Appendix A
Modelling Review

Appendix A - Modelling Review

A1.1 Background

The modelling review conducted by Brian Kerwick (Senior Transport Planner) is provided as a result of a telephone enquiry by Port Macquarie Hastings Council's Cliff Toms as to the extent of road works recommended in the draft traffic study. During our discussions I undertook to review the study. Subsequently I received a copy of submissions from two companies (King and Campbell and Tierney Property Services) representing affected landowners. I have also considered the issues raised in those submissions.

I have read the draft traffic report and discussed it with the principal traffic engineer Damien Bitzios and with Roadnet personnel involved in management of the study. I have reviewed the inputs to the model and discussed details of the modelling with the modeller Andrew Eke, including traffic generation factors within the model to ensure that there is no over estimation of traffic. I have also examined the trip tables that distribute traffic on the proposed networks.

Having reviewed the traffic study I am satisfied that the modelling is sound and satisfactorily reflects likely future traffic conditions for the road networks considered.

In regard to your specific comments about the amount of road infrastructure recommended, I would like to further explain the modelling process that we undertook to arrive at a network that can operate effectively in peak hour. As explained in our presentations the Paramics model is progressively developed (additional traffic lanes added) to accommodate increasing traffic demand resulting from proposed development in the study area. In doing this we are always mindful of the costs of providing infrastructure and only add sufficient capacity for the network to operate reasonably in peak hour.

I understand Council's wish to minimise the amount of road works and to desirably retain Ocean Drive as a two lane road if possible. You queried the Level of Service (LOS) adopted for our planning horizons, years 2019 and 2029. At intersections LOS criteria is based on delays and along traffic routes there is a range of criteria relating to the degree of freedom a vehicle has to travel at a desired speed. Generally, the objective is to have no worse than LOS 'C' in year 2029 peak hour for both measures. Desirably, this leaves some spare capacity for growth beyond 2029. In any event, we cannot add half a lane so the increase in capacity when going from two lanes to four lanes is substantial. The final report will contain diagrams and tables showing LOS criteria for intersections and section of road. However, we have found that the best way of representing the performance of a proposed road network is to show the extent of queuing in the Paramics model during the model simulation. In this instance we have prevented the peak hour queue from extending back through other important intersections. This visual appreciation of queuing is the main benefit of the Paramics model. Diagrams extracted from the model included in the report are a snapshot of generally the worst traffic conditions over the AM peak period (which is the highest) and make the degree of congestion clear to any observer.

Both the 2019 and 2029 intersection configurations are primarily based on the existing demand profile. However, for 2029 a 'smoothed' demand profile on Ocean Drive has been included to take account of future surrounding land uses and standard 'bell curves' of peaks. This serves to moderate the maximum queues along Ocean Drive.

As an indication of the Level of Service (LOS) provided by the proposed network configurations in 2019 and 2029, Table 1 below provides the average delay (seconds) and LOS at Houston Mitchell Drive intersection.

Table A1: LOS for Ocean Drive / Houston Mitchell Drive

ROAD	Model Year	Period	Average Delay	Level of Service
	2019	AM	24 secs	LOS C
		PM	27 secs	LOS C
	2029	AM	26 secs	LOS C
		PM	35 secs	LOS D

In both 2019 and 2029 the recommended network will still only provide a Level of Service C during the AM peak period. The PM peak level of service is expected to reach LOS D in 2029. This is a direct result of increased turning movements at the intersection, in particular southbound vehicles from Houston Mitchell Drive conflicting with all other major movements along Ocean Drive and ultimately increasing average delay at the intersection.

In addition, by 2019 a single lane of traffic between Bonny View Drive and Houston Mitchell Drive will be carrying approximately 1600vph northbound during the AM peak. Under the existing configuration (no development and uninterrupted flow northbound), the level of service for the lane would be approaching LOS E. 1600vph northbound would also result in insufficient acceptance gaps for the right turning traffic onto Houston Mitchell Drive westbound. When taking into account the proposed development traffic as well as signalising the intersection at Houston Mitchell Drive, northbound through traffic requires both two stand-up lanes at the intersection as well as two traffic lanes south of Houston Mitchell Drive to provide sufficient carrying and storage capacity.

