

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of a submission by **AMBURY PROPERTIES LIMITED** on the **PROPOSED WAIKATO DISTRICT PLAN** pursuant to Clause 6 of Schedule 1 of the Act seeking the rezoning of land at Ohinewai

**JOINT WITNESS STATEMENT OF EXPERTS IN
RELATION TO TRANSPORTATION EFFECTS**

1. **INTRODUCTION**

- 1.1 On the 22nd and 23rd June 2020, expert conferencing sessions in relation to Transportation effects were undertaken by Robert Swears, Naomi McMinn, Vincent Kuo and Cameron Inder. This Joint Witness Statement is a record of the outcome of this session.
- 1.2 The session was facilitated by Hearing Panel members, Dr Phil Mitchell and Paul Cooney.
- 1.3 Also in attendance as observers were:
- (a) Emily Buckingham, planning consultant to the Waikato District Council;
 - (b) John Olliver, planning consultant for APL; and
 - (c) Ian Mayhew, planning consultant for Waikato Regional Council and Waka Kotahi NZ Transport Agency (NZTA).
- 1.4 Vincent Kuo notes that his expertise relates to Public Transport planning and operations, therefore his comments/input and agreement or disagreement in this Statement relates only to those matters associated with Public Transport.

Agenda - issues considered at conferencing

- 1.5 The issues identified as forming the agenda for the conferencing were:
1. Are the Transportation Models, WRTM and SIDRA, with the underlying assumptions and validation applied in the updated ITA appropriate for assessing capacity and performance effects of the transportation network? (CI 2.2)
 2. Appropriateness of the trip generation rates adopted in the updated ITA from the WRTM for the industrial, residential and commercial components of the Ohinewai Structure Plan (OSP). (CI 2.4)
 3. Is the adjustment factor for a mixed use development (internal vs external trips) as predicted by the WRTM for the OSP area, appropriate? (CI 2.6)
 4. Do the proposed rules in the District Plan for the OSP sufficiently restrict the ability for trip generation and related effects to exceed that assessed in the updated ITA, through further resource consents that require an ITA report?
 5. Are the modelled assumptions in relation to the trip distribution from the WRTM, with more trips assigned south than north, reasonable? (CI 2.8)
 6. Are the impacts of the Ohinewai Structure Plan development on the operation of the surrounding road network, including the Waikato Expressway, acceptable? (CI 2.10)
 7. Ability for the surrounding transport network to accommodate additional heavy traffic associated with the OSP if the rail siding was not constructed. (CI 2.12)
 8. Is the conclusion for no capacity-related upgrades being needed to the Ohinewai interchange, based on the updated ITA modelling and effects assessments, agreed? (CI 2.14)
 9. Are existing sight distances at the Ohinewai interchange intersections sufficient given the operating speed of conflicting vehicles on Tahuna Road? (RS 6.1)
 10. Are the interchange intersections appropriate to accommodate the turning paths of design heavy vehicles? (RS 6.4)

11. Are the proposals to enable future public transport accessibility to service the site appropriate for both the interim staged development period and future completed development? (CI 2.16)
12. The proposed walking and cycling infrastructure to/from and within the Ohinewai Structure Plan area, provide appropriate safe, practical and efficient connectivity to enable active mode travel to be a viable option for the main local trip desire lines. Is this agreed, recognising the design detail with safety audits will form part of future development resource consents within OSP area. (Paraphrased from CI 2.20 and NM 45-52)
13. Is the proposed Left turn slip lane and cycle way treatment to Ohinewai South Road agreed as an appropriate infrastructure connection to provide connectivity and reduce local trips on the expressway? (NM 89–92)
14. The proposed development including transport infrastructure upgrades enabling PT and connecting active mode travel to key local destinations sufficiently addresses the intent of the Regional Transport Policy Statement objectives and other strategic transport policies. (NM 75)
15. Appropriateness of the recommended reduced Speed Limits and extents on Lumsden Road, Balemi Road and Tahuna Road as part of the development proposal. (CI 2.19)
16. Are the internal speed limits appropriate? (NM 85)
17. Are the potential safety effects of the Lumsden Road realignment to accommodate the proposed rail siding level crossing, sufficiently addressed by the proposed mitigation measures? (CI 2.18)
18. Are the triggers for transportation infrastructure upgrades agreed, and do they appropriately align with the development staging plan? (CI 2.22)
19. Are the proposed internal road network and cross sections for the Ohinewai Structure Plan area appropriate for the purpose and transportation outcomes intended? (CI 2.24) (NM 86 – 88)
20. Are the proposed new intersection/access forms and locations for the development, sufficiently safe and appropriate for the intended use and predicted traffic volumes? (RS 6.8) (NM 79-82; 77-78)
21. Proposed mitigation for Tahuna Rd / Lumsden Road roundabout. (In part, RS 6.20 – 6.25) (NM 83 – 84)

