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TRANSPORTATION SPECIALISTS

technical note

PROJECT	**PRIVATE PLAN CHANGE 83 (MANGAWHAI HEADS)**
SUBJECT	**INITIAL REQUEST FOR INFORMATION REVIEW COMMENTS**
TO	**VAISHALI SANKAR (NORTHLAND TRANSPORT ALLIANCE)**
FROM	JAMES GEORGETTI (SENIOR TRANSPORT PLANNER)
REVIEWED BY	MICHAEL JONGENEEL (ASSOCIATE)
DATE	15 MARCH 2023

1 SUMMARY OF OUR REVIEW

This document contains our initial review of an Integrated Transport Assessment (ITA) and Section 92 responses relating to a proposed plan change (Private Plan Change 83) located at the corner of Cove Road and Mangawhai Heads Road in Mangawhai Heads.

This review is intended to assist the Northland Transport Alliance (NTA) in identifying any transport concerns that need to be resolved as part of the plan change application, and to assist NTA in providing submissions on the application.

We consider that the applicant should provide additional information, and that mitigations or provisions within the District Plan rules relating to the precinct should be considered. Our general recommendations are summarised below, while specific comments on the applicant's request for information responses are provided in Table 1.

Recommendations:

- Recommendation 1: We recommend the ITA be updated to provide a more detailed transport plan for the precinct. The ITA should include
    - the indicative locations of roads, walking and cycling connections and intersections with external roads and within the precinct to enable Council to assess how the precinct is likely to function once fully developed
    - the estimated number of dwellings accessed from each road and intersection, to ensure transport infrastructure is fit for purpose and the impact on the surrounding transport network can be mitigated once the full precinct has been developed
- Recommendation 2: We recommend the applicant undertake SIDRA modelling and safe system assessments for all proposed intersections onto Cove Road and Mangawhai Heads Road to ensure impacts are captured and intersections can operate safely and effectively
- Recommendation 3: We recommend Council include any required transport upgrades (within or outside the precinct) within the precinct rules in the District Plan, along with triggers determining when upgrades need to be delivered.

Table 1: Requests for information and responses

Northland Transport Alliance Request for Information	Applicant Response	Flow Comment
1. TIA states that the intersection of Pigeonwood Place and Cove Road might warrant a CHR - request applicant to provide us an approximate estimate of lots accessed of Pigeonwood Place/Cove Road and an approximate estimate of lots accessed off Mangawhai Heads Road.	It is estimated that 130 to 140 lots will lead to Pigeonwood Place at full development of its catchment as anticipated, with as many as 240 leading to Mangawhai Heads Road. There is ample space within road reserve for a right-turn bay at Pigeonwood Place if/when this is required as a future consent condition.	We recommend the ITA include an indicative roading plan (per movement network in Urban Design Assessment) to show • Indicative intersection/vehicle crossing locations • indicative number of lots accessed from each road/access This needs to be resolved at a Plan Change level as it will dictate what intersection designs are appropriate for the precinct as a whole. If this is not defined at this stage there is a risk of intersections being constructed which are not fit for purpose to meet the demand of the precinct as a whole once fully developed.
2. Precinct Plan – this should include indicative collector roads and intersection locations with Cove and Mangawhai, otherwise it could develop as a bunch of cul-de-sacs if there are multiple landowners	No response provided	
3. Has the applicant considered providing Local Reserve within the Precinct? With the government working towards carbon emission reduction, we would like the applicant to consider this possibility to reduce the additional trips generated.	No response provided	We agree that the ITA should include indicative walking and cycling routes within the precinct, although we feel it is for Council to decide whether these are Local Reserve or some other ownership arrangement. Possible walking and cycling links could include connections to • Mangawhai Heads Road (at eastern corner of the precinct) • Connection to/towards Cullen Street further north
4. Request the TIA to carry out Modelling assessment for new roads intersecting	The primary, perhaps only, consideration at this stage is that adequate space is available for intersections likely to be	Refer to 1 above.

