



29 June, 2011

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Our Reference: 2005136RP10.DOC

Attention: Mr S Mustaca

Dear Sam,

**RE: PONDEROSA PARADE AND JUBILEE AVENUE, WARRIEWOOD**

This letter report supplements previous reports dated February 2011 and 8 June 2011 for the development of a road to connect 120 Mona Vale Road, Warriewood.

This report addresses in more detail the following issue raised with a proposed road to 120 Mona Vale Road, Warriewood by Roy Mustaca.

1. *The Traffic Impact Report is deficient in that it does not consider the future traffic volumes of Jubilee Avenue and Ponderosa Parade that will exist when all development in the Valley is complete;*

On 25 June 2011 a meeting with Mr Paul Davis requested that the analysis be considered for 150 dwellings and that the forecast volumes are used from the Warriewood Valley Urban Lane Release Traffic and Transportation study.

Contact was made with an officer that contributed to the preparation of this document and an appropriate methodology was discussed to assess the impact of 150 dwellings which were not considered in the original study.

The study examined two future growth and network development scenarios which are:

**Scenario 3 (S3)** Future situation, when the area is developed with the existing road network including the new link between Ponderosa Parade and Mona Vale Road.

**Scenario 4 (S4)** Future situation, when the area is developed with the existing road network including the new link between Ponderosa Parade and Mona Vale Road and the closures of MacPherson Street at Narrabeen Creek and Jubilee Avenue, west of Warriewood Road.



Intersection turning movement surveys were recently conducted at the intersection of Ponderosa Parade and Jubilee Road, Warriewood and modelled using the intersection analytical program, SIDRA. These volumes were factored up in line with the Warriewood Valley Urban Land Release report forecasts for one-way directional flows at the intersection of Jubilee ave and Ponderosa Road.

To examine the impacts of 150 dwellings it was assumed that 100% of trips would leave the site in the AM peak and the reverse for the PM peak. The generated trips at the intersection of Ponderosa Parade and Jubilee Avenue were distributed as per existing patterns. The Roads and Traffic Authority provide generation rates of 0.85 trips per dwelling for single residential developments as seen in their publication, 'Guide to traffic generating developments'. Based on 150 dwellings it has been assumed that there would be 127 vehicles leaving the site in the AM peak and 127 returning in the PM peak.

Further analysis was undertaken to assess the impacts of upgrading the intersection from a single lane roundabout to a double lane roundabout and another option to provide two lane approaches on Jubilee Avenue (western approach) and Ponderosa Road (North approach), to include the additional lane as an exclusive left turn lane.

The assessment used an RTA adopted intersection analytical program SIDRA. The Warriewood study used another intersection program INTANAL which is no longer currently available however, the results compare favourably. SIDRA reports on the performance of intersections in terms of average delay (seconds per vehicle) and Level of Service (LOS). Table 1. sets out the criteria



Table.1 INTERSECTION LEVEL OF SERVICE CRITERIA

LOS	Average delay (secs/veh)	Traffic signals, roundabout	Give way and stop signs
A	Less than 14	Good.	Good.
B	15 to 28	Good, with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
C	29 to 42	Satisfactory.	Satisfactory, but accident study required.
D	43 to 56	Satisfactory, but operating near capacity.	Near capacity and accident study required.
E	57 to 70	At capacity and incidents will cause excessive delays; roundabouts require other control mode.	At capacity and requires other control mode.
F	Greater than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode.

Adapted from RTA Guide to Traffic Generating Developments, 1993

SIDRA results for Jubilee Avenue/Ponderosa Road Lane for the existing situation and for the two scenarios are summarised in Table 2 and 3 and the AM and PM peaks.

Table 2 AM PEAK SIDRA RESULTS

Existing		S3		S4	
Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS
10.1	A	24.6	B	123	F

Table 3 PM PEAK SIDRA RESULTS

Existing		S3		S4	
Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS
10.2	A	21.5	B	70.1	E

The results show that S4 which includes the closure of MacPherson Street and Jubilee Avenue with no development at 120 Mona Vale Road could result in unsatisfactory operations at Ponderosa Parade and Jubilee Avenue.

Forecast generations from 120 Mona Vale Road were added to future development scenarios of S3 and S4 and modifications to the roundabout included in the assessment.



Table 4 AM PEAK SCENARIO 3 WITH 120 MONA VALE RD GENERATIONS

S3 + Development		S3 + Development + Roundabout modifications		S3 + Development + 2 lane roundabout	
Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS
68	E	12.7	A	12.3	A

Table 5 PM PEAK SCENARIO 3 WITH 120 MONA VALE RD GENERATIONS

S3 + Development		S3 + Development + Roundabout modifications		S3 + Development + 2 lane roundabout	
Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS
40.2	C	31.6	C	11.7	A

Tables 4 and 5 show that Levels of Service increase with the development however, with minor roundabout modifications, these levels of service change from B to A in the AM peak and B to C in the PM peak. The conversion from a single circulating lane to a double circulating lane roundabout allows Levels of Service to improve to A.

