

File Note

By: Caron Greenough **Date:** 14 November 2019
Subject: Additional Peer Review for Wairau Estate SH45 **Our Ref:** 3820866/300

1 Introduction

Beca Ltd (Beca) has been commissioned by NZTA (the “Agency”) to review the Integrated Transport Assessment (ITA) completed by AMTRANZ Ltd (7 November 2017) and the follow up Private Plan Change 48 Assessment of SH45 Access (25 March 2019). The follow up report was developed in response to submissions received on the plan change and at pre-hearing meetings.

The ITA was for the proposal to develop 58ha of land immediately south west of Oakura that is currently zoned rural and Future Urban Development. When fully developed it was intended to create some 399 residential lots.

The ITA assessed that all trips would access the development via Upper Wairau Road, which is a no exit road. There are currently 145 existing dwellings on Upper Wairau Road. Access to the development would be via Upper Wairau Road and all traffic associated with the proposed development, and the existing traffic, must then travel through the SH45/Wairau Road intersection.

The SH45/Wairau Road intersection is a typical rural crossroads however the side roads are stop controlled as there are some restrictions to visibility. The speed limit along SH45 changes from 50kph to 100kph some 50.0m to the west of the intersection and as such speeds remain high at the intersection. At some point the speed limit has been 80kph but was reduced to 50kph around 2008. The original ITA in November presented traffic data that suggested the 85%ile speed at the threshold signs were 70.9kph and 67.7kph 140 meters east of the intersection.

The trip generation rate attributed to the proposed development is 8.5 trips per lot per day, which is lower than that recommended in the NZTA Planning Policy Manual, however the assessment was undertaken using both values, discussion on this is presented in Section 2.2 below.

The crash history for the intersection is moderate with no particularly pattern of crashes or concerns resulting from the visibility of the intersection from any direction.

The original ITA tested a number of potential land use scenarios and concluded that a roundabout would be appropriate to manage all of the traffic generated.

Following the notification of the plan change it was stated that in submissions, and in pre-hearing meetings, that an alternative access directly onto the State highway would be beneficial and concluded that this would have positive effects, outweighing the disbenefits. Subsequently the roundabout option at the SH45/Upper Wairau Road was removed in the proposal.

Also subsequent to the 25 March 2019 traffic assessment report the following has happened:

- 16th July – expert conferencing with NPDC representative, NZTA representative (ie Beca), landscape architect, AMTRANZ
- 22nd July – start of hearing in New Plymouth (adjourned 26th July)
- Further evidence submitted to NPDC on 11th October

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- Telephone conference with Beca, Applicant, Applicants Planner and Traffic Expert, NZTA Planner and NZTA Senior Safety Engineer to discuss evidence.

For all of the reviews the main concerns centre around:

- Ability of the intersection to cope with the increase in traffic volumes
- Safety of the intersection for vehicles
- Safety of the intersection for vulnerable road users.

To respond to the above some discussion needs to be included on the details in the original ITA, and follow up reports, as the scenarios to be assessed have changed over time and there is information in some documents that have not been carried through to the latest. These are documented below, however we have focused our conclusions on the statements above rather than any wider issues that have been raised.

2 Existing TIA Discussion

2.1 Land Use Scenarios

The original (ITA) assessed a number of land use scenarios including a 10 year growth rate on the State highway and the inclusion of growth within the other FUD zones in the area.

As far as can be concluded none of these additional sites had any notified development proposed. While the ITA was more than comprehensive in its intent, it was difficult to conclude as to the impact of just the proposed development, and it was agreed that any impact of wider development in Oakura, as a whole, should really be the role of the Council to assess.

Following on from the Expert Conferencing, and the hearing, the growth from the FUD zones has now been removed from the traffic assessment and the number of lots has been significantly reduced.

The yield is now stated as 144 rather than the original 399.

2.2 Trip Generation Rates

The number of trips that might be generated (and presented in the original report) by the development has been determined from surveying the current intersection and basing it on the existing dwellings. This is a reasonable methodology and does align with best practise research, however in New Zealand, the Trips Database Bureau's database is typically referred too for reference, along with other globally recognised databases such as TRICS or the ITE trips database. In this particular instance, also of interest is the New Zealand Transport Agency Research Report 453 - Trips and Parking related to Land Use (November 2011) known as RR453.