The notion of retaining two lanes on Ocean Drive has a number of impacts. The modelling indicates that congestion would be approaching an intolerable level in the AM peak hour around year 2019. This means that additional capacity is needed around this time or there would be a restriction on development either imposed by Council or by the market. This would ultimately reduce the attractiveness of any future developments.

The notion of diverting traffic along Houston Mitchell Drive to the Pacific Highway would make little difference to the capacity requirements on Ocean Drive in the study area because almost all traffic will still need to pass through the Ocean Drive / Houston Mitchell Drive intersection. Most traffic will be locally generated and through traffic (traffic that potentially could be diverted) is only a small component. As an indication, a rate of 2.4% is applied to growth in through traffic (a 48% increase over 20 years). This figure has been obtained from the HUGS traffic study. This translates to an increase of approximately 300 vehicles per hour in 2029. Assuming that the Pacific Highway becomes more popular for Laurieton to Port Macquarie trips and the growth rate drops to say 1.4%, this only affects 100 vehicles per hour or 50 each way, or 2 cars each way per cycle of the traffic signals at Houston Mitchell Drive. This is insignificant in the context of the full development of the area.

It is possible that a higher proportion of traffic could be diverted along Houston Mitchell Drive to the Pacific Highway if there are capacity constraints to the north of the study area.

This could have implications for the design of the intersections at both ends of Houston Mitchell Drive, ie Pacific Highway and Ocean Drive.

The Ocean Drive intersection could be realigned to have Ocean Drive south and Houston Mitchell Drive as the continuous road. This could be an option Council may wish to pursue, however it would have further implications including possible upgrades to the Pacific Highway. The Pacific Highway intersection, currently a seagull, would need to be upgraded to an interchange. This may be necessary in any event given the volume of currently predicted traffic but if there is a deliberate strategy to divert traffic to this intersection the RTA may require developer contributions towards its construction. Furthermore, any downgrading of the role of Ocean Drive as a main road (including residential street type intersection designs) may see the Regional Road status of the route questioned. This would have funding implications for Council. Notwithstanding this, Houston Mitchell Drive will need upgrading to safely accommodate projected volumes under either scenario.

A1.2 Reply to Working Group Submissions

The following contains a response to the issues raised in the submissions from King and Campbell and Tierney Property Services.

A1.2.1 King & Campbell

The King and Campbell submission relates comments to page numbers in the Draft Modelling Report. The page numbers are used here as headings for our response.

Page 2 *It is suggested that the Manufactured Home Estate should be included in the Base Road Network for the modelling.*

The Manufactured Homes Estate has been included in the model as part of the 920 residential lots in the locality. There was limited reference within the project brief as well as no indications from Council at the time of modelling that this land contained a different type of development.

The model has applied 0.85 trips per dwelling resulting in 219 peak hour trips. The traffic generation rate from such an estate would be low, say 0.2 trips per dwelling in peak hour. For the 257 dwellings this equates to 52 trips in peak hour.

The changes can be incorporated into the model but would involve creating another zone and amending the report. Alternatively, we could simply decrease the number of normal residential lots proportionally to generate the same traffic volumes.

The comment regarding the staggered T intersection relates to the internal road network. The configuration was obtained off plans provided by Council however this can be readily changed in the model and has little affect on its operation.

The base network has been quantified and validated to reflect what is currently happening. We believe the Base Road Network as developed is appropriate and do not believe the approved subdivision or manufactured estate should be included in the base network. However, this is a matter for Council and changes can be made to the model should other substantial changes also be required.

Page 9 *It is suggested to extend the extremities of the road network further south to Bonny Hills.*

It would be desirable to extend the study area to include possible future development areas that have the potential to come on line within the study period. It is possible that additional urban development, such as another manufactured home estate, could occur without rezoning within the planning period. Consideration of such issues would assist Council determine the ultimate road configuration needed for this locality.

Page 12 *It is suggested that speed limits within the study area be reduced.*

The model was set up on a speed limit of 80kph for both 2019 and 2029. Having said that, the number and type of intersections has the effect of reducing travel speeds on the approach and departure sides of each intersection leaving only short distances of higher speed areas.