22. Are the effects implications of the OLL land being identified in the District plan for possible future development, appropriately addressed? (CI 2.26)
 23. Are the effects implications of the SPL land being zoned Country Living, appropriately addressed? (CI 2.29)
 24. Adequacy of the proposed plan provisions developed by BBO to address any potential adverse transport effects. (CI 2.31)
 25. Are the on and off-ramp lengths at the Interchange adequate? (RS 6.26)
 26. Is the distance between the Ohinewai interchange and the Huntly Northern Interchange adequate for the traffic volumes associated with APL? (RS 6.30)
- 1.6 The following sections of this joint witness statement addresses each of these issues or questions, noting where agreement has been reached and, in the event of disagreement, the nature of the disagreement and the reasons for that disagreement.

2. **ISSUE ONE – TRANSPORTATION MODELS**

Are the Transportation Models, WRTM and SIDRA, with the underlying assumptions and validation applied in the updated ITA appropriate for assessing capacity and performance effects of the transportation network? (CI 2.2, NM 9-10, RS 5.2)

- 2.1 The experts agree that the WRTM is generally appropriate. Cameron - APL has validated and refined the WRTM as much as could be considered appropriate – to make it as accurate as possible. Naomi and Robert consider that there is no better tool available, and that the results from the WRTM are representative rather than being conservative;
- 2.2 Cameron considers that the modelling he has undertaken is conservative for the reasons set out in para 2.3(c) of his summary statement;
- 2.3 The experts agree that SIDRA is the most appropriate industry recognised tool for modelling individual intersections.

3. **ISSUE TWO– TRIP GENERATION RATES**

Appropriateness of the trip generation rates adopted in the updated ITA from the WRTM for the industrial, residential and commercial components of the Ohinewai Structure Plan (OSP). (CI 2.4, NM 11-15, RS 5.13)

- 3.1 Cameron – yes, appropriate as per para 2.5 of summary statement. Cameron confirmed that original trip generation was based on industry standards.
- 3.2 Robert – Agree as per para 5.15 – 5.18 of summary statement, that the reference sources are the industry go to documents but the surveys associated with them are not related to places like Ohinewai, they are typically based on urban locations (Ohinewai does not have features like other urban locations – e.g. high schools, supermarkets). To gain further confidence in the information, Robert considers it is desirable to either find an exemplar site (which may be difficult) from which to obtain trip generation information or undertake further sensitivity testing.
- 3.3 Cameron noted that he has undertaken sensitivity analysis (December 2019), which as discussed later in this statement he considers appropriately tests the reasonable bounds of 'what if'. Naomi noted this was not redone for the updated model (February 2020), Cameron acknowledges this but considers previous sensitivity tests are still applicable.
- 3.4 Naomi –the trip generation for the TCG factory component is well understood in the ITA. There is the potential for a range of activities in the industrial and the business zone (including service centre) to generate more or less trips than assessed. However, she expects that the resource consent process would assess the effects of this. See para 15 of Naomi's statement.
- 3.5 Robert, Naomi: The robustness of the trip generation rates affects certainty over mitigation measures (looking at whether the scale and timing of mitigation is identified correctly – not the detailed design of mitigation).
- 3.6 The experts agree that, with the exception of the Interchange ramps (see later), the type of transport upgrades already identified in the ITA are likely to be the ones required (with details to be confirmed at resource consent stage). However, if certain transport upgrades not currently identified as necessary are later shown to be necessary, these can be required at resource consent stage as long as plan provisions are drafted specifically to allow that.
- 3.7 Future resource consents will be required, and Cameron considers that to be the appropriate way of fine tuning mitigation measures. Robert and Naomi consider that the uncertainty could be adequately reduced by undertaking sensitivity testing on the updated WRTM and sensitivity scenario. Cameron – original sensitivity testing used higher rates for industrial and residential – and showed the proposed network upgrades are robust (Section 8.18 of the ITA, Issue 2) – he considers this was robust and conservative at the time.

