ANNEXURE 4

Reviews of Traffic Impact Assessment

prepared by

Traffic Impact Services

Akuna Street, Terralong Street
and Shoalhaven Street, Kiama

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13 November 2017

Kiama Municipal Council
PO Box 75
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Attention: Chris Fuller

Dear Sir,

Re: Review of Traffic Impact Assessment for a Proposed Mixed Use Development Comprising of Residential Apartments above Retail Shops, Commercial Tenancies and Associated Car Park Areas Akuna Street, Kiama

I refer to the subject development application and the revised Traffic Impact Assessment dated 31 October 2017 prepared by Jones Nicholson in support of this development proposal.

On 7 September 2017 Traffic Impact Services undertook on behalf of Council a Peer Review of the findings of the original Jones Nicholson report. Since this time the applicant has prepared a revised "traffic" report to address some of the concerns that have been raised by Council.

One such concern has been from the findings of the traffic modeling undertaken (SIDRA Computer program) of relevant intersections surrounding the site. It is in this regard that Council has requested a further review as to the findings in the latest traffic assessment.

This review will mainly concentrate on the detail and results of the SIDRA output and in particular four issues raised by Council. Some commentary has also been provided to further understand this review.

1.0 BACKGROUND

The following background points should be read to assist in understanding the findings of this review

- Jones Nicholson undertook SIDRA modeling of some seven intersections surrounding the site that were considered likely to be most impacted upon as a result of the development proposal. The locations selected by the consultancy were considered appropriate for such an assessment.

- SIDRA modeling is usually undertaken to assess whether or not there is a change in the "Level of Service" at a particular intersection due to additional development traffic being distributed through it. The "Level of Service" determined however may not accurately represent the actual conditions on the site. It can however be used as an important tool in comparing existing conditions with that proposed under development generated traffic.

- The Kiama central business district is mainly within a rural area and as such you would not expect to see delays during the peak periods that would be similar to that experienced in a city or major suburb. The SIDRA programme does not to my knowledge differentiate between rural and city conditions and as such delays are not expected to be as great in the rural areas. The Level of Service criteria of "A" (Good) and "B" (Good with minimal delays and spare capacity) is therefore expected at all intersection within this township and not, say, a Level of Service of "C" or beyond. It is however noted that on some holiday Sundays traffic volumes increase considerably causing significant delay.

1.0 ***Review the SIDRA files and confirm that the existing levels of service identified in the Table 2 and Table 3 of Section 3.2.2 of the TIA report have been accurately determined and if not, outline what they should be.***

- As outlined previously in my September Peer Review there is some difficulty in determining the accuracy of the modeling due to the traffic count data provided being from a tube counter source from which only straight through flows are established. The SIDRA model depends a great deal on the extent of turning traffic at intersections and as such there is no mention in the Traffic Impact Assessment of how this was developed or distributed.

- Nevertheless, for the most part, the SIDRA data input for each of the intersections would appear to be reasonably shown with the output representing a suitable base for comparing with future development traffic.

A Level of Service of "A" (Good) has been determined for the seven intersections modeled under existing traffic conditions (Tables 2 and 3). This would appear a suitable assessment.

2.0 Assuming the traffic data provided in Section 4.5 of the report is correct, confirm that the level of service in Table 10 and Table 11 of Section 4.6 have been accurately determined and if not, outline what the results should be.

- The Jones Nicholson report indicates that the proposed development will have a trip generation of say 600-700vtph (Section 4.5 of the report) depending on the day and peak period of the week. There is no information on the distribution of this traffic however it is likely that some 500-600 vtph would be generated via the Aldi entrance in Shoalhaven Street.

  As such the most critical areas of this project are in Shoalhaven Street with the Aldi entrance and the two intersections either side being Terralong and Shoalhaven Streets and Shoalhaven and Bong Bong Streets being of importance. These have been closely examined as a test case for the other intersections modeled.

- As there has not been any modeling provided at the Aldi entrance then this has now been undertaken by Traffic Impact Services using the SIDRA programme. The traffic count data used was based on likely future development projections and volume data provided by Jones Nicholson.

  The results also revealed an "A" Level of Service during the AM and PM peak periods even though some 500–700 vtph are likely to use the entrance. The low traffic flows in Shoalhaven Street is responsible for the "Good" Level of Service designation.

- The SIDRA input and output for the proposed arrangement at the two Shoalhaven Street intersections has been examined and has revealed some concern in respect to accuracy as follows:

-traffic movement to and from the entrance to Aldi has been shown in the SIDRA modeling as over 670vtph when the entire proposal (including residential) of say a Friday generates only some 546vtph..