It is probable that a 60kph speed environment will be appropriate for year 2029. This does not mean that intersections should have a local street design standard. The designs should be consistent with the main road function of Ocean Drive.

Page 13 *Comment relating to the number of lots proposed.*

The number and type of lots described in the submission is slightly different from the information provided by Council on which we have done the modelling.

If the model is to be updated more recent numbers can be incorporated into the model.

Page 14 *Comment regarding the omission of the northern residential area at the end of Forrester Parkway in stage one of the modelling.*

The northern residential area was included as scenario 2 in the model as requested by Council. Again, this can be changed if the model is to be updated.

Page 18 *Comment querying intersection design standards, in particular the rural road design criteria for Ocean Drive intersections.*

As previously indicated the design criteria for Ocean Drive may change as the area develops. It may be appropriate to stage the designs to transform them ultimately from a single lane for roundabout (80kph) to more of an urban design roundabout (60kph) when required.

Page 21/31 *Comments querying the level of service proposed at the Houston Mitchell Drive and Ocean Drive signalised intersection.*

The design layout of the proposed intersection relates to the amount of traffic that would travel through the intersection and the management of associated queuing.

The Ocean Drive / Houston Mitchell Drive junction has ended up as a substantial intersection because almost all traffic needs to pass through this intersection. The layout has been developed to best manage the 12 traffic movements required.

As stipulated within the draft report recommendations, a single right turn lane is required for 2019 and double right turn for 2029. The two southbound right turn lanes are required in order to provide the following:

1. Minimise the length of southbound queue and required turning lane; and

2. Reduce the amount of green time needed for the movement. This in turn reduces overall cycle time, delays and queue lengths for northbound traffic flow on Ocean Drive.

Page 23 *Comments querying the traffic generation of the manufactured homes estate (MHE) and the configuration of the internal road system.*

The 920 residential dwellings that we have included in our model include the 257 MHE units but do not make the distinction in traffic generation.

Plans now available of the MHE development were not available at the time of modelling and the layouts were not taken into account in detail. The minor change can be made to the model.

We have made provision for access to the proposed commercial centre to the south of Ocean Drive by way of a fourth leg on the roundabout. A signalised intersection was the primary basis for this intersection based on initial design layouts as stipulated within the project brief. We believe that this is a sensible addition to help distribute traffic throughout the network.

As previously indicated the traffic generation for the MHE development would be significantly lower than a residential subdivision. This will be taken into account in any update of the model.

Page 27 *Comment relating to the staging of development at the end of Forest Parkway.*

Refer to comments relating to Page 14.

Page 27 *Comment relating to the residential link road and whether it is economically viable given that there is no development fronting it.*

We believe that the link road is necessary, albeit in a modified form and/or alignment. The link would be desirable to facilitate local access between precincts within the Rainbow Beach residential area and more importantly to provide for the efficient circulation of buses that would service the area.

The modelling contains scenarios with and without this link road. The modelling indicates that there would be a strong desire line along this route because it is shorter (in distance) than the Ocean Drive route. If queues and associated delays were to occur along Ocean Drive, the link road would become a desirable detour. This is why we have suggested a LATM scheme along with adequate capacity on Ocean Drive to reduce the attractiveness of this route for through traffic. An additional recommendation was also included within the report regarding

realigning the link road away from connecting directly towards the Commercial Precinct. This aims to reduce the attractiveness of the link road as a north-south through route.

Assessment of the link road within the draft report can be amended as required by Council.

This route can be included or excluded in any additional modelling that may be required by Council.

Page 29/30 *Further comments relating to the design of the Ocean Drive and Houston Mitchell Drive intersection comparing to other intersections in Port Macquarie.*

The Ocean Drive / Houston Mitchell Drive intersection is the hub of the area through which all traffic must pass. It is the primary route for through traffic on Ocean Drive and for most of the development traffic.

As previously indicated we have designed the intersection to accommodate the traffic movements in the 2019 and 2029 design years based on the following:

- proposed development yields;
- forecast background traffic volumes; and
- existing traffic patterns.