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with Cove Road or Mangawhai Heads. Given there aren't any specified within the Precinct Plan, assuming the worst case that there is only 1 intersection onto each road (i.e. traffic from the development is concentrated through 2 new intersections)	required with future subdivision within the precinct. In most cases, the road reserve will be able to be widened on the site side of the frontage roads as necessary. Even if this is not possible, a right-turn bay is very likely the largest treatment required at all intersections [footnote: Even the busiest – the Cove Road/Mangawhai Heads Road intersection as shown later]. The road reserve is 20 metres wide throughout the frontages of both Cove Road and Mangawhai Heads Road. There is ample space within such road reserves for a right-turn bay if/when this is required as a future consent condition. In fact, there is an existing right-turn bay on Cove Road for Mangawhai Heads Road and the road reserve on that part of Cove Road is 20 metres wide.	We disagree with the applicant's assertion that the only consideration at this stage is space availability. The Plan Change application is Council's opportunity to consider the impact of the precinct as a whole, rather than in smaller portions as may be the case when resource consent applications are lodged. As such, it is necessary to define (indicatively) what intersections and road infrastructure is required for the precinct once fully built out. We agree with NTA's request for modelling for new intersections with Cove Road and Mangawhai Heads Road, in line with the indicative roading plan requested above.
5. Safety and modelling assessment for Tara/Kaiwaka Mangawhai Road (holiday peak modelling only)	This intersection is 8 kilometres from the site and will only be used by a small proportion of the traffic generated by the proposal – estimated at only 3 to 4% being some traffic that travels to/from Auckland (not all such traffic because Tara Road is not part of the shortest route or most direct route to/from Auckland). So it is estimated that the proposal will increase the traffic through this intersection by no more than 1.5%. As such, an assessment of that intersection is not warranted.	We accept the applicant's response. No further information required.
6. In the TIA it has been stated that video monitoring was carried out in November 2021 (during Covid restrictions) – request applicant to carry out traffic counts during baseline (school period) and summer period and utilise that	This is not necessary. Continuous counters on roads that have them, and are subject to significant seasonal traffic, provide an adequate proxy for the seasonal variations in locations like this. Such a proxy has been applied to the traffic generation estimates in the RFI, with allowance for the fact that houses in this location are more likely to be used as primary residences	We accept that continuous counters in other locations can be used to proxy the seasonal variations in traffic in areas like Mangawhai Heads. We also note that Plan Change 78 (Mangawhai Central) undertook summer peak surveys which could be used for this purpose.

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information to determine the traffic effects.	than dwellings closer to the coast, so will be occupied for a higher proportion of the time, with the associated traffic less subject to seasonal increases.	However, in order to deduce summer peak traffic flows in this way reliable baseline traffic counts are required. We are not satisfied that counts carried out during Covid restrictions provide this baseline. We suggest baseline traffic counts are carried out on a normal schoolday/schooldays (Tuesday/ Wednesday/Thursday) for this purpose.
7. Request applicant to carry SIDRA modelling for all the intersections within their frontage including Pigeonwood Place, Robert Hastie Drive, Cove Rd/Mangawhai Heads Rd, and Mangawhai Heads Road/Cullen Street/Molesworth Drive.	SIDRA modelling has been carried out for the Cove Rd/Mangawhai Heads Rd intersection as shown later and an existing model has been updated for the existing roundabout. The roundabout model is based on a combination of monitoring and recent traffic counts, plus it includes the estimated traffic from two large subdivisions recently applied for on Cullen Street and 30% growth in existing traffic (representing some 10 years of future growth). It is estimated that the plan change will add another 150 vehicle movements through the roundabout during peak hours during holiday periods, more than 80% of which is expected to travel to/from Molesworth Drive and almost all of the remainder will travel to/from Mangawhai Heads Road east. Movement summaries from this analysis are appended. It shows that, even during those hours, the roundabout will continue to operate at an overall level of service A, with average delays less than 8 seconds, maximum delays less than 13 seconds and 95 percentile queues of only 7 vehicles on the busiest approach. The roundabout's operation will be even better at other times. This confirms the previous assessment that the roundabout has more than adequate capacity to cope with the traffic from the proposal. In any event, decisions on transport infrastructure are almost never based on absolute peak hours like this.	We are satisfied that the modelling undertaken does not indicate any major concerns for the Cove Road/Mangawhai Heads Road intersection or the Mangawhai Heads Road/Molesworth Drive roundabout, and do not require any further modelling of these intersections unless traffic counts (see above at 6) indicate volumes have been significantly underestimated. As noted above (see 4) we request modelling be undertaken for new intersections onto Cove Road and Mangawhai Heads Road. We recommend modelling Pigeonwood Place and Robert Hastie Drive as a single offset intersection to understand any impact of queueing at one intersection on the performance of the other.