RR453 report showed that for residential developments there is some variation in trip making by sub-groups of houses, divided between household size or car ownership, and within each of the subdivisions surveyed, but it was not determined why this variation occurred. The 85th percentile figure of 10.4 vpd (in + out) per household was recommended as an appropriate figure for design and assessment purposes when considering the full range of households within a city. However, there are many suburbs where a lower figure is appropriate and suitable rates per household may need to be selected in different urban areas.

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It was noteworthy that car ownership did not appear to be the sole dictator of household trip making: for households with 1.8 cars, the trip rate varied widely, from about four to 13 trips per household per day.

The surveys showed that lower trip generation rates were typically found in more rural subdivisions. Surveys near Queenstown and Christchurch indicated daily rates of between 6 and 8vpd (in + out) per household, which could reflect an increase in trip linking which might occur when the primary employment trip is longer, e.g. greater than 20 minutes, as with rural lifestyle properties located in the outskirts of an urban area.

The research also looked at Census data from various centres (2006 data) and is shown in Figure 1 below. The Census data for New Plymouth shows that household car ownership is as high as centres such as Christchurch, Auckland, Palmerston North and Nelson.

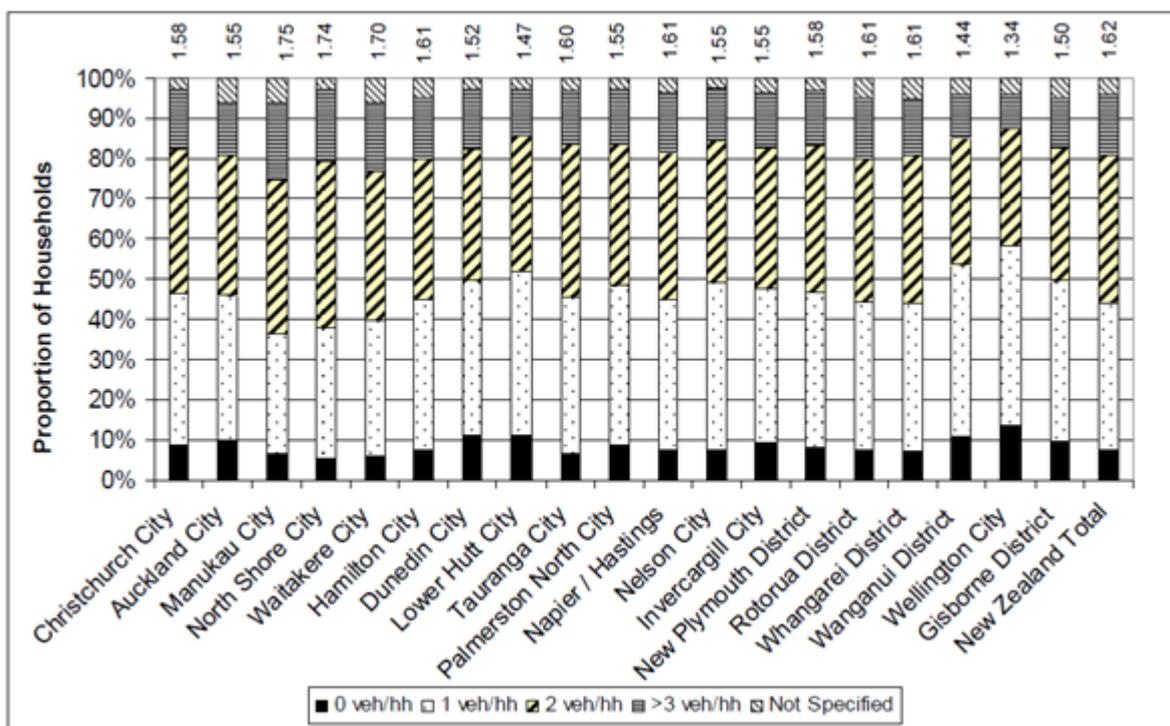


Figure 1 - Car Ownership (2006)

This indicates that the lower end of the trip generation rates used in the assessment may be more appropriate for Oakura due to the employment distances being greater than 20 minutes.

