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Tracy Davey
Meriton Apartments
Level 11, 528 Kent Street
SYDNEY NSW 2000

6 September 2011

Dear Tracy,

Re: 14-18 Boondah Road, Warriewood Internal Public Road

As requested, Halcrow has reviewed the implications of amending the approved public road through the development site at 14-18 Boondah Road, Warriewood. This review has considered the implications of replacing the public road with two private driveways from Boondah Road and Macpherson Street.

The Proposal

It is proposed that the public road which has been approved through the site be replaced with two private driveways from Boondah Road and Macpherson Street. The Boondah Road driveway would be located in the same position as the approved public road intersection. The Macpherson Street driveway would be located in the same position as the approved public road roundabout controlled intersection.

The driveway carriageways are each proposed to be 7.0m wide. The western driveway off Macpherson Street would extend past the car park entry to terminate with a turnaround area adjacent to Building F. The eastern driveway off Boondah Road would provide access directly to the basement car park as approved, and also to a cul de sac for access to the rear of the existing dwellings on Macpherson Street.

The two private driveways would each have a 2.5m wide bicycle path along one side, which would be joined through the site via a 3.0m wide bicycle path, which would be shared with emergency vehicles as required. The 3.0m bicycle path follows the alignment of the approved roadway.

External Traffic Implications of the Amendment

External impacts of removing the public road through the site would be limited to Boondah Road between the driveway and Macpherson Street, and on Macpherson Street between the driveway and Boondah Road. This is because without the link through the site, drivers travelling to or from the site would be directed to one or other driveway.

The traffic assessment undertaken for the Concept Plan for this development¹ assumed that drivers would choose the access location which best suited their approach or departure route, and included the effects of other potential development within the Warriewood Valley. It is noted that the Concept Plan assumed that the site would contain 559 dwellings, however this has now been reduced to a maximum of 447 dwellings. This would result in a reduction in traffic generation from that assumed in the Concept Plan assessment.

That assessment found that the three intersections of Boondah Road with the site access, Macpherson Street with the site access and Boondah Road and Macpherson Street would each operate at Level of Service A (A=best, F=worst) with spare capacity during the morning and evening peak periods with the forecast traffic loads. The reduction in total site traffic generation combined with the minor redistribution of traffic resulting from the removal of the internal road, would not be expected to significantly alter the Level of Service experienced at the intersections.

Visitor Access

The removal of the internal roadway would limit visitors to one or other driveway, to access the visitor parking spaces for the building they are visiting. Appropriate signage at each driveway and/or clearly distinct building addresses would minimise the likelihood of visitors choosing the incorrect driveway.

Emergency Vehicle Access

The NSW Fire Brigade's (NSWFB) emergency vehicles are generally larger and heavier than those used by other emergency services. The NSWFB's *Guidelines for Emergency Vehicle Access* set out requirements for general access to a site and access around buildings within a site.

The general appliances, the carriageway needs to have a clear width of 4m on straight sections, and on curves, a minimum inner radius of 6.3m and outer radius of 11.3m. For aerial appliance access, the carriageway needs to have a clear width of 6m on straight sections, and on curves, a minimum inner radius of 7.3m and outer radius 14.6m. The carriageway does not have to include a sealed top surface layer. The proposed driveways widths satisfy the requirements for aerial appliance access into the site.

The removal of the public roadway would result in several of the buildings having no road frontage, or limited road frontage. Emergency vehicles would be able to gain closer access to such buildings via the proposed private driveways and through the 3m shared emergency access/bicycle route which runs along the southern boundaries of Buildings F, G, L and M. The path itself would be 3.0m wide, and clear zones would be maintained on either side of the path to provide for access by larger vehicles.

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

Car Park Driveway Design Implications

The private driveways would each effectively function as circulation roadways for the basement car parks, as they would be used solely for circulation, and parking would not occur along them. Australian Standard AS2890.1 and AS2890.2 indicate that a two way circulation roadway requires a minimum width of 5.5m between kerbs, or 6.5m where heavy vehicles are expected to use the roadway. Additional horizontal clearance of 300mm on either side of the kerbs is also required. At the intersections with Boondah Road and Macpherson Street, the driveways are each proposed to have separate 4.2m wide entry and exit carriageways with a 2.0m wide median, narrowing to a 7.0m carriageway. The design exceeds the circulation roadway requirements and is therefore considered satisfactory. Curves shall be designed to accommodate the swept path of the largest vehicle likely to use the roadway on a regular basis, being the garbage collection vehicle, discussed below.