2029 background traffic is based on 2.4% growth between 2009 and 2029, which is in line with available strategic forecast data for Ocean Drive. Peak demand profiles for 2019 and 2029 were based on existing peak traffic patterns along Ocean Drive.

The final report can provide the full network requirement based 'only' on the smoothed profile which 'MAY' provide reduced intersection configurations at some locations. Council is to confirm 2029 assumptions to take forward for final report modelling.

I would like to reiterate that we have not provided unquantified spare capacity as suggested but have incrementally added capacity to various legs of the intersection as to arrive at a tolerable level of operation in peak hour. Lesser configurations performed poorly and resulted in long queues. The final report can provide and compare further information on the impacts of 'not providing' the recommended improvements. This may include screenshots of queues and comparisons of LOS at particular intersections.

In the final report we will provide a table and a plan showing Level of Service for each intersection and section of road. Perusal of such tables may alleviate the concerns regarding potential over design of the intersection. However, individual LOS readings can some times be misleading because intersections and lengths of road are interrelated and rely on adequate capacity of adjoining sections. An example of this is the required inclusion of a double right turn onto Houston Mitchell Drive by 2029. If modelled as a single right turn, queues extended back from the turn lane to influence all southbound traffic as far back as Abel Tasman Drive. This influence on upstream flows restricts traffic actually arriving at the required intersection and subsequently Houston Mitchell Drive intersection records an inaccurate LOS reading compared to if all approaching traffic arrives at the intersection.

(See table of contents for Table numbers for relevant Level of Service [LOS]results for each of the intersections)

The Paramics model combines these factors and sections to give an overall picture of network performance. The model indicates that the road geometry shown in the draft report is required to manage traffic flows for the quantity of development proposed.

Page 31/36 *Further comments relating to be manufactured home estate and the relationship between the use of this facility and school start and finish times.*

We acknowledge these matters and they will be taken into account when the model is updated.

Page 33 S*uggestions regarding the use of the Pacific Highway and Oxley Highway to access Port Macquarie for commuter traffic.*

The trip table developed for the model is based on origin and destination surveys conducted on the existing traffic patterns.

From local knowledge the most direct route to Port Macquarie from the Houston Mitchell Drive/Ocean Drive intersection is via Ocean Drive through Lake Cathie and Lighthouse Beach. It is possible that traffic may take alternative routes to Port Macquarie depending upon capacity restraints to the north of Lake Cathie in the future.

There is no basis to assume that existing traffic patterns would significantly change. As previously discussed should Houston Mitchell Drive become a more attractive route this would have serious implications for the Pacific Highway intersection.

Notwithstanding this, most traffic needs to pass through the Houston Mitchell Drive and Ocean Drive intersection which means that the capacity required on Ocean Drive through the study area will not change substantially with an increased use of Houston Mitchell Drive.

If this scenario were to be further explored the model should be extended to incorporate the Pacific Highway intersection because the impacts are potentially serious.

Page 38 *Comments relating to pedestrian access at Abel Tasman Drive.*

Signals were tested at Abel Tasman Drive following discussions with Council to provide for an existing crossing deficiency for residents west of Ocean Drive, as well as perceived increases in pedestrian movements as a result of the proposed development.

We have made suggestions in the report relating to pedestrian accessibility across Ocean Drive. The matter of pedestrian circulation throughout the study area is beyond the scope of this traffic study.

Page 41 C*omment relating to the diagram that shows closed road near the intersection of Houston Mitchell Drive and Ocean Drive.*

Amalgamation of the subject lots and subsequent removal of the ‘closed road’ was discussed during meetings and will be amended for the final report.

Page 42 *Further comments relating to design standards to be applied at the intersection at Abel Tasman Drive.*

Modelling shows that a two lane roundabout is needed for storage capacity at Abel Tasman Drive. This requirement would still apply should Houston Mitchell Drive take additional traffic because traffic would still be attracted to the Ocean Drive / Houston Mitchell Drive intersection from the north.