The experts agreed to document and share with each other before the hearing their opinions with regard to sensitivity testing.

- 3.8 Cameron, John, Ian, Robert, Naomi okay with current modelling so long as there is a mechanism to reassess transport modelling and mitigation down the track within the planning provisions/consenting process if the fundamental assumptions behind the modelling change, rather than the nature and timing of the upgrades being locked in at the time of plan change.
- 3.9 Robert – this is subject to fundamental concerns about specific mitigations as noted elsewhere in this statement (for example, the location of the Tahuna/Lumsden roundabout).

4. **ISSUE THREE – TRIP ADJUSTMENT FACTORS**

Is the adjustment factor for a mixed-use development (internal vs external trips) as predicted by the WRTM for the OSP area, appropriate? (CI 2.6, NM 16, RS 5.19)

- 4.1 This issue is related to (Issue Two) above.
- 4.2 Cameron – modelling is based on 20-25% internal trips but may even be 30-40% internal trips based on what is trying to be achieved – it adds conservatism. 0% internal trip distribution is highly unrealistic.
- 4.3 Naomi – 20-25% internal trips is reasonable and representative as per summary statement.
- 4.4 Robert – depends on requirement for housing to be occupied by people working on the site, if this is not required then the trip adjustment factors should be working off a gravity model. Cameron confirmed the WRTM is a gravity-based model.
- 4.5 As above, allowing a mechanism in planning provisions for reassessment later is agreed as appropriate by all (John, Ian, Naomi, Robert, and Cameron, with Vincent expressing no opinion).

5. **ISSUE FOUR – DISTRICT PLAN PROVISIONS RELATED TO THE PREDICTED TRIP GENERATION**

Do the proposed rules in the District Plan for the OSP sufficiently restrict the ability for trip generation and related effects to exceed that assessed in the updated ITA, through further resource consents that require an ITA report?

- 5.1 See above.

6. **ISSUE FIVE – TRIP DISTRIBUTION**

Are the modelled assumptions in relation to the trip distribution from the WRTM, with more trips assigned south than north, reasonable? (CI 2.8, NM 18, RS 5.24)

6.1 The experts agree on this assumption/ trip distribution.

7. **ISSUE SIX – IMPACTS ON THE SURROUNDING ROAD NETWORK**

Are the impacts of the Ohinewai Structure Plan development on the operation of the surrounding road network, including the Waikato Expressway, acceptable? (CI 2.10, NM 19, RS 5.29)

Waikato Expressway

7.1 Background; the WRTM shows approximately 2,500 southbound onramp trips per day from the development adding to 10,000 southbound movements per day on State Highway 1 Expressway in 2041.

7.2 For the 2041 PM peak (2 hourly) – Cameron advised about half as many vehicles join the Expressway southbound as are on the Expressway southbound. 15% of these are to Huntly.

7.3 Robert (Para 5.27) - Fundamental issue is that the Ohinewai Interchange was not designed with the Ambury proposal foreseen. Also, as a fundamental principle, the Expressway should not be used for the local trips as a fundamental principle. More of a strategic issue but also has some level of service concerns as the Ohinewai Interchange and the Huntly Northern Interchange are close together (5-8 km is minimum desirable spacing – para 6.32).

7.4 Cameron – spacing is not a strong reason to oppose, as these interchanges are currently at that spacing and was assessed by NZTA as being acceptable (without Ohinewai volumes considered). Robert – NZTA decision at the time would not have been based on same information as is available now. That is, at the time the Huntly Northern Interchange was designed the Transport Agency would not have been aware of the Ambury proposal.