Car Park Entry Queuing Implications

It is understood that the basement car parks would each be secured by means of electronically accessed swinging gate doors, the details of which are not yet available. The inbound peak volume into each car park would be of the order of 100 vehicles per hour. The Australian Standard AS2890.1 indicates that a card reader controlled entry to a car park could be expected to have a maximum capacity of 400 vehicles per hour per lane. Conservatively reducing this to 300 vehicles per hour to allow for the swinging gate access, the 98th percentile queue for entry during the evening peak hour would be between three and four vehicles. The driveway designs thus allow adequate queuing distance to accommodate the 98th percentile queue wholly within the site as required by the Australian Standard.

Car Park Circulation Implications – Stage 1 Car Park

With the removal of the public road, the previously approved eastern entry/exit for the Stage 1 car park would no longer be available, concentrating all entering and exiting traffic through the western entry/exit.

The entry area of the Stage 1 car park has been reviewed with regard to the manoeuvring of vehicles to ensure that sufficient space is available for the efficient movement of vehicles in and out during the peak periods. As required by AS2890.1, the area at the bottom of the main entry/exit ramp would satisfactorily allow for two vehicles to pass in opposite directions, i.e. for a B85 vehicle to pass a B99 vehicle. The traffic passing through this single entry/exit area is thus likely to manoeuvre satisfactorily, with entering and exiting vehicles able to pass.

There are only two potential conflict points at the entry/exit area, the first being where entering traffic turning right crosses the path of exiting traffic turning right onto the exit ramp. The second is where exiting traffic turning right onto the exit ramp merges with exiting traffic turning left onto the exit ramp. Travel speeds would be low and sight distances satisfactory.

Delays due to cars manoeuvring into and out of parking spaces would be minimal in this area, as only four visitor parking bays are located in the immediate vicinity of the entry/exit ramp.

It is noted that during the morning peak hour, a similar 98th percentile queue as discussed above would be expected to form within the car park, waiting to exit through the swinging gate. While the details of the swinging gate access have not been determined, it is expected that this queue length would be able to be satisfactorily accommodated within the car park without blocking aisles or access to individual parking spaces.

It is anticipated that with the removal of the eastern entry/exit, the existing layout of the car park would continue to result in satisfactory circulation patterns. The layout of the car park spreads the traffic across the aisles, with alternative routes available to/from most parking spaces. Considering the likely two way peak traffic generation of the Stage 1 car park of some 115 vehicles per hour, and the spread of aisles and spaces across the basement, it is not anticipated that excessive delays would be experienced by drivers entering or exiting spaces close to the entry/exit driveway.

Car Park Circulation Implications – Stage 2 Car Park

The removal of the public road through the site would not impact upon the access to or the circulation within the Stage 2 car park.

Service Vehicles

Three garbage collection/loading areas are proposed, one being at the northern end of Building F, one south of Building M, and one west of Building P. Garbage would be collected from garbage rooms located within the basement using utilities and bin lifters, and transferred to the ground level collection areas, where it would be collected using garbage trucks.

Furniture removal trucks would also use the waste collection/loading areas when loading and unloading on the site. Toll Transitions, a national removalist company with over 50 years of experience has the following removalist truck recommendations for residents moving home:

- Studio and one bedroom units (local and interstate relocations) = one trip by 3T truck (SRV)
- Two bedroom units (local relocations) = two trips by 3T truck (SRV)
- Three bedroom units (local relocations) = three trips by 3T truck (SRV)
- Two to three bedroom units (interstate relocations) = one trip by 8T truck (MRV).

The removal of the public roadway through the site would require these service vehicles to enter the site using the appropriate driveway, and turn around within the site to exit in a forward direction on the same driveway. The proposed design provides turnaround areas for service and other vehicles to enter and exit the site in a forward direction. These will be designed to accommodate the manoeuvring of Medium Rigid Vehicles in a three-point turn movement.

Conclusions

The proposal to remove the public road through the development at 14-18 Boondah Road and replace it with two private driveways would not detrimentally affect traffic and vehicular access conditions for the development. Access for residents, visitors, emergency vehicles and service vehicles would be satisfactorily maintained.

I trust that this information is satisfactory. Do not hesitate to contact the undersigned should you wish to discuss any aspect of this submission.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'P Dalton'.

Penny Dalton
Principal Consultant, Transport Planning