Based on the provided future development and network an assumption, modelling of a single lane roundabout at this location is expected to produce extensive queues along Ocean Drive out to 2029 and beyond. However, should Council choose to further investigate variations in future traffic and development assumptions, the required intersection at Abel Tasman Drive may vary?

The actual size of the roundabout will vary according to the adopted speed limit. The diagrams in the report have been included to indicate the possible extent of land required to provide the facility. The design criteria for the roundabout will be reviewed in the final report (should a roundabout intersection be favoured by Council at this location).

Page 49 C*omment relating to striking a balance between affordability and appropriate level of service.*

The outputs from the modelling indicate that certain level of capacity is needed to carry the predicted traffic based on the provided network assumptions. The intersections have been designed to efficiently manage traffic congestion without having queuing to nearby major intersections during peak hour. We believe that the intersections are not over designed and that infrastructure is required to provide for both expected through traffic and proposed future development traffic.

It is acknowledged that refinements to future proposed development inclusions, land uses and changes in traffic patterns could warrant revised intersection and network configurations. However, these changes to the model inputs would subsequently require additional model runs, along with clear limitations of use and accompanying statements defining any future model assumptions.

Intersection recommendations provided within the study are based primarily on future network capacity. Affordability of intersection requirements has also been included when choosing the type of intersection required for either 2019 or 2029. As stipulated within the report and discussed at meetings, signalised intersections were recommended based on providing traffic capacity, reducing intersection footprint size and providing pedestrian amenity.

It should be kept in mind that there is a ‘doubling’ of capacity when you go from one lane to two lanes, so it could be perceived that some elements of the network may be over designed. I believe we have delivered an appropriate level solution and the network is not over designed. Unfortunately, a single lane solution for Ocean Drive would be significantly under designed and is likely to incur intolerable congestion and extensive queuing.

The extent of the congestion may not be apparent from the Draft Report because we have added capacity to get an acceptable outcome. Unless some additional scenarios are run through the model the impacts of a suggested two lane objective cannot be fully assessed.

A1.2.2 Tierney Property Services

The Tierney Property Services submission on the Draft Modelling Report are in numbered paragraphs. These numbers are referenced as headings for our response.

Point 1 S*uggests the report contains a number of inconsistencies that have been discussed with Council's Vanessa Penfold.*

The Background section within the Draft Report was based on information provided within the brief and by Council.

Council to advise on the inconsistencies and the report will be amended.

Point 2 S*uggested change to be chapter heading for Scenario 2.*

Agree. The report will be amended.

Point 3 *Suggests that the report needs to be changed to identify the northern school site and the southern school site in lieu of high school and primary school. Suggests minor changes to the internal road network.*

Development inputs were provided by Council at the time of the modelling development process. The model needs to distinguish between the high school and the primary school because they generate different volumes of traffic.

It is acknowledged that the Eco Tourism Site is not part of the Hilltop Village. For modelling purposes these sections of the development have been grouped together as traffic to/from the eastern area of the development will be loading into the network at a similar location. Council to advise on details of the internal road network. The model/report will then be amended (if required).

Point 4 Q*ueries the need for a cross intersection at Bonnie View Drive for year 2019.*

Staging of the development components was based on information provided at the time of the modelling development process. If the school is not needed within the planning period, then a T-junction may suffice. Initial estimations without undertaking detail modelling would suggest that at a minimum improvement to linemarking for turn lanes and passing lanes would be required.

Council to advise whether to include the southern school site in the traffic model and in what year.

Point 5 *The need for traffic signals over a roundabout is accepted but the intersection should be staged.*

A signalised cross intersection should be able to be staged. This would be subject to detailed design. Modelling indicates that a single lane right turn lane is required in 2019 and a double right turn lane for southbound traffic in Ocean Drive is required in 2029.

Through traffic lanes can also be staged with northbound lanes requiring 2 through lanes by 2019 and two lanes southbound in 2029.

Point 6 *Queries the need for the new residential access with the intersection for access to the St Vincent's Foundation property.*

The mid-block intersection between Abel Tasman Drive and the Commercial Precinct was included based on network design within the project brief. However, we acknowledge that the draft report does not clearly identify the need/warrant for the inclusion of this intersection. The final report will include further details on the requirement for this intersection and its merits.