Table 6 AM PEAK SCENARIO 4 WITH 120 MONA VALE RD GENERATIONS

S4 + Development		S4 + Development + Roundabout modifications		S4 + Development + 2 lane roundabout	
Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS
198	F	28.6	B	28.0	B



Table 7 PM PEAK SCENARIO 4 WITH 120 MONA VALE RD GENERATIONS

<i>S4 + Development</i>		<i>S4 + Development + Roundabout modifications</i>		<i>S4 + Development + 2 lane roundabout</i>	
<i>Ave Delay</i>	<i>LOS</i>	<i>Ave Delay</i>	<i>LOS</i>	<i>Ave Delay</i>	<i>LOS</i>
107.3	F	36.2	C	14.0	A

Notes: 1.S3 Roundabout modifications includes 2 lanes on Jubilee Ease (Eastern Approach).

Scenario 4 which is more unlikely as it involves road closures but shows in Table 6 and 7, indicates that Levels of Service also increase with development generations however, with minor roundabout modifications these levels of service change from F to B in the AM peak and E to C in the PM peak. The conversion of the roundabout to two lane circulation improves Levels of Service to B in the AM peak and A in the PM peak.

## CONCLUSION

The intersection of Ponderosa Parade and Jubilee Avenue has been re-assessed using forecasts contained within the Warriewood Valley Urban Land Release Traffic and Transportation study and a development size of 150 dwellings for 120 Mona Vale Road, as requested by Council.

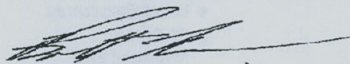
Two future growth/network development scenarios for Warriewood Valley were included in the analysis which showed that the additional generations of 120 Mona Vale Road would have an impact on the roundabout of Jubilee Avenue and Ponderosa Parade. Whilst the impact is significant, the roundabout is still expected to operate at capacity.

Further analysis was undertaken to assess the impacts of minor modifications to the corner radius of the roundabout to allow two lane approaches on the western and northern sides to allow exclusive left turn lanes on the approaches. The results show highly favourable improvements to delay with operations similar to current levels.

On this basis, with minor modifications to the roundabout at Ponderosa Parade and Jubilee Avenue generations of 150 dwellings from 120 Mona Vale Road would be easily accommodated at full development of the Warriewood Valley area.

TAR

Yours sincerely,  
for TAR Technologies Pty Ltd



Brett Morrison  
Director MEngSc(UNSW), AITPM, ACEA





8 June, 2011

Vogue Agency

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*Our Reference: 2005136RP8.DOC*

**Attention: Mr S Mustaca**

Dear Sam,

**RE: PONDEROSA PARADE AND JUBILEE ROAD**

In response to Councils question regarding the intersection of Ponderosa parade and Jubilee Road

*1. The Traffic Impact Report is deficient in that it does not consider the future traffic volumes of Jubilee Avenue and Ponderosa Parade that will exist when all development in the Valley is complete;*

To determine the intersection capacity of Ponderosa Parade and Jubilee Road, the development potential of Warriewood Valley must be known. As this is unavailable the existing and theoretical capacity of the intersection has been assessed and related back to trips per dwelling.

Intersection turning movement surveys were conducted at the intersection of Ponderosa Parade and Jubilee Road, Warriewood and modelled using the intersection analytical program, SIDRA. Traffic volumes were then incrementally applied using the program's sensitivity analysis procedure to achieve a practical capacity of 90 per cent.

The total existing peak hour morning and afternoon intersection volumes at this intersection were compared with the volumes where the roundabout reached a practical capacity of 90 per cent. The findings are shown in the table below.



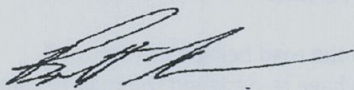
Table 1.1 Comparison of existing and near capacity volumes at Ponderosa Parade and Jubilee Road

Scenario	AM	PM
Existing	1394	1381
90 per cent capacity	2091	2072
Difference	697	691

The analysis revealed that the roundabout is operating at a Level of Service A which offers ample capacity for future growth in the area. Furthermore, the roundabout could service an additional 691 trips per hour as shown in Table 1.1.

The Roads and Traffic Authority provide generation rates of 0.4 - 0.5 trips per dwelling for medium density residential developments as seen in their publication, 'Guide to traffic generating developments'. If the higher range is assumed, this equates to a limit of an additional 1382 dwellings. The subject site would be unlikely to provide more than ten per cent of this development size.

In summary the intersection of Ponderosa Parade and Jubilee Road has sufficient capacity to provide for any future growth that may occur from the proposed development.