- on the northern approach of Shoalhaven Street at Terralong Street the geometry shows that the straight through and right turn movements are permitted whereas they are not permitted on-site. Volumes have been allocated to these movements further questioning this situation.

The two inaccuracies however should not pose a problem as both actually demonstrate a worse case situation by increasing the overall volume and delay. Furthermore it is difficult to analysis other consultants modeling particularly without all the relevant information such as turning volumes at intersections. There may be reasons for some of the inaccuracies.

Based on my understanding of the traffic flows evident in the central business district of Kiama together with the results of SIDRA modeling it would appear that the stated Level of Service of an "A" or "B" at any of the intersections is considered a reasonable assessment.

In summary the Levels of Service shown for each of the intersections modeled under projected development traffic (Tables 10 and 11 of Section 4.6) is considered as being reasonably determined.

3.0 Comment on the weighting/parameters used in the report (dot points in Section 4.6 – Page 17). If it is not agreed with (state reasons), determine what the level of service should be (assuming no backstreets are used).

The Criteria for Determining the Results of SIDRA as shown in Section 4.6 – Table 9 is standard for all projects modeled.

4.0 In regard to both items 2 & 3 above, where there is a change in the level of service, determine if the change will create adverse impacts (state what they are, if any) in the locality and if there are impacts, what recommended treatments are required to negate the impacts.

Although there has been a reduction in the Los from an 'A" to a "B" for some of the movements at the modeled intersections this would not appear to warrant the need to undertake further action. However any minor actions to improve the capacity or safety on the surrounding road system due to the additional traffic movement should be examined with a view to the development funding such action.

The main area to be impacted upon is Shoalhaven Street due to the Aldi entrance and as such consideration should be given for the developer to fund the following:

Shoalhaven Street and Bong Bong Street

Provide central medians in Shoalhaven Street at Bong Bong Street to provide for dual "Stop" signage on each approach. This will increase the safety of those new motorists generated by the proposed development by increasing the awareness of the need to stop and by channelizing the intersection.

Entrance to Aldi at Shoalhaven Street

Ensure this entrance has good sight distance due to the high volume of traffic turning into and out of the development. Remove parking and/or provide kerb blisters on the road such that vehicles when exiting gain improved sight distances.

Terralong Street at Shoalhaven Street

Clarify the comment made by Jones Nicholson in Section 5 Conclusion for the installation of a No Right Turn sign in Terralong Street. It is presumed that this restriction is for Trucks only over a certain length or weight and not for all traffic turning.

Shoalhaven Street and Terralong Street

Examine the possibility of the widening of Shoalhaven Street on the southern approach to Terralong Street to provide for a short section of two lanes on this approach.

Only one lane is available at present to service left straight and right turn movements under a sign controlled intersection. Under the increased traffic generation from the development the results of SIDRA show that this approach has a slight reduction in the Level of Service from an "A" to a "B". To retain the existing Level of Service of "A" may be achieved if undertaking this widening to provide for two lanes.

The provision of two lanes on this approach may also remove the delay problem likely from pedestrians on the marked pedestrian crossing in Terralong Street on the western approach.

Only slight widening is suggested to provide for a short length of additional lane capacity. Due to the existing landscaping careful design is required.

For any further discussion on this review please phone.

Yours faithfully,

Bruce Conneeley
Director 0413845777

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7 September 2017

Kiama Municipal Council
PO Box 75
KIAMA NSW 2533

Attention: Chris Fuller

Dear Sir,

Re: Peer Review of Traffic Impact Assessment for a Proposed Mixed Use Development Comprising of Residential Apartments above Retail Shops, Commercial Tenancies and Associated Car Park Areas

I refer to the subject development application and the Traffic Impact Assessment undertaken in July 2017 by Jones Nicholson which supports this application.

I have reviewed the assessment and provide the following advice in the context of undertaking a Peer Review. This review is intended to provide assistance to Kiama Municipal Council in its consideration of the application.

This assessment will provide commentary on most aspects of the report and make further suggestions if considered necessary.

1.0 MAIN ISSUES

The main issues to be considered in this regard to this report are:

- Suitability of the location to provide for this development.
- The extent of traffic generated and its likely impact.
- The suitability of the proposed entrances to the site.
- The adequacy of parking and circulation within the development site.