It is noted that in the latest evidence that the lower trip rate of 8.5 trips per household per day has been used however should this be challenged we have provided the evidence above.

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2.3 Intersection Performance

2.3.1 Capacity

The performance of the intersection has now been assessed using the trip generation rate for the new development and 144 lots.

The conclusion indicated that the existing intersection layout performed well. There is a slight increase in delay on the side roads but the overall performance remained at a level of service A or B.

2.3.2 Vehicular Safety

Based on the existing layout of the intersection the crash rate is calculated to be 0.1 injury crashes per year against an expected annual injury crash rate of 0.25 for a typical crossroads intersection, as per the NZTA High Risk Intersection Guide. As stated by AMTRANZ, the existing intersection is performing better than expected.

The original report mentioned that sight distance is restricted for some approaches but does not confirm what the sight distance requirements are, only that they are met. Given the 85% speed is 70km/h at the intersection, using Austroads Part 3: Geometric Design the sight distance required for vehicles at the SH45/Wairau intersection would be 92 metres (70km/h, Rt=2) ignoring minor grade corrections.

With the increase in traffic, assuming not improvements are made, the crash risk increases to 0.6 or a 35% increase, in annual injury crash risk. This is largely due to there being non compliance with the speed limit, as stated in the introduction, so the risk is based on the speed being around 70kph.

Due to this increase in risk, AMTRANZ are recommending the speed limit thresholds are moved further away from the intersection, and other traffic calming features, such as vertical planting and paint markings installed that will increase compliance by the time vehicles reach the intersection. If the speed at the intersection is reduced to 50kph then the crash risk is increased to 0.38 with the additional traffic – so an increase of 13%.

Subsequence conversations with the Transport Agency, however, have concluded that despite the agreement that the speed of traffic should be reduced, the process to relocate the speed limit threshold is complicated and could not be guaranteed.

Due to this it has been agreed, through various conversations, that while the legal posted speed limit threshold may not be able to be relocated, traffic calming features that assist with compliance, could still be installed at, or in advance, of the speed limit thresholds, reducing the crash risk as much as possible to the 0.38. It should be noted that this a similar result to installing a roundabout, as presented in previous reports.

The details of the traffic calming features and funding are still be agreed between the Transport Agency and the Applicant, but it is my opinion that this can be achieved.

2.3.3 Vulnerable Road User Safety

In addition to vehicular traffic there is an expectation that there will be an increase in the presence of pedestrians and cyclists. No figures of existing or future numbers have been presented in any of the previous reports but this has been concluded by there being a recommendation for the installation of more footpaths and the pedestrian refuge by AMTRANZ.

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An underpass was originally proposed but it was agreed at the Expert Conferencing that there may not be enough demand for one plus there are high costs to install and maintain such a facility and that alternative methods should be considered. It was agreed that if speeds could be reduced then at-grade facilities, similar to those already in Oakura, could be installed.

In the latest AMTRANZ report an at-grade pedestrian refuge on the northern side of the intersection was proposed. Unfortunately, and this was agreed at the video conferencing, the sight distance to the refuge is very poor and there is the potential for motorcyclists or other vehicles to overtake, or turn out of the side roads, and not see it.

It was agreed by all parties that a central refuge was not appropriate however there were options to reduce the crossing distances of pedestrians by reducing the turning radius from the side roads and installing side islands and road markings, and using road markings, to raise the conspicuity of the intersection.

The details of the design changes and funding are still be agreed between the Transport Agency, NPDC and the Applicant, but it is my opinion that this can be achieved.

2.4 Limited Access Road

While it was agreed in the Expert Conferencing that the additional access to the development, south of Oakura was not required and should be removed, the latest proposal still included a future access point directly onto SH45.

The Transport Agency are opposed to the inclusion of an alternative access for the following reasons:

- SH45 is a limited access road
- No evidence has been presented that provides a compelling reason for its inclusion.

