

traffic impact assessment

alterations and additions to the d'albora marina
the spit, mosman

prepared on behalf of Ardent Leisure Pty. Limited by **TRAFFIX** traffic & transport planners
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appendix a
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photographic record
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1. introduction

T R A F F I X has been commissioned by Ardent Leisure Pty. Limited to undertake a traffic impact assessment relating to the proposed redevelopment of the existing marina at The Spit, in Mosman. The application involves alterations and additions to the existing d'Albora Marina

The proposed marina expansion is the subject of an Environmental Assessment and the traffic and parking implications are associated with overall development, irrespective of its future staging.

The marina is located on the western side of Spit Road to the immediate south of the Spit Bridge. It is also located on the northern side of the existing "Parking Reserve" which is under the ownership of the Department of Lands. The existing marina accommodates a total of 165 berths. This will increase to 200 berths under the proposed redevelopment, representing a 21% increase.

In addition, the existing marina building is to be rationalised to improve its operation. The existing uses are generally to be retained, including the d'Albora workshops and offices, Seven Seas workshops and offices, Sports Marine boat sales, Noakes workshop and Fleet Marine workshop and offices. The existing restaurant will also be retained on the ground floor. The balance of the area on Level 2 is ancilliary offices.

This report documents the findings of our investigations and should be read in the context of the Environmental Assessment prepared separately by Hamptons Development Group Pty. Limited. The development requires referral to the RTA under the provisions of SEPP (Infrastructure) 2007; as well as under the provisions of Section 139 of the Roads Act concerning the form of access to Spit Road (a classified main road). The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development



- Section 5: Assesses parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions.



2. location and site

The site is situated on the western side of Spit Road and extends between the existing “Parking Reserve” and the northern end of the public road that terminates at the waterfront adjacent to the abutments to the Spit Bridge.

The site has an irregular configuration and the land-based facilities are focussed adjacent to the public road that forms a dead-end to the immediate north of the site; extending to the waterfront. This land is under the ownership of the Department of Lands. The existing (165) marina berths are within the Maritime Services lease area, which is proposed to be extended as outlined further below.

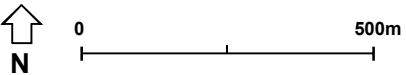
A Location Plan is presented in **figure 1**, with a Site Plan presented in **figure 2**. Reference should also be made to the Photographic Record presented in **appendix a**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.

The site is only accessible via Spit Road using the sub-standard (unnamed) public road that runs between the site and the Spit Bridge, where it terminates adjacent to the site at a small turning area suitable for use by cars and other light vehicles. This road connects to Spit Road at a dangerous acute angle, which does not conform to any standard or guideline, including the RTA’s Road design Guide.

The development proposal seeks to overcome this hazard and improve access to the site.



