need to go or significant benefits offered by the proposed development are lost. We do not see the marina development as being detrimental to navigation in the Bay. The Marina Operator will need a Fire Compliance Certificate prior to getting approval from the NSW Fire Brigade. The Building Certificate will require said preliminary certificate. We are yet to see, where fires have occurred in marinas in Australia, an occasion where or when more than three (3) vessels were damaged.

8.1.13 Respondent 13 – Local business? Opening up the swing mooring areas to create large safe ponds is beneficial. The ferry hitting children sailing out of CSC is unfortunate and a large open area of water fronting CSC should be beneficial. The Proponent can not be blamed for ferry movements in and around CSC sailing days.

8.1.14 NSW Department of Primary Industries (NSW Fisheries) – James Sakker – The NDPI is primarily interested with the protection of aquatic flora and fauna. The Proponent, with the relinquishing of the fore-&-aft moorings and two higher grated drains on the slipways can demonstrate conformance with the NDPI's concerns. We note additionally that the floating marina will introduce reef style habitat and should encourage an increase in fish and other species in the immediate vicinity.

8.2. A Review of Responses 16-26 Submitted to Planning NSW

8.2.1 Respondent 15 – Local Resident. Marina berths do not sell for $900,000.00 in Sydney. The going industry rate when you exclude the CYC or Woolloomooloo Finger Wharf is around $10,000.00/lm of vessel for a ten year license. You would expect the Port Hacking to attract a value of approximately 50% to 75% of what you would attract in Sydney Harbour for berth sales.

Yes most of the boats will only be used less than ten (10) times per year which supports the 'no intensification of use' argument. Studies show that more floating berths are needed and the relinquishing of swing moorings will create the large open ponds Respondent 15 would like to see in the Bay. Although we disagree with most of Respondent 15's comments the Proponent should get a sailing expert to look at the effect on pure sail craft traveling through the western navigation channel from the public boat ramp.

8.2.2 Respondent 16 – Unaware of his relationship to the project. We see no environmental issues with a modified proposal (as per previous comments). We do not see dangerous levels of vessel traffic associated with the development. Visual impact will always be of a concern to residents not wanting development.

8.2.3 Respondent 17 – Local Resident – The Respondent acknowledges that areas of the Bay will be opened up. Concerned re the location of the development. We do not believe that their entertainment areas or privacy will be affected. Most vessel movements will be on the opposite of the Bay as vessels leave Arms via fairways opposite and not adjacent to the Respondents residence. We do not believe that noise will be an issue. Vessel size should be reduced and we have recommended as such. Boat ramp access, waves and wash and noise should not be of an issue.

8.2.4 Respondent 18 – Concerned Public?

1. The foreshore walk is on the Proponents property and can be amended.
2. Relinquishing swing moorings and opening up the Bay with no significant increase in vessel numbers is socially responsible.
3. Parking is outside of our scope of works.
4. They may launch "other craft" assuming they are on trailers but the public boat ramp is not designed for launching kayaks and hand carried vessels. We recommend that the Proponent permits launching of public kayaks and dinghies from the "Long Pontoon" and "Arm A" to return a level of amenity not existent at the public boat ramp, to the public.

5. We have reviewed and are happy with the navigation channel associated with the public boat ramp given the modification of the marina development.
6. We see no real reason why the marina would negatively impact the amenity of surf boat clubs training in the Bay should all swing moorings be relinquished.
7. Further detail is required on the large steel structure over the slipway.
8. The Proponent should ensure that the public can traffic the foreshore without needing to cross roads or streets. Public access to and along the foreshore is one of the NSW Maritime Authority's underlying rationales re planning and public amenity. I believe that there is scope to accommodate said foreshore access.

8.2.5 Sutherland Shire Marine Association – Respondent 19. In support so no response needed. Respondent 19 also runs Cronulla Houseboats and as such is pro the development. We have formed the view, after extensive consultation with the NSW Maritime Authority, that these boats may be berthed on swing or fore-&-aft moorings and that they do not necessarily need to be incorporated into the development.