2.0 PEER REVIEW CONSIDERATIONS

- **Proposal.** The proposal, as outlined in the Jones Nicholson Traffic Impact Assessment, is for the provision of a mixed use development including residential apartments, retail shops and commercial tenancies. The site is virtually bounded by Terralong Street, Shoalhaven Street, Collins Street and Akuna Street in the central business and shopping area of Kiama. The site will have direct vehicular access to Shoalhaven Street and Akuna Street, and an exit only to Collins Street which is primarily for heavy vehicles. A pedestrian linkage has been provided from the site to Terralong Street.

- **Content.** The development proposal provides for four residential towers above retail and commercial tenancies. The development will comprise of the following:

  Retail Area = 2,994m^2
  Commercial Area = 1,141m^2
  Residential = 98 units

  A breakdown of the type of units is as follows:

	1 Bed	2 Bed	3 Bed	
Building A	7	8	1	16
Building B	11	12	1	24
Building C	11	12	1	24
Buildings D & E	12	20	2	34
Total	41	52	5	98

  The above details are obtained from the Traffic Impact Assessment report prepared by Jones Nicholson and are assumed to be correct. The size of the plans within the report does not permit detailed checking of, say, the car park layouts, however this should not raise an issue as this report is mainly a review of the main findings.

- **Traffic Generation.** *Jones Nicholson has correctly used the relevant guidelines in assessing the traffic generation rates for this proposal.* The traffic generation has been basically undertaken using the "RTA Guide to Traffic Generating Developments – Version 2.2 – 2002" and the RMS Technical Director TDT 2013/04a – "Updated Traffic Surveys – August 2013".

The updated surveys permit assessments for high density flat dwellings and shopping centres and therefore are considered more than appropriate.

For the commercial component, Jones Nicholson has included this floor area within the retail component. This method is also considered appropriate as retail activity is usually at a higher rate than that of commercial activity. *The assessment therefore represents a slightly higher traffic generation figure which could represent a worst case situation.*

- **Parking Demand.** For the parking assessment, Jones Nicholson has correctly used:
  - Kiama Development Control Plan Chapter 9, Car Parking Requirements. For shopping centres the DCP then refers to the RMS guide.
  - RMS updated data for Shopping Centres. In this regard, reference is made to latest survey information and seasonally adjusted parking rates produced by the RMS in 2014. Comparison is also made by Jones Nicholson to the Shellharbour Shopping Centre (although with a significantly higher floor space) and an Aldi supermarket at Albion Park to confirm a suitable parking rate.

    Traffic Impact Services has previously reported on an Aldi supermarket at Miranda (isolated site with similar floor space to this proposal) and found the parking rate provided to be close to that proposed for this development site.

- Jones Nicholson refers to the parking provision for the site and uses various scenarios for consideration to reduce the number of spaces.

  Credits, comparisons of RMS and Council rates, public transport and linked trips (park for multi purposes) are all aspects that are worth considering instead of a blanket approach adopting rates from Council's DCP.

3.0 TRAFFIC GENERATION AND DISTRIBUTION

The Nicholson Jones report undertakes an assessment of the existing conditions on the surrounding road system using the SIDRA computer model and then determines the likely traffic generation and distributes this traffic to and from the site.

Although this is *generally the correct procedure* the following comments are made.

- Tube Traffic Counts

  Tube counts have been undertaken at various sites and details provided in Appendix A of the report. The tube counts were undertaken in April 2017 during the school holidays and therefore it could be said that this does not reflect normal traffic conditions. However, the Kiama township is different to many areas with tourism playing an important part and as such increased activity may be evident in the township during this time period.

  It is possible therefore that *normal traffic* conditions may actually be less traffic than the April school holiday period. The report does not specifically address this issue and *perhaps a table indicating volumes during different days and periods of the year would have been appropriate.*

  From previous observations and data research the peak hourly times for Kiama are usually Midday and PM (3.30pm-4.30pm) of a week day and midday of a Sunday particularly during market times. There has been evidence of considerable delay in Terralong Street and Collins Street particularly of a Sunday.

  Tube counts were undertaken in Collins Street, Akuna Street, Shoalhaven Street, Bong Bong Street, Terralong Street, Manning Street and Thomson Street. A map showing the tube count locations would have been appropriate to assist in the overall assessment.

- Turning Movement Counts

  The SIDRA computer model has been used to assess the Levels of Service of the various intersections. The model requires the input of traffic movement data at the various intersections which includes all turning movements.