Source: UBD 2008

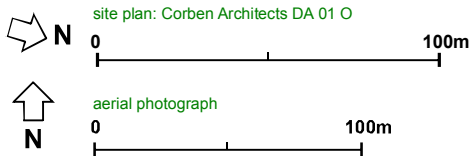
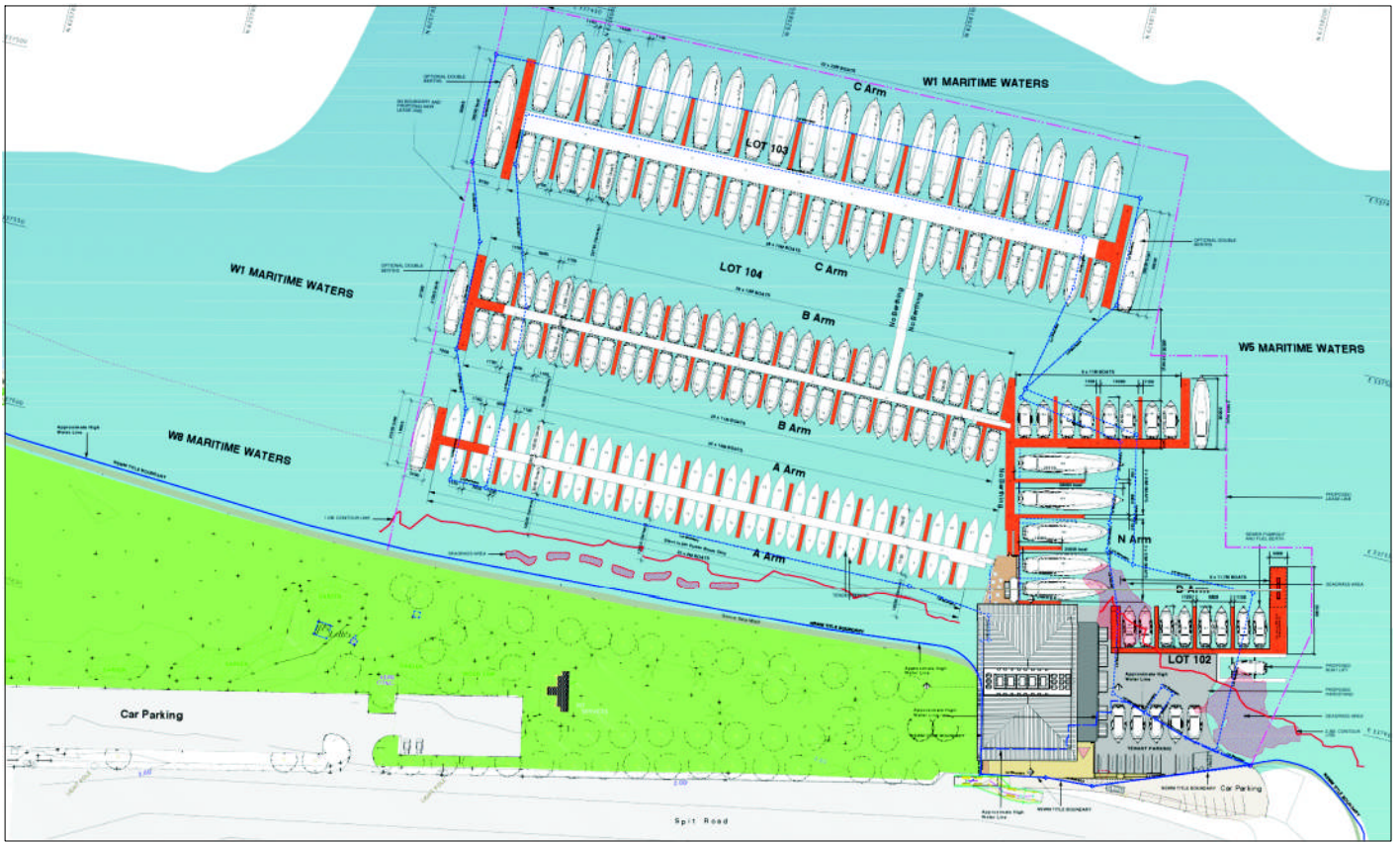


traffic impact assessment: alterations and additions
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figure 1
 location



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figure 2
site





3. existing traffic conditions

3.1 road hierarchy

The surrounding road network is shown in **figure 3** and includes the following:

- The Spit Road

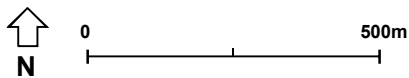
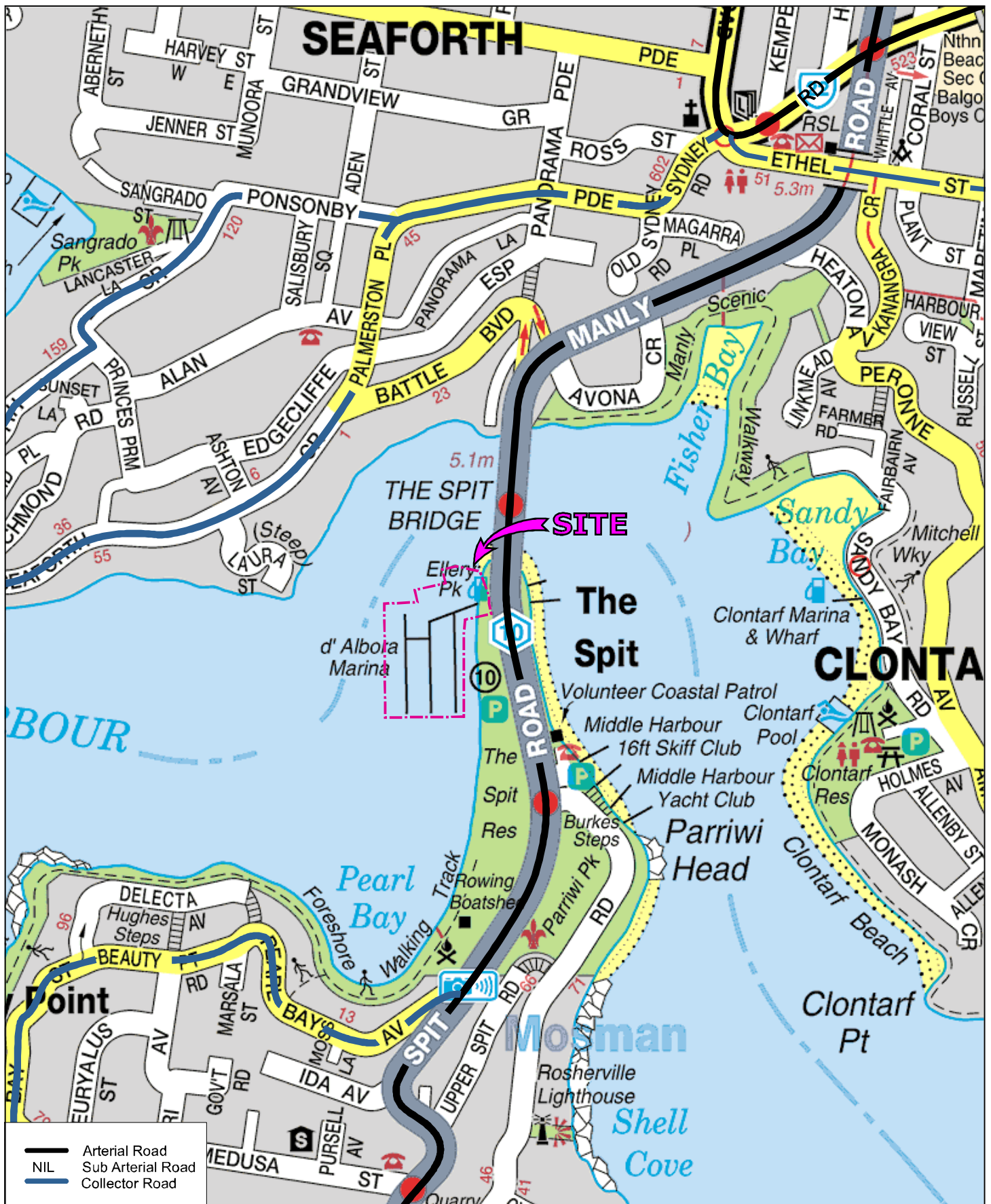
a classified State Road (MR 164) that traverses the site frontage where it crosses the Spit Bridge. It forms the major link between the Sydney CBD and the northern beaches. It carries a daily traffic volume of about 70,000vpd in the vicinity of the site;
- Sydney Road

a classified State Road (MR 159) that runs in an east-west direction to the north of the site, where it intersects at the junction of the Burnt Bridge Creek Deviation and Frenchs Forest Road. Sydney Road carries approximately 20,000 vpd;
- Frenchs Forest Road

a classified State Road (MR 397) that connects Spit Road/Manly Road with the Warringah Parkway to the north-west of the site. It carries approximately 26,000 vpd through the study area;
- Battle Boulevarde

a local road that connects to Spit Road/Manly Road on the northern side of the Spit Bridge. It connects to Palmerston Parade and thus forms a local alternative route between Spit Road and Frenchs Forest Road. It also allows an alternative local route for traffic that departs the subject site and needs to turn to travel south along Spit Road;
- Pirriwi Road

a local road that provides limited turn access between Spit Road at the Middle Harbour Yacht Club and the residential precinct to the east of Spit Road. Pirriwi



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figure 3
road hierarchy

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Road intersects Spit Road further to the south, in the vicinity of Warringah Road and Bickell Road;

📍 Spit Reserve Road

a local dead-end road that is unnamed but is presently the only access to the subject site. It is a sub-standard access and involves dangerous entry and exit movements that compromise road safety.

It can be seen from figure 3 that the site is not conveniently located with respect to either the arterial or local road systems serving the region. Access is only available via sub-standard left turn entry and left-turn exit movements onto the Spit Road and this should ideally be addressed even if the proposed development does not proceed. Nevertheless, the development provides a catalyst and opportunity to implement improvements that will not only benefit D'Albora Marina, but the general community.