8.2.6 Email of 2/11/08 Details With held. Visual impact is outside of our scope of works. We have noted previously that visual impact support Figures do not show relevant and correctly sized vessels. We have previously recommended a better vessel mix, reduction in plan footprint and revised visual impact Figures.

8.2.7 BIA – Respondent 21. We may be wrong but believe that when we last talked to Ian McAndrew, he was the head of the BIA and has supported this proposal in 8.1.5. Again valid argument.

8.2.8 Respondent 22 – Adjacent Resident. Again a change in view is not appreciated by an adjacent resident. We respect the resident's opinion. Visual impact is outside of our scope of works. We see no issues associated with the public boat ramp nor with an increase in contamination.

8.2.9 Respondent 23 – Local Resident.

- Deep water is available fronting the public boat ramp. Seabed

contours support ample water and sufficient navigation channel width for users of the public boat ramp. Yes these can be improved by the proponent.

- Boat ramp users will be protected during inclement weather and do have sufficient access to the Bay and the Port Hacking.
- Good access is maintained. The Fore-&-Aft moorings are supported by the NSW Maritime Authority and do delineate the north western navigation channel to the public boat ramp.
- I, after extensive work with the NSW Maritime Authority, disagree that the Fore-&-Aft moorings are inappropriate and should be deleted.
- I believe that a consolidation of marina berths into a fixed floating structure will open up significant areas of the Bay. Again the permanent removal of swing moorings is important.
- Visual impact and the large awning and its visual impact are outside of our scope of works.

8.2.10 Respondent 24. Again boat ramp access. We believe that the design with the removal of moorings will provide sufficient boat ramp access. A better public boat ramp would be beneficial in this locality. The current Public boat ramp is old, too narrow and too limited in amenity.

8.3. A Review of Responses 27-34 Submitted to Planning NSW

8.3.1 Sutherland Shire Council. We agree with Peter Barber's comments that the EA fails to provide sufficient detailed information to enable the environmental assessment of the key issues surrounding the slipway development or assess the required level of environmental management and monitoring for the project. We do comment that had The Ecology Lab been directed to access and recommend environmental management and monitoring controls and processes for the slipway then the level of detail and quality of methods and strategies would have been far improved. We comment that The Ecology Lab were unaware of any slipway works and were not directed to address the slipway.

1. We agree with Councils comments re the slipway. Two

"capture" grated drains can be installed above the highest tide. The current proposed location of the one grated drain is not acceptable and can be inundated by wave action washing waste into the Bay. Although the DECC's documentation requires 15mm first flush the DECC themselves stated that Sydney Water will only accept 10mm first flush. The Proponent should have a Hydraulic Engineer design the Catchment and treatment system to suit 10mm first flush. We concur with Council's comment regarding discharge of unwanted waste or treated water into the Bay. Unwanted waste water or treated waste water must be discharged to sewer under trade waste agreement with Sydney Water or removed to an approved waste facility in accordance with DECC requirements.

2. Hours of operation should be controlled and Council raises a valid point. The Marina needs 24/7 management or the Proponent needs to mitigate the risk of excessive noise.
3. Odor does need to be addressed in a revised EA.
4. We are not overly concerned with sewage treatment. As long as the Proponent plans for and installs a pumpout facility and that this pumps to a collection pit or to Sydney Water's system under license then we are happy with the extent to which this item is dealt with in the EA. Should the existing pumpout facility be used then the treatment system needs to be discussed and covered in the DA conditions of consent.
5. Again the Proponent needs to address the handling and storage of dangerous goods in the EA.
6. Acid Sulfate Soils will need to be addressed in areas associated with dredging. We are aware that the Long Pontoon adjacent to the boardwalk will require dredging to meet current required water depths.
7. We agree that a more detailed Contaminated Sediments study be completed and the results and recommendations incorporated into the EA.
8. An erosion and sediment control plan does need to be

completed for excavation works associated with the slipway proposal.