At the location of the additional access SH45 is classified as a Limited Access Road. This is shown in the NPDC Operative District Plan and on the extract from Planning Map A61 below (Figure 2).

Note this was not mentioned in the any of the reports and a discussion on the implications of this follows in Section 2.4.1.

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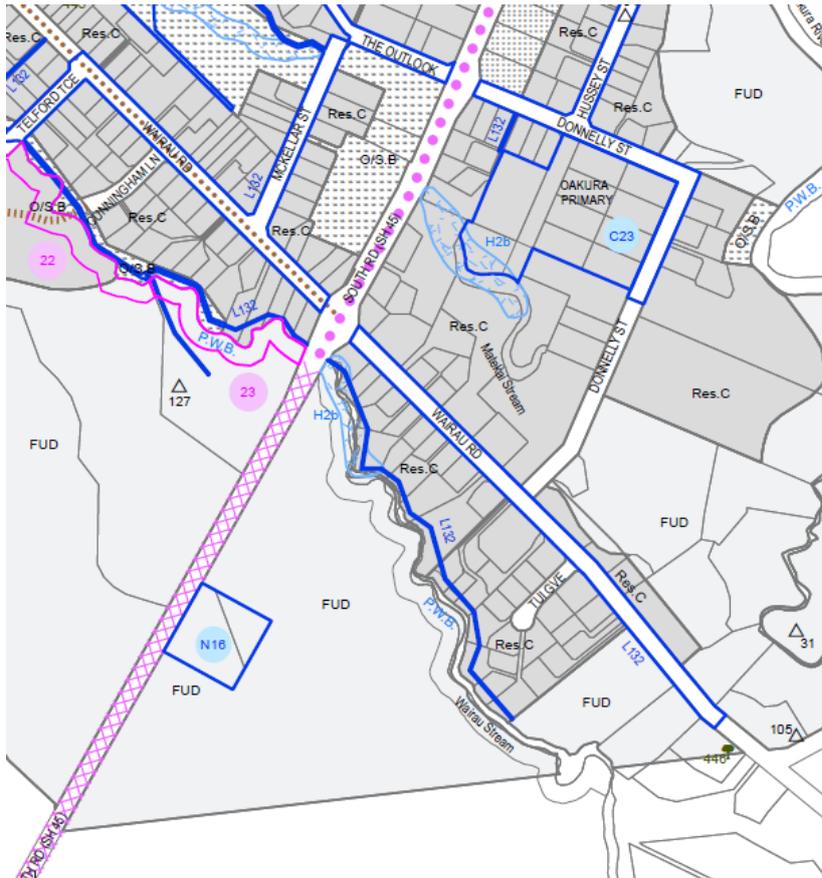


Figure 2 - Extract from Planning Map A61 (NPDC Operative District Plan)

2.4.1 New Zealand Transport Agency – Planning Policy Manual

The Planning Policy Manual was developed in 2007 to assist with Transit, now the NZ Transport Agency, to meet its objective of having regard to the effects of individual developments on the state highway network, as these can positively or negatively affect the safety and sustainability of state highways.

Development brings benefits to New Zealand by creating wealth, jobs and improved economic performance. However, new development usually generates additional traffic and this can potentially create adverse effects by:

1. reducing average vehicle speeds, increasing journey times and delays and trip variability;
2. increasing the number and/or severity of road accidents;
3. accelerating the need to upgrade the state highway network;
4. complicating future plans to upgrade a road, for example by adding new lanes or a central median barrier; and/or
5. creating environmental and social effects, such as increased pollution from vehicle emissions.

The cumulative effects of small-scale development are particularly difficult to manage within the provisions of the RMA. This is a concern for transport systems where each development may adversely impact levels of service, congestion and safety by only a small amount, but where the combination of a number of developments can result in significant adverse effects.

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There are a number of tools that can be used to manage the effects. One of these is Limited Access Roads.