3.2 general description of road environment

The Spit Road is a 4 lane undivided road across the Spit Bridge to the immediate north of the site; with a 6 lane divided carriageway adjacent to the site access and extending to the south. It also has a 6 lane divided carriageway on the northern side of the Spit Bridge. That is, the Spit Bridge presents a capacity constraint to traffic movement in the region. This has resulted in the introduction of 'tidal flow' arrangements across the bridge and on its approaches, with only single lane flow in the non-peak direction.

These tidal flow arrangements result in only a single northbound through lane being available in the AM peak adjacent to the existing site access via the unnamed public road. In practice, the tapers associated with the tidal flow arrangements provide an additional one metre width, so that the effective lane width to undertake a left turn into the site in the AM peak is presently about 4 metres.

At all other times, left turn entries into the site can be made from the kerbside lane by cars and other light vehicles. Larger vehicles (up to an 11 metre rigid truck) must encroach into the adjacent lane to turn into the private roadway, which is permissible under the Australian Road Rules. The public roadway permits only one-way flow in any direction due to its narrow width and the presence of right



angled and parallel parking along its length (8 spaces in total). This results in delays and also traffic queuing within the Spit Road to permit a vehicle to exit the laneway, which is hazardous.

Only cars and light vehicles are able to turn within the small turning area at the end of the public roadway. These vehicles can therefore turn within the site and enter and exit the roadway to/from the Spit Road in a forward direction. However, the exit movement involves a sharp 'U' turn manoeuvre that does not permit the vehicle to enter the kerbside lane in the Spit Road, which introduces an accident potential as this is an 'unusual' manoeuvre that would be a surprise to approaching northbound traffic. The required 'U' turn also presents headlight glare problems as exiting vehicles are facing oncoming traffic. This is an additional safety hazard at night time.

The requirement for trucks to access the public roadway (and hence the marina) is presently a matter of some concern. While trucks can enter the roadway using the above manoeuvre (assuming there is no exiting traffic) it cannot turn within the roadway. Hence, trucks must presently reverse out of the roadway into oncoming traffic on the Spit Road. This requires a truck to exit into two lanes of northbound traffic which is unconventional and extremely hazardous. This manoeuvre is shown in appendix c, based on the AutoTurn computer model, as permitted under AS 2890.1 and AS 2890.2. It is emphasised that the largest truck that is capable of accessing the site with this manoeuvre is a 10.4 metre rigid truck. Larger trucks (up to a 12.5m HRV) cannot access without undertaking multiple manoeuvres, which introduces the potential for on-street queuing and of extended delays to through traffic movement along the Spit Road.

A car park is located within the Spit Reserve area, within the area of the "Parking Reserve". This is accessed via a separate entry and exit driveway, with left turn entry and exit movements only permitted. This car park is understood to have been constructed at the expense of D'Albora Marina and other marine-related tenancies in this area, although the marina does not enjoy exclusive use of this car park. Specifically, it is a public car park that is used by all recreational visitors and businesses. The car park has capacity for 200 parking spaces.

Apart from the D'Albora Marina, there is a rowing club located to the south of the reserve. There are several businesses on the eastern side of Spit Road that extend between the Spit Bridge and Pirriwi Road. This includes numerous restaurants as well as the Middle Harbour Yacht Club. In total, there are 341 public parking spaces within the locality that serve the commercial and recreational uses that



front both sides of Spit Road that would be within walking distance of the site. However, it is not possible to identify which specific uses make use of which parking and in general, people would be expected to park depending upon their approach direction, making left turn entries to access parking areas.

3.3 existing intersection performances

The proposed marina expansion will generate moderate additional traffic movements as discussed in Section 6. In addition, peak development activity occurs on Saturdays and Sundays, when 'background' traffic volumes on Spit Road are much lower than occur on weekdays. Accordingly, the performance of intersections is not considered to represent a constraint to development.

Rather, constraints are related to the existing sub-standard access via Council's local roadway (which, as mentioned, presently requires improvement); and to the adequacy of parking supply in the locality.