Surrounding Road Network

7.5 Semi-trailer NZ standard (RTS18 - 2007) tracking curve diagram shared by Cameron, shows it tracking close to the wingwall/ parapet, and not moving onto other lane.

- 7.6 Robert used 19.5 m high productivity motor vehicle (HPMV) semi-trailer tracking curve which showed need to move into other lane. Cameron will look at. Robert questioned effect on SIDRA model if turning HPMV needs to wait for both lanes to be clear? Cameron - a delay in turning already accommodated within SIDRA. Robert expects rail overbridge may need to be widened or completely replaced if required to avoid tracking curve encroaching into opposing lane and/or Tahuna/Lumsden roundabout merge taper encroaching onto the bridge as noted later.
- 7.7 Cameron and Robert disagree that the need for the tracking curve to enter the opposing lane is as significant as shown on Robert's diagram. Naomi - significant safety risk including to cyclists because there is no extra space or shoulder on the overbridge. Concerned that the tracking curves have no clearances (0.5 m each side). Cameron - HPMV occasional, risks to the likely low number of cyclists can be mitigated through signage. Robert and Naomi disagree.
- 7.8 Cameron considers that using 17.9 m semi-trailer tracking curve as per RTS18 is the appropriate design vehicle for tracking curves. Robert considers that because HPMV are legally permitted on roads, the tracking curve should be based on HPMV.
- 7.9 The experts did not reach agreement on adequate tracking curves but agreed that HPMV 19.4 m tracking curve may need to cross centre line to avoid clipping parapet/ wingwall. Likely that larger trucks do currently cross over the centre line in order to avoid abutment (may be useful to observe timber trucks to Lumsden turning at the off-ramp?).
- 7.10 The question is how significant is this: how many are there? What percentage of heavy commercial vehicles (HCV) are HPMV? Robert agreed to endeavour to provide this information from NZTA. Subsequent to conferencing, Robert advised that the information is not readily available (25/06/2020).
- 7.11 Cameron will investigate options to widen before the abutment for the tracking curve and report back offline to the other experts.

8. **ISSUE SEVEN – IMPACTS OF ADDITIONAL HEAVY COMMERCIAL VEHICLE TRAFFIC ASSOCIATED WITH OSP**

Ability for the surrounding transport network to accommodate additional heavy traffic associated with the OSP if the rail siding was not constructed. (CI 2.12, NM 28, RS 5.31)

- 8.1 In addition to the design issues that have been raised, all agree the modelling was done on the basis of no heavy traffic removed from the road via rail siding. It is also agreed that issues associated with surrounding transport network are covered under other items.

9. **ISSUE EIGHT – CAPACITY-RELATED UPGRADES**

Is the conclusion for no capacity-related upgrades being needed to the Ohinewai interchange, based on the updated ITA modelling and effects assessments, agreed? (CI 2.14, NM 30, RS 5.37)

- 9.1 Cameron – updated ITA shows there is some spare capacity in the interchange. OLL and Shand would need to be specifically considered by them.
- 9.2 Robert does not have sufficient information to draw any conclusion.
- 9.3 Naomi agrees that capacity related upgrades to the Ohinewai interchange are unlikely to be required based on the updated ITA assessment.

10. **ISSUE NINE – SIGHT DISTANCES AT THE OHINEWAI INTERCHANGE**

Are existing sight distances at the Ohinewai interchange intersections sufficient given the operating speed of conflicting vehicles on Tahuna Road? (RS 6.1, NM 23)

- 10.1 Robert – what is design operating speed; what is position from which sight distances should be observed; what things are obstructing sights and how can this be addressed.
- 10.2 Cameron - Feb 2020 measured operating speeds 55 km/h east side (85th percentile); also 60 km/h tube count westbound. 49 km/h eastbound coming out of roundabout 1hr speed gun survey, no tube count (Robert considers tube count would be useful).
- 10.3 Cameron – The ITA indicates that the achievable sight distance looking west from the southbound off-ramp when sitting 3 m back from the continuity line is 95 m.
- 10.4 At 5 m back from the continuity line, visibility is obstructed by Expressway overbridge parapet. Cameron recommended shifting the limit line forward 0.3 m to 0.5 m. Robert prefers to stick to design guidelines.
- 10.5 Robert – Concerned vertical curvature to east past rail overbridge means losing sight of approaching vehicle for drivers waiting at the Interchange.