Yours sincerely,  
for TAR Technologies Pty Ltd

Brett Morrison  
Director MEngSc(UNSW), AITPM, ACEA



Ref: 4034

29<sup>th</sup> June, 2011

**REPORT ADDRESSING ROAD DESIGN ISSUES RAISED  
IN THE REPORT TO THE DEVELOPMENT UNIT OF  
PITTWATER COUNCIL DATED 9<sup>TH</sup> JUNE 2011**



**mepstead  
& ASSOCIATES**

REGISTERED SURVEYORS AND  
DEVELOPMENT CONSULTANTS

**B6.10 Transport and Traffic Management**

**Item 2.** *The width of the proposed road does not comply with the width of a local road as defined in the Warriewood Valley Roads Master Plan (WVRMP) and as such is not acceptable.*

The design submitted with the original application was on the basis of the road being a private road. However given that Council now prefers that this be a public road we have re-designed the road to comply with the standards of the WVRMP. The road width has been reduced from the original design to comply with the criteria in the WVRMP. The overall road reserve width is now 16 metres, comprising a 7.5 metre carriageway with a 4.25 metre footway on either side. A footpath of 1.5 metres wide has been positioned 1 metre from the back of the kerb on the northern side of the proposed road. There is little need for a footpath on the southern side of the road, given that the church and the possible development to the west of boundary street would be the only people using the road at this point in time.

**Item 3.** *The maximum longitudinal grade of proposed roads exceeds the 15% maximum specified in the Austroad Standard to roads having the function of a local road and as such is not acceptable.*

A private driveway can have a grade of 20% however as there is now proposed to be a public road we have amended the design to show that a 15% grade is possible. To reduce the extent of cut required Council may consider a variation to the grade requirements. We have submitted an additional plan showing the result if an 18% grade is adopted.

**Item 4.** *The proposed road does not achieve the minimum traffic sight distances on the crest as specified in the Austroad Standard for roads having the function of a Local Road and as such is not acceptable.*

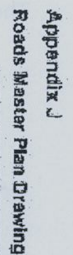
A 50 metre vertical curve has been designed between the 15 per cent grade and the 1 per cent grade heading further toward Boundary Road. The length of the curve satisfies the criteria for sight distances based on the difference in grade.



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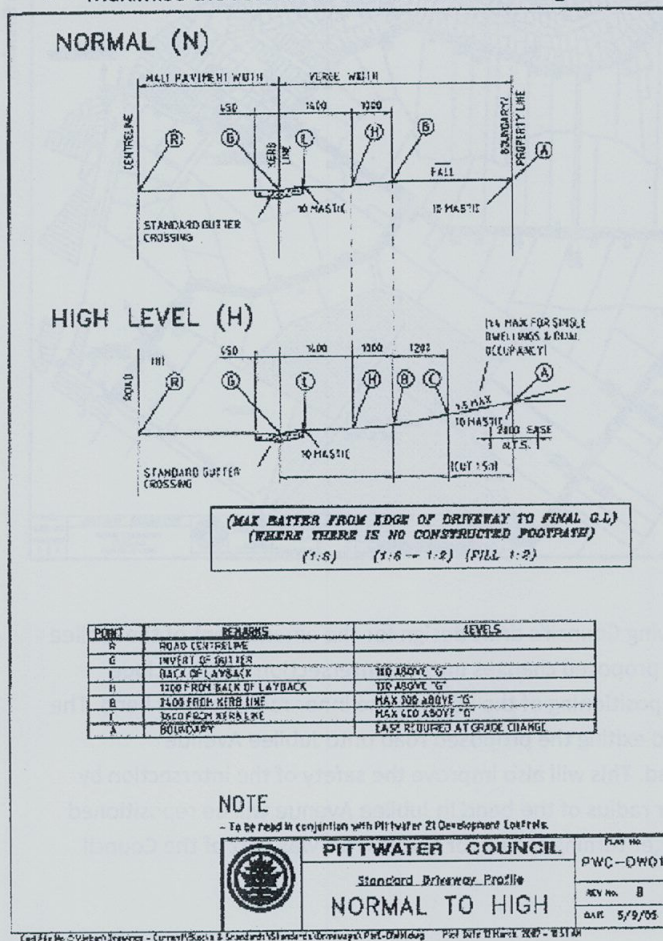
**Item 7.** *There is no provision of Street Lighting to Standard required by WVRMP and as such is not acceptable.*

An indication of proposed lighting has been shown on the plan. A 6.5m high 'Sylvania Urban' light extending 3 metres from its base toward the kerb has been proposed as street lights due to its likeness to other streetlights in the area and its appropriateness to the site. There is ample scope to alter or add to this preliminary design given that the design constraints are relatively minimal for this component of the proposed road.

**Item 8.** *The proposed intersection of the proposed road with the existing ROW to the Uniting Church needs to be designed in accordance with Pittwater 21 DCP, B6.2.*

The design requirements are:

- Safe and convenient access
- Restriction of visual impact of driveways is reduced.
- Pedestrian safety
- An effective road drainage system
- Maximise the retention of trees and native vegetation in the road reserve





The driveway has been amended to suit the above criteria. A 3 percent cross fall has been maintained along with the longitudinal grades and steps as set out above. This 3 percent cross fall will reverse direction once passes through the private property line such that the existing kerb will divert the stormwater into a pit, (subject to a drainage design being undertaken).