3.4 existing public transport

The existing bus services that operate in the locality are shown in figure 4. It is evident that the site benefits from good access to the public transport system with buses traversing the Spit Road. In this regard, while public transport will be of benefit to employees, it has limited potential to accommodate recreational demands which are expected to continue to favour private car usage.



Source: UBD 2008



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figure 1
 location



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4. description of proposed development

A detailed description of the proposed development is provided in the Environmental Assessment prepared separately by Hamptons. In summary, the development for which approval is now sought comprises the following components:

- ④ The existing marina accommodates a total of 165 berths. This will increase to 200 berths under the proposed redevelopment, which translates to a 21% increase.
- ④ The existing marina building is to be rationalised to improve its operation. The existing First Floor uses are generally to be retained, including the D'Albora workshops and offices, Seven Seas workshops and offices, Sports Marine boat sales, Noakes workshop and Fleet Marine workshop and offices. In some cases, these offices are provided on a new Level 2. The existing restaurant will be retained with the same seating capacity.
- ④ The existing development on the site comprises a total area of 923m² on Levels 1 and 2. The proposed development will result in a total floor area of about 1,766m². Notwithstanding that this increase is significant in relative terms, in practice it is intended to provide improved operational efficiency and an improved amenity for existing commercial tenants.
- ④ Improvements to the existing access arrangements onto Spit Road to allow safe and efficient left turn movements and to remove the existing reversing movements that occur within Spit Road, through the creation of an indented bay that extends further to the south. This will be used for occasional truck servicing, as well as providing an effective deceleration lane for cars accessing the site as well as Council's parking area; and
- ④ Provision of 9 on-site parking spaces for use by tenants.

The parking and traffic impacts arising from the development are discussed in Sections 5 and 6 respectively. Reference should be made to the plans submitted separately to the Department prepared by Corben Architects which are presented at reduced scale in **appendix b**.



5. parking requirements

5.1 council controls

Mosman Council's Transport DCP requires that "boating industry facility" be assessed on merit, based on the requirement to prepare a traffic impact assessment. In these circumstances, there are two assessment approaches that are relevant for consideration, as follows:

- ➊ Assessment based on AS 3962 – 2001 (Guidelines for the Design of Marinas); and
- ➋ Assessment based on surveys of the existing marina operations at the site.

The former is a 'generic' approach that draws upon experience with marinas nationally. It would be appropriate for a new development. However, where the development is for the expansion of an existing marina, the opportunity is available to undertake surveys that specifically take into account local factors, including travel patterns, travel modes, public transport usage and local constraints such as access and parking. This is therefore the favoured approach and in fact this approach is supported by the RTA's publication entitled "Guide to Traffic Generating Developments" which acknowledges the benefit of relevant local surveys for most land use categories. Notwithstanding this, the following considers both methods of assessment for completeness.

5.2 guidelines for the design of marinas

This Guideline is AS 3962 – 2001 and in fact also favours parking surveys to assess the likely demand. It does however incorporate rates for adoption in circumstances where surveys are not available. The Guideline states as follows:

"The number of car parking spaces to be provided for development of new facilities is based on the particular activities and uses at each site. In the absence of traffic and parking studies, the following car parking requirements have been found to be acceptable:

(a) Car parking for marina activities, as follows:

(i) Spaces to be provided per wet berth designed for boats 0.3–0.6.



- (ii) Spaces to be provided per dry berth 0.2–0.4.
- (iii) Spaces to be provided per swing mooring 0.3–0.6.
- (iv) Spaces to be provided per employee0.5.

NOTE: For commercial facilities the lower number of parking spaces should be considered. For racing clubs, the larger number should be considered.

(b) Car parking for activities ancillary to marina activities (e.g. ship chandleries, brokerages, shops, restaurants, residential or other uses), should comply with the existing planning codes or standards of the relevant authority.

For ancillary activities where planning codes or standards have not been adopted, the following may be applied:

- (i) For activities directly related to boat berthing activity one space per 50 m² or part thereof, of net lettable building floor area.*
- (ii) Activities primarily related to marina use but not directly related to boat berthing one space per 30 m², or part thereof, of net lettable building floor area.*

Car parking provided for marina activities and for activities ancillary to the marina should consider periods of common usage. Consideration should be given to providing a portion of the number of car-parking spaces as unpaved parking. Parking spaces for disabled persons should comply with AS 1428. Parking spaces for disabled persons should be located close to land-based buildings and comprise 1 percent of parking spaces provided.”