Cameron believed the approaching vehicles can be seen adequately at the operating speed. To be discussed further.

- 10.6 Naomi concerned with existing safety issues and crash history (para 21) associated with vehicles on the off-ramp approaching the stop limit line and not stopping. Shifting the limit line as proposed may reduce the approach visibility to the stop limit line.
- 10.7 Cameron – crashes appear to be due to people not complying with the Stop sign. However, widening bridge to improve sightlines is very difficult.
- 10.8 No agreement reached but experts happy to address further prior to hearing.

Further discussion

- 10.9 Tube counts eastbound – to be done at agreed location for a week that is not during a school holiday period. Image below shows proposed position for anchoring counter; this is approximately midway between the western interchange roundabout and the southbound off-ramp.



- 10.10 Cameron - Likely speeds here about 40-45 km/h so why design for 60 km/h.
- 10.11 Westbound vehicle sightlines from off-ramp to be further investigated in light of Robert's observed dip. Raising Tahuna Road is a possibility if required.

11. ISSUE TEN –OHINEWAI INTERCHANGE INTERSECTIONS

Are the interchange intersections appropriate to accommodate the turning paths of design heavy vehicles? (RS 6.4)

- 11.1 Covered above in (Issue Six). See above.

12. **ISSUE ELEVEN – PUBLIC TRANSPORT PROVISION**

Are the proposals to enable future public transport accessibility to service the site appropriate for both the interim staged development period and future completed development? (CI 2.16, NM 33, RS 5.39, VK 4.5)

- 12.1 Vincent – agrees in principle that a PT connection to the site can be provided by the proposed public transport infrastructure, but is concerned that there is no certainty around whether a service will be provided, in what form, and the long walking distances between the residential area and the proposed bus stops. He noted that WRC has no plans or funding to provide additional services to the area. Interim connection to existing service is possible but provides limited value due to low frequency. He considers that the proposal should focus on the outcomes that are intended to be delivered by PT rather than physical connections. Availability of quality PT at early stage of development is important to encourage mode shift. Funding aside, thinks it is possible to come up with a good PT solution.
- 12.2 Cameron – creation of demand results in funding but we should not pre-empt what future funding mechanisms may or may not exist. Accepts a first-last mile issue with interim solution is needed. Thinks effort should be made to provide PT in peak hours. As demand increases, funding can be sought.
- 12.3 Cameron wants to get PT stops and connections in the right place. To provide on east side, with west side users having to go to east side if desired.
- 12.4 Cameron - 4-5% uptake of bus trips expected over long term, similar to Waikato elsewhere (but not taken off the trip generations).
- 12.5 Vincent - First-last mile solutions to access PT could include shuttle/demand response services, E-scooter or cycling.
- 12.6 No agreement reached, but further conversation to be had, Vincent and Cameron consider further discussions would be beneficial. Planners to be involved – who needs to do what and what an acceptable PT scenario would look like.

13. **ISSUE TWELVE – WALKING AND CYCLING INFRASTRUCTURE**

The proposed walking and cycling infrastructure to/from and within the Ohinewai Structure Plan area, provide appropriate safe, practical and efficient connectivity to enable active mode travel to be a viable option for the main local trip desire lines. Is this agreed, recognising the design detail with safety audits will form part of future development resource consents within OSP area. (CI 2.20, NM 45, RS 5.52)