9. A plan for the management of Caulerpa Taxifolia should be completed for the proposed development.
10. We agree that a Construction Environmental Management Plan and a Operation Environmental Plan should be completed for the proposed development.
11. Visual impact is outside of our scope of works.
12. The use of berths for boat sales will remove said berths from public use hence reducing public amenity. This item needs to be discussed and addressed.

8.2.11 Ministry of Transport – No real issues.

8.2.12 NSW Maritime Authority – Graeme Dunlavie. Maritime is concerned re the navigation channels associated with the Public boat ramp and east fronting the sailing club and ferry. A reduction in vessel size and a more appropriate vessel mix will reduce the marina footprint to an extent more than likely acceptable to Maritime. We believe that Maritime should sign of on any final iteration of the design presented by the Proponent. We agree that the current footprint is too large.

8.2.13 Respondent 28. Impassionate regarding private use of public access for commercial purposes. No comment.

8.2.14 Respondent 29 – Local Resident. There is scope to improve the current public boat ramp facilities. The Proponent can and may look at incorporating this in the design. Navigation channels have been accessed by our office and the NSW Maritime Authority and any final design should be forwarded to the NSW Maritime Authority for final comment. Contamination for boats can be controlled and generally, in the industry, there is little to no direct contamination from berthed vessels.

8.2.15 Sydney Water – General comment re requirements for disposal of trade waste.

8.2.16 Respondent 31 – Local Resident. We have addressed most of these arguments previously. We do see merit in improving the existing public boat ramp facilities but understand that this amenity is the

responsibility of Council and not the Proponent. Loss of boat ramp amenity is attributed to the boat ramps narrow width and sedimentation in the Bay. The proposed development will limit the flexibility of the existing public boat ramp and its ability to adapt to changes in water depths. These items need to be addressed whether or not planning approval is issued for development at Cronulla Marina. Cronulla Marina can include mitigation measures in their proposed redevelopment.

8.2.17 Respondent 32 – Local Resident. We have address most issues associated with Nerida's comments. We agree that boat ramp amenity needs to be maintained. Currently sedimentation of the Bay is significantly reducing public amenity on and around the boat ramp. Careful consideration needs to be taken re boat ramp amenity. Contours are to AHD which is equivalent to plus 0.925m to zero tide. By adding 1m to all contours the public can convert the hydrographic survey to a tidal seabed survey.

8.4. A Review of Response 15 Submitted to Planning NSW

We acknowledge Respondent 33's level of expertise and experience and comment that we know Respondent 33 very well and do respect his qualifications. Respondent 33 does live in a waterfront residence in this Bay. We address Respondent 33's comments as follows;

- *An unacceptable operational collision risk to the Public Transport Service operating from the adjacent Cronulla Wharf with the proposed structure.* We have been on site with the NSW Department of Planning and then completed two further site inspections to ascertain the pond area required for and used by the Commercial Ferry. We note that the Ferry was orientated north/south and under full steam heading towards Bundeena prior to crossing a north south extension of the existing fuel berth. Arm C and Arm D are a further 27m and 35m west of the outer face of the fuel berth giving a further 27m and 35m safety buffer. We are also of the opinion that the best expert regarding said ferry would be the ferry captain and the director of said

ferry company. To date they have voiced no concerns.