Based on the previous modelling, the mid-block intersection does provide relief to surrounding intersections in particular the intersection adjacent to the commercial precinct. Additional modelling was undertaken to elaborate on the benefits of providing additional access/egress locations for the commercial precinct as well as the benefits to both the local road network and Ocean Drive.

Further information can be included within the final report on the mid-block intersection benefits as required by Council.

Point 7 *Coordination is needed for construction of the intersection designed for Abel Tasman Drive.*

Noted.

Point 8 *Queries the need for the residential link road and raises issues regarding LATM.*

The link road would be desirable to facilitate local access between precincts within the Rainbow Beach residential areas and more importantly to provide for the efficient circulation of buses that would service the area. These comments can be clearly defined within the final report.

Impediments to through traffic (LATM) and/or the realignment of the link road away from the commercial precinct are recommended if it was to proceed.

Council to advise whether the link is to be retained or not.

Point 9 Q*ueries the volumes of traffic for the final 2029 scenarios.*

Trip generation tables will be provided within the final report to define the model inputs. This will provide any future variations and refinements to the model assumptions with clear transparency to what the initial recommendations are based on.

The traffic volumes have been calculated in the model using the following traffic generation criteria. These are in line with industry standards. Table 2 shows the rates used.

Table A2: Traffic Generation Rates

Type	Quantity	Peak Hour Rate	Peak Hour Trips
Normal Residential Lot	460+460+833+410 = 2163	0.85/lot	1838
Medium Density	68	0.4/unit	27
Manufactured Homes Estate (To be updated in final models)	257	0.2/home	52 (to be updated in final model)
Residential Apartments	120	0.4/app	48
Commercial Centre	5000m2	12.3/100m^2 GFA	615
Shopping centre	2000m2	12/100m^2 GFA	246
High School	(600 pupils)	20%	123
Primary School	(400 pupils)	25%	180
Additional Lots off Forest Pkwy	338	0.85/lot	287
Total			**3364**

Through traffic is based on 2.4% growth between 2009 and 2029, which is in line with available strategic forecast data for Ocean Drive. Peak demand profiles for 2019 and 2029 were based on existing peak traffic patterns along Ocean Drive. As a result, 2029 traffic queues along Ocean Drive still remained high. However, the draft report stated that peak traffic patterns are expected to 'smooth' compared to existing patterns and as a result, queues along Ocean Drive are not expected to be as extreme as displayed within the initial 2029 model.

Refinements and variations to these inputs are welcome, provided any recommendations are clearly stated alongside the input assumptions.

The design of intersections should be able to be staged subject to detailed design considerations.

Point 10 C*omment on queuing in the commercial access street and the issue of the left in left out scenario.*

The commercial access assessment was an additional modelling task that was included in order to benefit the overall design and ultimate success of the proposed commercial precinct and surrounding residential area.

Agree that this is a detailed design issue.

Point 11 *Comments regarding the footprint requirements for intersections.*

Details of the intersections footprints were included within the draft report upon discussions at the presentations. As previously mentioned Abel Tasman Drive has been tested for both roundabout and signals.

Roundabout size appears to be a sensitive issue at this location. A standardised 'rural' roundabout was the basis of the roundabout design primarily to maintain through and circulating capacity.

However, detailed roundabout design requires additional consideration of pedestrian amenity, median width, staging (one lane initially to two lanes ultimately) and available land.

The final report can detail further information and assessment of a recommended roundabout size requirement as directed by Council.

The diagrams contained in the report as to the land requirements for intersection upgrades are indicative only. The diagrams in the report show the distance from the property boundary to the outside of the roundabout and this is possibly misleading. Abel Tasman Drive requires more land (when compared to Bonny View Drive) to the south-east due to existing properties to the north. We will clarify the roundabout sizes in the final report and that includes staging the development of the intersections from one lane to two lanes.

It is envisaged that the roundabouts would be constructed as a single lane rural facility in the first instance to an 80 kph design speed. They would then be reconfigured as a two lane urban roundabout to 60 kph design speed when required.