- 13.1 Cameron – tried to create good connections internally. Serious practical constraints to connect over the Expressway to the west (width, soil strength, and crossing of on/off-ramps). Requires separate bridge to the south of the Interchange. This meets expected predominant desire lines.
- 13.2 Robert and Naomi – concerned at the average distance for walking to school and other trips being too long. Agrees that if only one overbridge then new overbridge to the south is the better location, but notes uptake may not be high.
- 13.3 Naomi concerned about certainty of connection being provided given it is on private land and reserve. She supports its early implementation as proposed in the staging provisions aligned with residential development (Stage 2A).
- 13.4 Robert – notes that potential active trips being made in motor vehicles may not be an operational traffic issue but affects the usage of the pedestrian connection.
- 13.5 Robert agrees the active modes are enabled.
- 13.6 All agree that the most appropriate location for an active modes connection should be to the south of the Interchange.
- 13.7 Naomi also suggests an additional shared path alongside northbound off-ramp to the Ohinewai Hall to connect to the current bus stop.
- 13.8 Naomi notes that the stop-bank path is not funded in the current WDC LTP.
- 13.9 Robert and Naomi agree that the local walking/cycling connection is in the most appropriate position, but the development site is fundamentally in the wrong location for encouraging multi-modal transport.
- 13.10 Cameron – APL looked at alternative sites nearer Huntly and no suitable land was available.

14. **ISSUE THIRTEEN – LOCAL TRIPS ON THE EXPRESSWAY**

Is the proposed Left turn slip lane and cycle way treatment to Ohinewai South Road agreed as an appropriate infrastructure connection to provide connectivity and reduce local trips on the Expressway? (NM 89)

- 14.1 Naomi – Agrees it provides an opportunity to divert some trips that would otherwise use the Expressway but sees it as limited benefit. Noted Council’s initial comments were that 50 km/h limit is unlikely to be supported, and the existing road surfacing may need improvement. Funding and maintenance responsibilities would need to be resolved.
- 14.2 Cameron – seen opportunity as a local road connection, reduces trips on Expressway. Provides an opportunity to pick up school children without having to travel on the Expressway. Believes it has some benefit at not high cost. It would be ultimately vested in Council.
- 14.3 Robert agrees in having merit of slip lane but considers 50 km/h speed limit unlikely to be appropriate.
- 14.4 Cameron confirmed length is 120 m single lane. Agreed by all that due to length, it is unlikely vehicles would travel the wrong way down the slip lane.
- 14.5 Agreed by all that the speed limit and design speed would/can be addressed later.
- 14.6 Cameron noted that it was not needed to address any particular effect, however it would reduce some local trips on the Expressway, so is shown in the ITA Table 31 mitigation measures for implementing at Stage 5a.

15. **ISSUE FOURTEEN – STRATEGIC TRANSPORT POLICIES**

The proposed development including transport infrastructure upgrades enabling PT and connecting active mode travel to key local destinations sufficiently addresses the intent of the Regional Transport Policy Statement objectives and other strategic transport policies. (NM 75)

- 15.1 Refer para 75 Naomi’s statement. To be considered by planners.

16. **ISSUE FIFTEEN – SPEED LIMIT PROPOSALS**

Appropriateness of the recommended reduced Speed Limits and extents on Lumsden Road, Balemi Road and Tahuna Road as part of the development proposal. (CI 2.19)

- 16.1 Robert – Raised questions regarding the most appropriate location for the speed limit on Tahuna Road to change from 60 km/h to 80 km/h, however noted that this could be determined at a later date.
- 16.2 Agreement that speed limits on Lumsden Road and Balemi Road are likely to be no more than 60 km/h. (Robert, Cameron, Naomi).
- 16.3 Speed limits relate to what the area is to become and design parameters used for the roads and intersection locations. Agreed that speed limits and a reduction to the operating speeds would be required to permit safe use of any mitigation that is based on a design speed lower than the existing speed limit and/or operating speed. (Robert, Cameron, Naomi).
- 16.4 Paragraphs 16.4 to 16.9 relate to the above but also to Issue Twenty One.
- 16.5 Robert considers that the intersection of Lumsden Road and Tahuna Road should be moved further to the east to accommodate a merge taper without conflicting with the rail overbridge (requires 197 m at 60 km/h as per Austroads design guide; refer paragraph 6.22 of Robert’s statement) and the residential roundabout (Access 2) intersection on Tahuna Road should be moved further to the west.
- 16.6 Robert considers this to be a significant safety issue – merge crashes and people going into and/or off bridge abutment/parapet/wingwall. Robert asked if Service Centre could be relocated to the other side (west) of Lumsden Road to accommodate moving the intersection east. Ultimately, no agreement reached.
- 16.7 Naomi agrees the length available to provide the merge taper between the roundabout and the rail overbridge is constrained. It may be acceptable to depart from design guidelines, but this would need to be confirmed through appropriate process, and recommends an early stage concept design safety audit to confirm whether the proposed roundabout upgrade is acceptable.
- 16.8 Cameron disagrees that it is a significant safety issue and effects can be mitigated with safety barriers. And considers it a capacity issue rather than safety issue to have the merge and taper as shown on the concept plan.