  There is no mention of how the turning movement data was obtained and the hourly time period used in the model. It is recognized however that the volume figures used may have been averaged over say 2 hours per peak. *Usually turning movement data is*

collected manually at the intersection and some comment should be made in this regard to assist in assessing the impact on the road system.

- Traffic Generation of the Site

As outlined in Section 2 of this report, *the methodology used in determining the traffic generation is considered appropriate*. The likely traffic generation is as follows:

Residential	-	PM	-	32 v.t.p.h.
Retail/Commercial	-	Friday PM	-	517 v.t.p.h.
Total				549 v.t.p.h.

- Assigned Traffic

The abovementioned number of vehicle trips to be generated is relatively high (549 vtph) and yet there is no mention of how it has been assigned to the street system. In the report, for example, *it should be possible to examine the movement of traffic to and from the proposed entrances at the site in Shoalhaven Street* and where this movement is heading and came from.

- SIDRA Modelling

The result of the modeling of some seven intersections has been undertaken. As Kiama is basically a country township, it is not expected to see delays that would be similar to that experienced in a city or major suburb. As such a Level of Service of "A" and "B" is to be expected in the township and not, say, a Level of Service of "C" or beyond.

The modelling, although a useful tool in determining an intersection's operation, should therefore be viewed in the light of how greatly it is impacted upon due to the increased traffic movement and has it changed the Level of Service. If the Los has changed from the current operation then there may be options to improve the site by new design and road works.

For example a brief examination of the SIDRA output "Movement Summary" for the Terralong Street and Shoalhaven Street intersection would suggest that the Los has changed from an "A" to a "B" due to the increased traffic movement. The modeling for

this intersection needs further clarification as the detailed output shows traffic from the northern approach of Shoalhaven Street undertaking right and straight through movements when these movements are not actually available. *Further examination is therefore required and perhaps the option of the widening of Shoalhaven Street to provide for 2 lanes on the southern approach should be explored to increase overall capacity.*

4.0 PARKING PROVISION

The parking requirement of the site has been *correctly determined by Jones Nicholson* as:

Council DCP = 322 spaces
RMS Data = 304 spaces

The proposal provides for a total of 251 car parking spaces which shows a deficiency of some 71 spaces (Council DCP) or 49 spaces (RMS).

It is agreed with the Jones Nicholson report that consideration should be given to eliminating some of this deficiency based on parking credits, location of site and simultaneous demand for visitor parking and public transport. The development is adjacent to the main street shopping precinct where parking has been provided to service the existing shops and, with a good pedestrian linkage, this parking may be used as part of a multipurpose trip. Furthermore it is common for new development in established shopping centre strips to not be required to comply fully with the respective DCP.

Parking, however, is in considerable demand in Kiama during the weekends and, in particular, on market days. *The assessment of whether the parking deficiency is suitable is best left to Council to make a decision on.*

5.0 HEAVY AND SERVICE VEHICLE LOADING

Jones Nicholson has provided details of the travel path for a 19 metre articulated vehicle and medium rigid vehicle to access the two loading docks. The loading docks have been provided to service the supermarket and specialty shops and for garbage collection.

The Jones Nicholson report recognises the need to coordinate the times of delivery (see Section 4.3.2 of the report). The access way from Shoalhaven Street to Collins Street is presumed to be designated one-way westbound and this should lessen any likely conflict.

The use of the two loading docks has been explained in the report, however if an approval is given to the development there will be a need to undertake a *plan of management for loading and service vehicles.*

6.0 VEHICLE ACCESS TO THE SITE

Vehicle access is provided via various entrances in Shoalhaven Street (two entrances) and Akuna Street. In Shoalhaven Street heavy vehicle access is provided by a one way system west bound to Collins Street. The Shoalhaven Street entrances (heavy and light vehicles) are adjacent to each other which under normal guidelines is usually not a good practice. As the heavy vehicle access is only in one direction being one way IN then this should not pose any conflict problem.

The Shoalhaven Street light vehicle access is in close proximity to the Terralong Street intersection being approximately 43metres which may be of concern. It is important that the Terralong Street and Shoalhaven Street intersection and the entrance of the site with Shoalhaven Street be carefully considered to ensure no delays will be experienced. *Additional capacity and/or channelized treatments may need to be considered to ensure a good level of service is provided in this section of street system.*

The access from Akuna Street via the laneway to the residential parking areas would appear suitable as outlined in the Jones Nicholson report

I trust that this advice is of assistance and that, if needed, further assessment is able to be undertaken. Please contact the undersigned should you have any concerns regarding this report.

Yours faithfully,

Bruce Conneeley
Director 0413845777