Having regard for the above, and as the marina is a commercial marina, the additional 35 wet berths attract a rate of 0.3 spaces per berth which would require an additional 11 parking spaces.

The additional floor area is ancillary and in all cases is directly associated with the marina operations. The floor area (excluding public circulation areas) is to increase from 849m² to 1,766m². This is an increase of 917m² which would attract a need for 18 spaces.

Notwithstanding this ‘nominal’ requirement, it is noted that the principal reason for the marina redevelopment is to provide improved facilities and an improved amenity for existing tenants, all of



which will remain on the site. For example, the increased sales areas will enable a greater product range to be displayed, but without any significant change in the average number of enquiries.

In addition, the existing parking constraints in the locality are unlikely to meet the 'unrestrained' demand for parking, so that there is an element of self-regulation due to the suppression of demand based on these local factors. The improvements are therefore not expected to result in an increase in activity commensurate with the increased floor space and in these circumstances, a discount is considered warranted. The extent of this reduction is difficult to establish accurately. However, it is considered that the increased parking demand associated with the redevelopment is likely to create an increase in demand of about 9 spaces, or about 50% (say) of the 18 spaces derived above using the Marina Guidelines.

When added to the marina demand for 11 spaces, a requirement for a total of 20 spaces arises and this is considered to be the total overall demand that arises based on the Marina Guideline

5.3 survey based assessment

In order to establish typical summer parking demands (outside the influence of school holidays), surveys were undertaken of the existing marina operations. The surveys were undertaken on Saturday 23rd February and Sunday 24th February 2008, with both days being warm sunny days that were ideal for boating activities. In this regard, February is reportedly the second busiest month of the year and therefore qualifies as the 85th percentile demand level, which is appropriate as the 'design' level of demand. While these surveys were undertaken about two years ago, it is important to note that no significant change has occurred either in the land use or in traffic conditions that prevail within the study area so that the conclusions drawn from these surveys remain valid. The following surveys were undertaken:

- Surveys of all people arriving and departing the marina between 9am and 3pm;
- Interviews of patrons to establish travel modes; and
- Surveys of the utilisation of the 376 parking spaces in the general locality.

The results of the surveys are provided in the following tables.



table 1: existing marina person accumulations on saturday

Time of Day	People In	People Out	People Accumulation
9am to 10am	2	1	1
10am to 11am	31	4	28
11am to noon	87	19	96
Noon to 1pm	56	9	143
1pm to 2pm	41	27	157
2pm to 3pm	29	11	175

It can be seen that a maximum accumulation of 175 people occurred on Saturday, associated with the marina. The interview surveys established that car drivers represented 55% of these people, so that they created a peak parking demand for 95 cars at 3pm. The survey continued past 3pm and established that activity essentially ceased between 3pm and 3.30pm, so that the peak demand has been accurately identified. With 165 existing berths, this equates to 0.58 spaces per berth, which is at the high end of the range considered in AS 3962. The Sunday results were however more critical as shown in Table 2.

table 2: existing marina person accumulations on sunday



Time of Day	People In	People Out	People Accumulation
9am to 10am	10	0	10
10am to 11am	69	11	68
11am to noon	61	8	121
Noon to 1pm	86	17	190
1pm to 2pm	89	19	260
2pm to 3pm	29	19	270

It can be seen that a maximum accumulation of 270 people occurred on Sunday, associated with the marina. The interview surveys established that car drivers represented 55% of these people, so that they created a peak parking demand for 148 cars at 3pm. The survey continued past 3pm and established that activity declined between 3pm and 3.30pm. With 165 existing berths, this equates to 0.90 spaces per berth, which is above the high end of the range considered in AS 3962. Based on these rates, the expanded marina, with 35 additional berths, will result in:

- An increased demand for 20 parking spaces on a Saturday (35×0.58); and
- An increased demand for 31 spaces on a Sunday (35×0.90).

When the additional demand from the ancilliary uses are taken into account, the demand will increase by a further 9 spaces based on the methodology adopted in Section 5.2, resulting in a total demand of about 29 spaces on Saturday and about 40 spaces on Sunday.

These increased demands need to be considered in the context of the existing utilisation of the 341 public parking spaces in the immediate locality, as discussed in the following section.