Unnecessary to undertake early design safety audit but is willing to have it done to progress the matter to agreement if possible.

- 16.9 All agreed that concept design stage safety audit should be carried out, with Cameron noting that he does not consider it actually necessary at this time.

17. **ISSUE SIXTEEN – INTERNAL SPEED LIMITS**

Are the internal speed limits appropriate? (NM 85)

- 17.1 Cameron, Naomi and Robert agreed there is no need to discuss this at this stage. WDC will set appropriate speed limits in due course.

18. **ISSUE SEVENTEEN – LUMSDEN ROAD REALIGNMENT**

Are the potential safety effects of the Lumsden Road realignment to accommodate the proposed rail siding level crossing, sufficiently addressed by the proposed mitigation measures? (CI 2.18, NM 37, RS 5.46)

- 18.1 Cameron – yes.
- 18.2 Robert considers that traffic modelling for Lumsden Road should take account of the proposed level crossing.
- 18.3 Cameron to find out the time taken for a train to clear the level crossing, to establish the extent of queuing on Lumsden Road.
- 18.4 Cameron – KiwiRail is in support and has agreed to a level-crossing on Lumsden Road. A road realignment is needed to achieve the KiwiRail design angle requirements of between 70 and 90 degrees to the rails.
- 18.5 Naomi – level crossing introduces safety risk. The concept stage safety audit raised two moderate concerns: sightlines at Balemi Road intersection with Lumsden, and the short distance between the North Island Main Trunk Rail (NIMT) and Lumsden Road meaning that southbound through trains on NIMT might trigger the Lumsden Road level crossing warning system without a train using the crossing. The Safety Audit included Designer Responses but had no further comments. Cameron advised it has not yet been submitted to WDC as RCA to obtain Safety Engineer responses.
- 18.6 Sightlines at Balemi Road; there are no planning provisions proposed to protect these – Naomi and Cameron agree these are required.
- 18.7 Short distance between NIMT and level crossing; Naomi has concerns relating to whether this is acceptable to KiwiRail Safety Engineer. Overall,

despite KiwiRail National Manager supporting 'suitable approved' crossing, Naomi is still concerned about the likelihood/certainty that the level crossing will be acceptable to KiwiRail at time of implementation given the KiwiRail website states that grade separated crossings are preferred.

- 18.8 Cameron – Satisfied that KiwiRail is supportive and the concept stage safety audit indicates there are no show-stopper safety issues.
- 18.9 All agree that rail siding is a good idea if there are no unacceptable safety and/or efficiency effects, but no specific agreement reached.

19. **ISSUE EIGHTEEN – TRIGGERS FOR TRANSPORTATION INFRASTRUCTURE UPGRADES**

Are the triggers for transportation infrastructure upgrades agreed, and do they appropriately align with the development staging plan? (CI 2.22, NM 53, RS 5.71)

- 19.1 Cameron – yes.
- 19.2 Robert – not enough certainty to say appropriate, both with respect to nature of upgrades and timing.
- 19.3 Naomi – still some refinement required, but align reasonably. E.g. proposed Access 1 on Tahuna Road, there are concerns with the left in-left out because it is the first access to be developed in the staging and the roundabout (Access 2) on Tahuna Road is proposed in Stage 4.
- 19.4 Naomi – staging plan does not show the internal road connection to Stage 2 residential development as part of Stage 2 residential development. Cameron acknowledges this and proposed to update staging plan accordingly.
- 19.5 Robert – considers it would be useful if other triggers (e.g. traffic volumes) were applied to enable flexibility.
- 19.6 Cameron - issue with practicality/administration of monitoring traffic volumes.
- 19.7 Vincent supports the interim bus stop provision on Tahuna Road in the staging table (refer to ITA Table 31). The proposed bus stop facility within the APL site (adjacent to DFOs) is not included in the table and further detail should be provided.

