



Childcare Centre
Macpherson Street
Warriewood
Traffic Impact Assessment


transportation planning, design and delivery

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Traffic Impact Assessment

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1. Introduction

This report has been prepared on behalf of Meriton Apartments Pty Ltd to present the findings of a review of the traffic and parking implications of proposed amendments to an approved childcare centre on Macpherson Street at Warriewood.

A childcare centre has been approved as part of the Concept Plan for the Oceanvale Apartments development at Warriewood. Thus this assessment considers the implications of the amendments to the proposed childcare centre against the Concept Plan approval.

The report is set out as follows:

- Section 2 describes the background to the development, including the Concept Plan and relevant traffic assessments.
- Section 3 describes the proposed childcare centre, and its expected traffic generation during peak hours.
- Section 4 assesses the implications of the amendment on the external road system, and reviews the provision and layout of car parking.
- Section 5 presents the conclusions of the study.

2. Background

2.1 Site Location

The site being developed by Meriton Apartments lies on the south western corner of the intersection of Boondah Road and Macpherson Street at Warriewood. It is bounded by Macpherson Street, Boondah Road and Warriewood Wetlands Reserve. The childcare centre portion of the development site lies at the north-western corner of the development site, with frontage to Macpherson Street and the internal roadway off Macpherson Street.

2.2 Background to the Proposed Development

A Concept Plan and Stage 1 Project Application has been approved for the site, for a multi-unit housing development of three and four storey buildings, with vehicular access to and from both Boondah Road and Macpherson Street. The approval limits the total number of dwellings on the site to 447, and includes a childcare centre within the Stage 1 development.

A number of Concept Plan and Project modifications to the development have been approved, including deletion of the internal roadway linking Macpherson Street and Boondah Road and its replacement with two private roads and realignment of the bicycle path.

Halcrow prepared the traffic impact assessment¹ for the Concept Plan application, which included the effects of the potential for rezoning and development of currently under-developed land throughout the Warriewood Valley, in the context of the planned upgrades to the road system under Council's Roads Master Plan.

The Warriewood Strategic Review prepared by Worley Parsons² indicates that the Warriewood Valley could sustain higher residential densities than identified by Pittwater Council in its Planning Framework. In considering the Concept Plan application, the DOP commissioned Halcrow³ to examine the traffic implications of various increases in permitted residential densities on this site and other sites in the Warriewood Valley.

The external implications of this development as a whole (Stages 1 and 2) have therefore already been considered, and so are not addressed in detail in this report, rather the implications of the changes proposed to the childcare centre with regard to the approved Concept Plan are reviewed, together with a review of the car parking provision and layout.

2.3 Previous Traffic Assessments

The Concept Plan traffic assessment undertaken for the site as a whole included provision for a 40-place childcare centre located near the north-western corner of the site. Off-street car parking was included for the centre, located in a dedicated parking area off the internal roadway near Macpherson Street.

¹ *Proposed Residential Development Boondah Rd, Warriewood – Traffic Impact Assessment and Transport Management and Accessibility Plan*, 16 August 2010, Halcrow for Meriton Apartments Pty Ltd

² *Warriewood Valley Strategic Review*, August 2010, Worley Parsons for NSW Department of Planning

³ *Warriewood Valley Traffic Report*, 11 November 2010, Halcrow for NSW Department of Planning

The Concept Plan included an internal roadway which extended through the site between Macpherson Street and Boondah Road. The traffic assessment therefore assumed that drivers would choose the access location which best suited their approach or departure route, with some drivers using the internal road to travel through the site to the car parking, rather than using the external roads.

An amendment to the layout has since been approved, which provides separate vehicular accesses from Boondah Road and Macpherson Street, which do not connect internally within the site. As part of that approval, Halcrow assessed the operation of the intersection of Boondah Road and Macpherson Street, which is to be upgraded to a roundabout control as part of the Roads Master Plan. That assessment found that the intersection of Boondah Road and Macpherson Street is expected to operate at good Levels of Service during the peak hours, with average delays on the worst movement of less than 12 seconds per vehicle, and spare capacity.

3. The Proposal and its Traffic Generation

3.1 Proposed Amended Childcare Centre

It is proposed to amend the childcare centre to a 100-place centre. Its location within the Meriton-owned development site would remain unchanged, being in the north-western corner of the site, with frontage to Macpherson Street and the private internal roadway.

Vehicular access is proposed via a driveway off the site access driveway. Car parking is proposed for 25 cars, including two spaces allocated to people with a disability.

3.2 Traffic Generation

The volume of traffic expected to be generated by the childcare centre has been estimated using the rates set out in the RTA's (now RMS) *Guide to Traffic Generating Developments*. This guide indicates that long day care centres typically generate 0.8 vehicle trips per child during the morning peak, and 0.7 trips per child during the evening peak. For the 100-place centre proposed, this is equivalent to 80 and 70 vehicle trips during the morning and evening peak hours respectively.