- *Increased, and undetermined, risk to both commercial and recreational navigation safety*. Yes a new development will require that existing users take care. Freeing up swing moorings will open up large pond areas in the Bay to which the public can navigate. Again here the key issue is that these newly created pond areas remain free of swing moorings. We are at the end of a Bay and the end of a navigation channel. Boating public will expect to motor at slow speeds in this locality. We do not support the argument that there will be an increased risk should swing moorings be removed.
- *Inadequate assessment of the impacts of the structure on Gunnamatta Bay geomorphology, particularly with respect to the littoral drift changes along the eastern foreshore and shoaling of the north eastern corner of Gunnamatta Bay*. We are not of the opinion that an increase in floating marina structure will affect the seabed in this locality. Sedimentation of the Bay is governed by storm water channel born sediments.
- *Inadequate channel access to the existing public boat ramp and slipway.* Channel width immediately adjacent to the proposed marina development (northwest corner of Arm 'B') will need to be approved by the NSW Maritime Authority.
- *Inadequate car parking*. Outside of our scope of work.

9.0 DISABLED ACCESS

9.1. Relevant Requirements

We note that there has been no proposal for disabled access to the marina. The NSW Maritime Authority in their Engineering Standards & Guidelines for Maritime Structures notes that;

Structures which will be utilized by the public shall be designed to provide access for disabled persons in accordance with AS1428 and the Commonwealth Governments Disability Standards for Accessible Public Transport Guidelines 2001.

The Proponent should discuss the need for dialed access with the NSW Department of Planning and should demonstrate why such access is not required given the marina fronts a restaurant that does need to provide disabled access.

10.0 CONCLUSIONS & RECOMMENDATIONS

JSP believe that there is scope to approve a level of marina redevelopment at Cronulla Marina. Any redevelopment needs to be socially responsible and environmentally friendly. Relinquishing swing moorings and opening up large areas of water in Gunnamatta Bay and consolidating these swing moorings into fixed floating berths is good design practice. We note that;

- The design of the marina is generally consistent with current and relevant Australian Codes and Standards. Minor dredging works may be required and vessel sizes will need to be reduced for ten (10) mooring pens.
- The design of the slipway is not consistent with current and relevant Australian Codes and Standards. Significant modifications are required.
- The proposed layout of the redevelopment and stepping of arms to the south west best fits the bathymetry of Gunnamatta Bay and current and expected future ferry movements. The layout does restrict future (and expected) growth of the public boat ramp and improving this public amenity should be included in the Proponents development proposal.
- The size and bulk of the marina is not appropriate for the locality. Vessel Mix needs to be modified and there is real scope to maintain vessel numbers while significantly reducing the plan footprint and proposed lease area for the marina redevelopment.

- The level of information submitted and environmental controls proposed for the slipway, refueling and sewage pumpout are not adequate. Further information, studies and detailed management plans are required.

Should a level of marina redevelopment be approved it will be crucial that swing moorings relinquished are not replaced in the Bay by the NSW Maritime Authority. Any marina redevelopment approval for Cronulla Marina will need to include;

- A reduction in vessel size and an appropriate vessel mix. Justification for this mix is also required.
- A reduction in plan footprint and lease area.
- Relinquishing swing moorings and surety that said swing moorings will not be replaced in the Bay by another Government Authority.
- Surety that navigation channel widths and depths to the public boat ramp will be maintained. Cronulla Marina should look at undertaking all remedial dredging works for the public boat ramp when required in the future.
- Navigation channel markers aiding the safe navigation to and from the public boat ramp should be included in the development.
- A review of the potential for widening the existing public boat ramp and dredging the surrounds of the existing ramp to increase existing navigation channel widths and depths should be included in the development.
- Amended visual impact drawings to suit the current and modified vessel mixes.
- Amended Slipway drawings incorporating design changes as required.

- A comprehensive and detailed environmental assessment of slipway operations in accordance with the recommendations listed in Section 5.5 needs to be submitted.

_____

Joshua Stuart Parsons
Director

11.0 Appendix 'A' – ALTERNATE MARINA DESIGN

JSPARSONS STRUCTURAL CONSULTANTS PTY LTD ACN OOO2O1347 ABN 69481143003

SUITE 36, 330 WATTLE STREET, ULTIMO, SYDNEY NSW AUSTRALIA 2007

P. 9282 9926 F. 9282 9927 M. 041 602 8413