The Government Roading Powers Act 1989 (TNZA) gives the Transport Agency powers to declare state highways to be Limited Access Roads (LAR). No person can lawfully drive or move a vehicle onto or from a LAR except at a road intersection that existed prior to the state highway being declared a LAR, a road intersection with a LAR that has been authorised by the Agency, or an identified crossing place that has been authorised by the Agency.

The Agency is required to authorise such a crossing place to and from a parcel of land that does not have reasonably practicable alternative legal access to some other road. However, even in those circumstances the Agency is only required to grant one crossing place, will specify the location of that accessway and can impose appropriate conditions on that accessway.

The Agency may use the LAR powers to prevent access to and/or from a LAR, including where the accessway is sought for a new development, where this may have an unacceptable adverse effect on the safety or functioning of the state highway. However, where the Agency considers a new accessway onto a LAR should not be authorised, it may still be possible for the development to proceed if alternative access arrangements via the local road network can be found.

Essentially there is an acceptable alternative access arrangement via Upper Wairau Road.

In addition, no safety or capacity/efficiency assessment has been provided other than in the March 2019 report, which made recommendations that the speed limit would need to be reduced.

We are aware that this section of State highway was identified by NZTA two years ago as part of their BOOST 1 programme. These were corridors that fell outside of the larger capital programmes.

The programme aims were to provide treatments for high risk corridors with lower traffic volumes (<5000). On these routes the primary crash type is run off road, but the crash location is hard to predict, so a low cost treatments are installed cost effectively across long lengths of corridor. Audible Tactile Pavement (ATP) was the typical treatment recommended.

SH45 Oakura to Hawera was identified in the top 30 high risk corridors. Unfortunately, the treatment has not yet been installed along this corridor but the corridor remains a medium risk.

In addition, as with the discussion for in Section 2.4.2 above, just relocating a sign is unlikely to improve safety and additional features and improvements would need to be incorporated to reduce the speed in advance of whatever intersection treatment is recommended.

2.4.2 Conclusion

In conclusion:

- SH45 is a limited access road.
- There is an alternative access.
- Safety along this corridor has been demonstrated by the Agency as being low
- It has not been demonstrated that this access would not have adverse affects on the state highway.

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Specifically, the assessment does not demonstrate that the development brings benefits to New Zealand by creating wealth, jobs and improving economic performance without:

- reducing average vehicle speeds, increasing journey times and delays and trip variability – in these are likely to increase through the reduction in posted speed limit and additional turning movements;
- increasing the number and/or severity of road accidents – these may increase through additional turning movements;
- accelerating the need to upgrade the state highway network – through additional speed management measures required or accelerating the increase in crashes etc;
- complicating future plans to upgrade a road, for example by adding new lanes or a central median barrier.

3 Summary

In general, the trips generated by the development has now been reduced, with the reduction in the yield for the site and it can be demonstrated that the existing intersection would perform to an acceptable level, even with 10 years of growth.

However, the safety risk of the SH45/Upper Wairau intersection is likely to increase with the additional development traffic and, in particular, with the existing approach speed. While the Transport Agency indicated that the legal speed limit threshold may not be able to be relocated, it has been agreed that there may be appropriate traffic calming features that could be installed to achieve an appropriate speed reduction at the intersection that is in context for Oakura.

In addition to reducing the speed of vehicles at the intersection, the increase in vulnerable road users, as a result of the development, requires improvements to be considered. The central pedestrian refuge proposed is not appropriate due to a significantly reduced sight distance, however it is considered that there were options. These include reducing the crossing distances of pedestrians by reducing the turning radius from the side roads, installing side islands and road markings, and using road markings to raise the conspicuity of the intersection.

The details of the design changes and funding are still be agreed between the Transport Agency, NPDC and the Applicant, but it is my opinion that these can be achieved.

Further, the provision of an additional access directly onto SH45 is contrary the designation of the highway, as a limited access road, and it has not been demonstrated that the benefits outweigh the disbenefits to performance of the state highway and that the original access is actually required. In addition, the safety record for this section of SH45 is already low and it has not been demonstrated as to how this will be mitigated, other than through some form of speed management, which is again contrary to the LAR.

Yours sincerely



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