It is noted that the RMS surveys found that on average, 93 percent of children travel to/from long day care centres by car. The proposed childcare centre on this site would draw a proportion of its children from within the site itself. Meriton's experience with similar centres suggests that around 40 percent of children at the centre would be residents of the development. This would reduce the proportion of children travelling by car from 93 percent to 60 percent or less, which would result in a significant reduction in the vehicle trip generation and the demand for parking.

The traffic generation of the childcare centre would therefore be lower than is suggested by the RMS guidelines. Nevertheless, this assessment applies the higher RMS rate to ensure a robust review of the potential implications of the childcare centre.

4. Impacts of the Proposal

4.1 Impacts on Site Traffic Generation

The volume of traffic expected to be generated by the proposed development of the whole site and its effects on the surrounding road system have previously been assessed by Halcrow for the Concept Plan proposal. The number of dwellings on the site has been reduced below that assessed for the Concept Plan, which reduces the volume of traffic expected to be generated by the residential component of the development.

Table 4.1 compares the peak hourly traffic generation as assessed for the Concept Plan, and as now approved and proposed with the amendments to the childcare centre.

Table 4.1: Peak Hour Traffic Generation of Concept Plan and Current Approval and Proposal

	Concept Plan		Approved ^A / Proposed	
	AM Peak	PM Peak	AM Peak	PM Peak
Residential	281	281	224	224
Childcare Centre	34	30	80	70
Total	315	311	304	294

^A Residential approved cap on number of dwellings

This demonstrates that the total site traffic generation with the amended childcare centre is expected to remain below that assessed by Halcrow for the Concept Plan development. As noted (Section 3.2) the traffic generation of the childcare centre is expected to be lower than is suggested by the guideline rates, as a significant proportion of the children would be residents of the development, and so would not travel by car.

4.2 Impacts on the Road Network

The Concept Plan assessment concluded that the development as a whole *"would not significantly increase traffic volumes or delays on the road system of Warriewood Valley above those previously expected and planned for as part of the Roads Master Plan."*

It is noted that the Concept Plan traffic assessment assumed that all the site-generated traffic would travel beyond the boundaries of the Warriewood Valley. In reality, the traffic generated by the childcare centre is likely to be locally-contained, catering for children of the Warriewood Valley area, rather than attracting new vehicle trips from beyond the local area. The Concept Plan assessment is therefore considered to slightly overestimate the impacts of this site, particularly on the intersections at the boundaries of the Warriewood Valley, i.e. along Pittwater Road and Mona Vale Road.

It follows that as the site traffic generation is expected to remain below that assessed for the Concept Plan and be more locally contained that was assumed in the Concept Plan assessment, the conclusions of the Concept Plan study regarding the impacts of the site on the surrounding road network remain valid.

The assessment undertaken with regard to the deletion of the internal roadway through the site⁴ considered the implications of the removal of this internal link on the external road system, with all impacts being limited to the short sections of Macpherson Street and Boondah Road between the two accesses. The impacts on the intersection of Boondah Road and Macpherson Street were quantitatively reviewed⁵, and it was found that the intersection would operate at Level of Service A (good operation) during the peak hours, with short delays of less than 12 seconds per vehicle on the worst movements and spare capacity.

The proposed amendments to the childcare centre would have the greatest impact at the site access intersection itself, thus its operating characteristics have been reassessed using the SIDRA Intersection program, an analysis program which determines characteristics of intersections operating conditions including the degree of saturation, average delays, and levels of service.

The degree of saturation, or x-value, is the ratio of the arrival rate of vehicles to the capacity. The operating characteristics can be compared with the performance criteria set out in Table 4.2. It is noted that average delay per vehicle is expressed in seconds per vehicle and is measured for the movement with the highest average delay at roundabouts such as the Macpherson Street site access.

Table 4.2: Level of Service Criteria at Priority Intersection

Level of Service	Average Delay per Vehicle (seconds/vehicle)	Give Way and Stop Signs
A	less than 14	Good operation
B	15 to 28	Acceptable delays and spare capacity
C	29 to 42	Satisfactory, but accident study required
D	43 to 56	Near capacity and accident study required
E	57 to 70	At capacity, requires other control mode
F	> 70	Extreme delay, traffic signals or other major treatment required

The results of the analysis are summarised in Table 4.3. The forecast turning movements at the intersection (which includes the Anglican Retirement Village access opposite) have been developed using the same potential background traffic volumes and distributions as the Concept Plan traffic assessment, amended to reflect the current traffic generation expectations for the subject site (refer to Table 4.1).

Table 4.3: Roundabout Operating Conditions Macpherson St, ARV and Site Access

	X-value	Average Delay (sec/vehicle)	Level of Service
AM Peak Hour	0.28	11.3	A
PM Peak Hour	0.32	11.7	A

The results demonstrate that with the amended childcare centre, the site access intersection would operate at a good level of service during the peak hours, with short delays and spare capacity. Given the spare capacity at the nearby intersections such as the proposed roundabout at Boondah Road and Macpherson Street, the additional traffic resulting from the increase in the size of the childcare centre would not adversely impact upon the operating conditions. As noted, the traffic generation of the

⁴ Letter to Meriton Apartments from Halcrow, 6 September 2011

⁵ Letter to Meriton Apartments from Halcrow, 26 October 2011

centre is expected to be lower than that assessed here, thus the resulting delays and degree of saturation would be somewhat lower than the SIDRA results suggest.