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	With future intersections likely to be necessary for future subdivision, the only consideration is that adequate space is available. As shown in the response to question 4, such space is currently available.	
8. Request applicant to carry Safe System Assessment of all the intersections along their frontage including Pigeonwood Place, Robert Hastie Drive, Cove Rd/Mangawhai Heads Rd, and Mangawhai Heads Road/Cullen Street/Molesworth Drive and the report is to address the effects at these intersections and propose a primary treatment.	This is not necessary for the reasons already given and the additional reason that, apart from Pigeonwood Place, the eventual locations of intersections are not even known. Safe System Assessments might be warranted at future consent stages, but not at the stage of a plan change. This said, a recent crash at the Cove Rd/Mangawhai Heads Rd would be fully addressed with a central island on the side road. There is ample space at the intersection location for this and it is an existing issue that should already have been addressed. There are some sightline restrictions in relation to the roundabout, but no crashes have been reported on it since at least the start of 2018, the relatively small increase in traffic from the plan change is unlikely to increase this risk significantly and, even if it does, some vegetation trimming and a small volume of earthworks is all that will be necessary to address the issue. This is another existing issue that should already have been addressed. Overall, we maintain that no significant work is warranted at existing intersections as a result of additional traffic from this plan change.	See above at 1 and 4. We consider it is necessary to indicatively define the layout of the precinct at this plan change stage, including the location of intersections, number of dwellings served by each and indicative designs for these intersections. If these matters are left to resource consent stage, Council will only be able to consider the impact of any given consent, and not the cumulative requirements of the precinct as a whole. We agree with NTA's request for Safe System Assessments of intersections as a means of determining the impact of the precinct on the road network and defining safe, efficient intersection locations and layouts. That said, we consider that the SSA for the Mangawhai Heads Road/Molesworth Drive roundabout only needs to consider pedestrians and cyclists, as the roundabout treatment is safe for most vehicles.
9. The Plan outlines the indicative street and cycling connection on Mangawhai Heads Road but does not address the effects on the existing footpath on	Again, it is only necessary that space be available for future installations or upgrades of such facilities. A future footpath along Mangawhai Heads Road is likely to be 1.8 metres wide and there is ample space within the road reserve for this even if the	See above at 3. For reasons outlined above, we consider it is necessary to define an indicative walking and cycling network for the precinct at this stage.

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Mangawhai Heads Road and have shown an indicative off road shared path connecting to an existing footpath which would not be ideal. Request applicant to address this.	necessary space cannot be made available along site frontages (and it is likely this will be feasible). There is absolutely no reason why shared paths cannot be connected to footpaths. In fact, such is common, an example being the Hatea Loop path in Whangarei.	We suggest Council include a District Plan rule within the precinct plan requiring pedestrian upgrades and identifying triggers for when these must be delivered, including: • The urbanisation of the precinct's frontage to Mangawhai Heads Road and Cove Road (South of Pigeonwood – dependent on other proposed pedestrian connections) with sealed footpaths • Safe, sealed connection to existing footpath on the southern side of Mangawhai Heads Road
10. Request TIA to address the effects on Pigeonwood Place due to this proposed plan change both traffic effects and active modes.	Pigeonwood Place has a legal corridor 20 metres wide. This is ample space for any future traffic and upgrades for active modes, even with the catchment of the road at full development. It is noted that the traffic on most of Pigeonwood Place will be less than 1,500 movements per day at full development even during holiday periods. This is a long way from a busy urban road, so special treatments that might be especially space intensive will simply never be necessary.	Requirements for Pigeonwood Place are dependent on the overall layout of the precinct and the number of dwellings served by the road. We note that a 20 m legal road width meets the Kaipara District Council Engineering Standards' requirement for roads serving more than 50 households. We suggest Council define expectations for roads within the precinct and include these as rules for the precinct within the District Plan, including things such as providing for safe walking and cycling, with footpaths and speed calming.
11. TIA has stated that a future possible connection to Cullen Street can be made – request TIA to further address the effects on Cullen Street and the roundabout due to this additional	The recommendation is simply for such a future link to be facilitated. Any such link would rely on land outside the plan change area, so is far from certain. The effects on Cullen Street would have to be evaluated at the time in which such a link is actually proposed but this is not warranted at this stage.	In our view a road connection to Cullen Street is not desirable, and traffic should be directed to Cullen Street and Molesworth Drive via existing main roads (Cove Road and Mangawhai Heads Road). A future walking and cycling link to Cullen Street, however, would provide an alternative route for