Point 12.1 *Bonny View Drive/Ocean Drive intersection.*

Agree that the southern school site development should be considered on its merits at the time of its development. However, the traffic generation from such a facility should be considered in terms of the ultimate configuration of Ocean Drive (up to 2029 and beyond).

This is particularly pertinent given that Council is considering traffic management measures on Ocean Drive that include limiting the number of travel lanes. It would be desirable to consider in the traffic model the traffic generation from such a school along with other potential nearby development.

Modelling can be undertaken without the school in place in 2019 to identify minimum requirement for Bonny View Drive. Council to confirm.

Point 12.2 *Abel Tasman Drive/Ocean Drive intersection. Preference for traffic signals at this intersection.*

Agree and final report to reflect recommendations. To be confirmed by Council.

Point 12.3 *New residential mid-block intersection.*

As previously mentioned, modelling has been developed based on the provided information and the mid-block intersection has been observed to provide relief to surrounding intersections and improve distribution within the network. However, additional assessment can be undertaken on the network without the mid-block intersection under guidance from Council.

Council to advise on whether this facility should remain in the model.

Point 12.4 *Request to withdraw the Link Road.*

Council to advise on whether this facility should remain in the model.

Final Statement *Request that Council determined traffic speeds throughout the study area in regard to the design of future improvements.*

We have made comments regarding speed limits in this review. Desirably, the 80kph speed limit would be applicable until about year 2019. Beyond that date, as the area becomes more urbanised, the speed limit would be reduced to 60kph. Traffic facilities would be staged and designed on this basis.

Council to confirm.

A1.3 Next Steps

Modelling to date has provided a good indication of the type and nature of traffic facilities required for the target years up to 2029. Model inputs were based on provided information at the time of the model development. We believe that we have completed our assignment in accordance with the brief and a final report could be readily completed following standard amendments and refinements to suit Council. However, the draft modelling report has prompted new issues which have been raised in the two submissions and in discussions with you. Other issues have arisen while considering responses to the submissions.

We recognise the development of this future road network (and any) is an iterative process which takes into account various components other than future transport modelling. We also welcome testing of variations in the future development and road network assumptions on order to arrive at an acceptable solution for Council and the community.

Prior to finalising the report we would appreciate Council considering the issues raised in this review and to provide direction as to what, if any additional work is required before completing the traffic study. Standard amendments to the report in line with meeting the project brief will be undertaken for the final report.

Indications are that Council may require additional modelling and/or significant changes to the report. If so, any work outside the initial scope would constitute a variation to the contract.

As a guide you may wish to incorporate the following into the study:

- Update the model to reflect the number and type of lots now proposed within the study area. This includes creating a new zone for the manufactured homes estate and applying a lower generation rate to the 257 sites.

- Retain the internal Link Road to provide for local traffic circulation and buses.

- Retain both schools within the study timeframe because there is a possibility that they may both be required. Suggest the primary school only for 2019 and both for 2029.

- Model a new scenario that directs more traffic along Houston Mitchell Drive and may reduce the amount of proposed road infrastructure.

- Identify the long term future cross section for Ocean Drive and its staged development.

- Expand the model to include the Pacific Highway intersection at Houston Mitchell Drive. The RTA is likely to raise the issue of how the proposed development would impact on this intersection.

- Expand the study to include other potential urban development in the locality, eg at Bonny Hills. This does not necessarily mean including it in the 2029 model but simply acknowledging the possibility of additional traffic being generated onto Ocean Drive in the future and identifying the network needed for that traffic.

- Include general commentary on the implications of the Rainbow Beach development on the wider road network – Pacific Highway / Houston Mitchell Drive intersection, Ocean Drive through Lake Cathie and to the north through to Lighthouse Beach.

Could you please consider the issues raised in this review and advise of any changes to the road network that you would like us to model to address your concerns. The additional cost to update the report in line with the submissions, create new trip tables and re run the model is dependent upon the amount of additional work involved.

I am available and happy to discuss any or all of the issues raised in the submissions and in this response so as to arrive at a satisfactory outcome for Rainbow Beach development.