4.3 Car Parking Provision

Pittwater 21 Development Control Plan (DCP) does not specify a parking rate for childcare centres. For development types not specifically addressed in the DCP, Pittwater 21 DCP indicates that the minimum number of car parking spaces should be determined using appropriate guidelines for parking generation and servicing facilities based on the RTA's *Guide to Traffic Generating Developments* or analysis drawn from surveyed data for similar development uses.

The RTA's guide indicates that at childcare centres, parking must be provided at the rate of one space for every four children in attendance. For the proposed 100-place childcare centre, this equates to a requirement for 25 car parking spaces. The proposed provision of 25 car parking spaces therefore complies with RTA guidelines as required by Pittwater 21 DCP.

The parking is proposed to be conveniently located to the centre to allow for the safe movement of children to and from the centre.

The proposed car parking provision includes two designated disabled parking spaces. This represents 8 percent of the total on-site parking provision. It is noted that Pittwater 21 DCP and RTA guidelines do not set either a minimum or maximum disabled parking provision for childcare centre land uses.

The current edition of the Australian Standard does not provide information on the number of spaces required for people with a disability, however the previous edition suggests a provision of disabled parking of 2 to 3 percent of total parking for educational and community land uses. On this basis it is considered that the proposed provision of two disabled parking spaces for the proposed 25 space parking area may be excessive and may reduce the effectiveness of the proposed car parking spaces.

It is recommended that, unless required under the Building Code of Australia, the proposed number of designated disabled parking spaces be reduced from two spaces to one space.

4.4 Other Parking Provision

Pittwater 21 DCP does not specify particular requirements for the provision of bicycle or motorcycle parking for childcare centres. By way of comparison, it requires one secure enclosed bicycle rack per 1,000m² GLA (minimum four bicycles) and one motor cycle space per 100 car parking spaces for business and industrial developments above 2000m² GLA.

The demand for secure enclosed bicycle spaces and motor cycle spaces would generally be limited to staff. Parents who may drop off a child by bicycle would be unlikely to use a secure enclosed space for a short-term stay, with the RTA noting an average length of stay for cars of 6.8 minutes. If required, a bicycle rack (enclosed or open) could be located adjacent to the entry doors to the centre. Any demand for motorcycle parking would be satisfactorily accommodated within the car parking area, without need to dedicate a space to motorcycles only.

4.5 Car Parking Layout

The layout of the car parking for the childcare centre has been reviewed with regard to the Australian Standard for off-street car parking AS2890.1 (2004) and for parking for people with a disability AS2890.6 (2009).

The driveway width satisfies the requirements of the Standard. The width of the parking bays is sufficient for full opening of all doors to allow children to be loaded and unloaded. The parking aisle width exceeds the minimum to allow for single manoeuvre entry and exit into and out of the spaces, however is slightly less than the Standard's additional allowance to facilitate the movement in short term, high turnover car parking facilities. Given the high turnover of the spaces, it is recommended that the aisle width be widened to 6.6m in accordance with AS2890.2 (2004).

To facilitate vehicle turning within the car park, i.e. to allow a vehicle to turn around if all or many parking spaces are occupied, it is recommended that a dedicated vehicle turning bay be provided at the northern end of the car park. The provision of "pram" parking is not considered warranted in this location, as prams are not typically used to move children a short distance from a car to a childcare centre, and dedicating spaces thus would be an inefficient use of the most convenient parking spaces.

The provision of a turn bay and other improvements to the car parking layout could be achieved by replacing the northernmost parking space (Space 1) with a vehicle turning bay, converting the pram parking spaces to standard parking spaces, and replacing the shared space between the "pram" spaces with a standard parking space.

If two spaces are required by the BCA for people with a disability (refer Section 4.3), these would best be provided at the northernmost end of the carpark adjacent to the recommended turning bay, and separated by a shared space, i.e. in the area shown in the plans for the disabled shared space and Spaces 2 and 3.

It is recommended that a condition be included in the consent which requires the car park layout to be redesigned prior to the issue of Construction Certification to incorporate a vehicle turning bay and maintain a minimum parking provision of 25 parking spaces.

4.6 Service Vehicles

Childcare centres typically attract some deliveries such as food and other consumables, and access by a Small Rigid Vehicle is considered appropriate for these. The layout of the car park, assuming the recommended turning bay is provided, would accommodate a Small Rigid Vehicle.

Waste collection is expected to take place from the private internal road, using the same size vehicles as those which would service the Stage 1 residential development.

5. Conclusions

The proposed amendments to the childcare centre within the Oceanvale Apartments development on Macpherson Street at Warriewood would have only minor impacts on the surrounding road network. With the increased size of the childcare centre, the total traffic generation of the site is expected to remain below that assessed for the Concept Plan, which was found to be accommodated within the planned road network changes set out in the *Warriewood Valley Roads Master Plan*. The provision of car parking satisfies the expected demand, and subject to some minor amendments, the layout of the car parking is satisfactory.

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