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movements and the active modes along Cullen Street.		people from the northern side of the precinct to move towards Mangawhai Heads. We support this and think it should be included in the indicative walking and cycling network for the precinct.
12. Has the applicant considered future growth while undertaking the assessments of the intersection? If not request applicant to consider 10% future growth especially for Mangawhai Heads Road/Cove Road intersection, Mangawhai Heads Road/Cullen Street/Molesworth Drive, and the effects on Cove Road/Pigeonwood Place once Robert Hastie Drive has been fully developed/occupied.	The average daily traffic on both Cove Road and Mangawhai Heads Road is currently less than 2,500 movements per day - well below the level of traffic that can create capacity issues even at conventional tee intersections. In particular, Molesworth Drive currently carries traffic close to 10,000 movements on an average day and has a number of conventional tee intersections on it. One – Wood Street, carries close to 5,000 movements and three others carry close to 1,000 movements on an average day. The speed limit is lower at all of those intersections, but this does not have a significant influence on the capacity of the most challenging turn – right turns out of the side road. Wood Street has a right-turn bay but, as already shown, there is ample space for right-turn bays at all future intersections along the frontage of the plan-change precinct area if/when those are warranted. There are also numerous other intersections in much busier locations in locations with similar or higher speed limit. Examples are the intersections of Mangawhai Road, Baldrock Road, SH12 (Brynderwyn), Marsden Point Road, Mangapai Road, Maungakaramea Road and Portland all on SH1N. No upgrades that would have a material impact on the capacity of those intersections are proposed. While Mangawhai is growing more rapidly than most, the traffic along the road frontages of the plan-change precinct will not reach the levels at any of the cited locations for many decades, probably never.	We accept the applicant's evidence regarding the capacity of the Cove Road/Mangawhai Heads Road and Mangawhai Heads Road/Molesworth Drive/ Cullen Street intersections, and are satisfied with the modelling undertaken provided there has not been a significant under-estimation of traffic volumes (see above at 6). However, we support NTA's request for SIDRA modelling of the Pigeonwood Place/Cove Road/Robert Hastie Drive intersection and other intersections connecting the precinct to Cove Road/Mangawhai Heads Road (see above at 7), as this will help to determine the appropriate layout for these intersections.

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13. Request a minimum of 4.5m setback from the road boundary based off Exposure Draft District Plan.	No response provided	Agree with NTA's request. Suggest this is included as a provision within the precinct rules in the District Plan (unless the Exposure Draft District Plan is adopted prior to approval of the precinct plan).
14. Request applicant to include commercial/industrial activity as a Discretionary Activity or Non-complying in the District Plan.	No response provided	Agree with NTA's request.
15. The minimum lot sizes proposed is 400sq.m and the TIA has assumed that the lot sizes are 1000sq.m to determine the number of lots that can be accommodated. Request the TIA to address the possibility for smaller 400-500sq.m lots in these sections, which would create additional effects. Request TIA to address this possibility and carry out SIDRA modelling accordingly.	The average lot size estimated in the TIA was agreed by all project team members. It is based on a number of factors including the larger minimum lot size specified for part of the area (including the northern slope), the need for space for access, reserves, other services and the likelihood that some ground will be unsuitable for the establishment of dwellings. We maintain that an average 1,000 sq.m lot area is realistic and, also for the reasons already given, disagee that it is necessity to revisit the analysis.	Noted. Suggest the precinct rules in the District Plan include a provision that an average lot size of 1,000 sq.m will be maintained or stipulating the maximum number of dwellings for the precinct. As outlined above, this needs to be defined at a precinct level as it will influence the infrastructure required to serve the precinct as a whole.
16. Request applicant to carry out SIDRA modelling to determine if the one-lane bridge on the southern end of Cove Rd/Mangawhai Heads Rd would be able to accommodate the additional traffic generated. While we note there are many one-lane bridges throughout	This analysis has been carried out and finds that the bridge has capacity for at least 1,000 vehicle movements per hour (total in both directions), even with a bias in one direction - only likely outside peak holiday periods. The bridge has been modelled with a conservative "gap acceptance" of 10 seconds and vehicles in both directions giving way. Even at 1,000 vehicle movements per hour, the average delay in the busier direction is predicted	Request that the applicant clarify how many peak hour vehicle movements on the bridge they estimate will be generated by the development. We also note that the approaches to the one lane bridge appear to be mislabelled, unless we have been provided modelling for a different location.

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Northland which carry higher ADT than this one, Mangawhai is developing at a rapid rate and has a higher volume during the summer periods. Hence, we would like the modelling to be undertaken. Note: We request the SIDRA modelling to be undertaken for existing, future growth and peak summer periods as well.	at less than 22 seconds, with an overall average delay of 15 seconds. The 95-percentile queue in the busier direction is predicted at 24 vehicles with virtually no queues in the other direction. The bridge currently carries fewer than 200 movements during peak hours on average days and this is unlikely to increase to more than 300 during holiday periods. Even with growth in Mangawhai being more rapid than average, it will be many decades before the bridges on Cove Road experience levels of traffic that might create significant and/or regular congestion.	In general, we accept the applicant's response and agree that some degree of congestion is to be expected and tolerated during the busiest peak periods.
17. TIA has stated that the Mangawhai Heads Road/Cove Road intersection has capacity for more than 300 right-turns out of Heads Road even during holiday season – Request applicant to provide further information on how this was determined, was modelling or Austroads treatment check carried out to determine this?	The methodology use is stated in Footnote 18, page 10, of the TIA. It was based on models as described in various Austroads publications. However, for completeness, a SIDRA analysis has been carried out of the intersection for current traffic plus 30% representing some 10 years of future growth plus traffic from the plan change precinct at full development and during peak hours of holiday periods. This shows that the greatest average delay for any turn – right turns out of Mangawhai Heads Road, will be only 12 seconds, with 95 percentile queues of fewer than 2 vehicles and less than 30% of the practical capacity of the turn. This analysis is conservative because it omits the left turn lane from Cove Road north. The high capacity is partly a result of the low frequency of through movements on the priority route – Cove Road. Summary output of the analysis, both with and without PPC83, are appended.	Noted. No further information required unless updated traffic counts (see above at 6) indicate volumes have been significantly underestimated.

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	It is further noted that there is space for the Cove Road/Mangawhai Heads Road intersection to be converted to a roundabout in future. Figure R1 shows an indicative roundabout with an outside diameter of 25 metres. A roundabout is the highest standard of treatment ever likely to be necessary for this intersection.	
18. 13.14.2 – Reads "the Cove Road North Precinct Road, Cycleway and Pedestrian Connection 2. Council will have regard to the following additional matters when considering an application for resource consent under this rule within the Cove Road North Precinct: i. The extent to which any road, cycling and pedestrian connections are established in accordance with the Cove Road North Precinct Map 1 and Cove Road North Precinct Concept Plan 1" Request applicant to remove the wording "in accordance with Cove Road North Precinct Map 1 and Cove Road North Precinct Concept Plan 1" as the active modes connection has not been addressed completely.	No response provided	Agree with NTA's request. To be updated within the precinct rules.