- 19.8 Naomi – the ITA states that the Lumsden/ Tahuna roundabout upgrade is triggered by 1,000 vph but this is not included in the planning provisions.
- 19.9 No agreement reached but liaison between traffic engineers and planners may be beneficial.

Further discussion

- 19.10 Tahuna Road Discount Factory Outlets (DFO) – Cameron supports left in left out at Access 1. Robert suggests left in only with exit movements on to Lumsden Road. If left turn out to Tahuna Road is permitted, the roundabout to the east on Tahuna Road is likely to be too far away for it to be used for U-turn manoeuvres.
- 19.11 Cameron – roundabout at the location proposed will mark where the urban environment begins for westbound traffic on Tahuna Road. Robert and Naomi have concerns regarding the two left turn ins (Service Centre and DFO) in close proximity to each other and the proposed zebra pedestrian crossing. Mismatch noted between ITA plans, masterplan, and structure plan. Cameron to update these to make consistent.

20. ISSUE NINETEEN – INTERNAL ROAD CROSS-SECTIONS

Are the proposed internal road network and cross sections for the Ohinewai Structure Plan area appropriate for the purpose and transportation outcomes intended? (CI 2.24, NM 86, RS 5.74)

- 20.1 Cameron – Considers these to be appropriate for the purpose intended.
- 20.2 Naomi – Commercial Roads 1 and 2 acceptable. Residential Road 1 acceptable since shared path facilities provided elsewhere for connectivity and safety.
- 20.3 Naomi - Concerned with reduced seal width in Residential 3 cross section where applied to serve more than 20 lots. It is appropriate for low volume roads with <20 lots. For 20-100 lots, considers a minimum 17 m road reserve width and 8 m seal width is needed.
- 20.4 Naomi - Concerned about Commercial Road 3 cross section - swept paths of cars accessing 90° car park spaces (see para. 62-63), and to what extent the usable 4 m path width (adjacent to the commercial development) would be reduced by car overhang and possible café tables (para 58).
- 20.5 Naomi and Cameron to discuss further.

21. **ISSUE TWENTY – PROPOSED INTERSECTIONS / ACCESSES**

Are the proposed new intersection/access forms and locations for the development, sufficiently safe and appropriate for the intended use and predicted traffic volumes? (NM 77, RS 6.8).

- 21.1 There is disagreement around the location and forms of the Tahuna Road intersections - also discussed above (Issue Eighteen). Cameron to prepare a plan showing the context for the Tahuna Road layout of accesses and the zebra pedestrian crossing, and provide to other experts once completed.
- 21.2 Cameron considers enough work has been done to show a workable concept for all intersections, and that further design can be appropriately addressed at resource consent stage. Cameron considers it important to retain flexibility for detailed design. All that needs to be indicated on the Structure Plan is the approximate positions and likely form of intersections.
- 21.3 Naomi notes that the Service Centre access has not been assessed in the updated ITA and is only shown on the Business Area Structure Plan inset.
- 21.4 It is agreed by the experts that there is a need for the Service Centre accesses to be assessed and confirmed at resource consent stage.
- 21.5 There is disagreement as to whether there should be a left out to Tahuna Road at Access 1. Cameron considers it is efficient to provide for this. Robert considers that left in only is appropriate; he is concerned that the distance to the proposed eastern roundabout (Access 2) is too great for drivers wanting to turn right to U-turn. Robert suggested moving the Access 2 roundabout to the west. However, the experts were made aware that this may exacerbate concerns identified by the urban design experts.
- 21.6 Naomi raised concerns that during the initial stages of development, the only Tahuna Road access proposed is Access 1 (left in left out access). She is less concerned after the roundabout (Access 2) is provided in Stage 4. There is a risk that the roundabout will never be triggered if Stage 4 development does not proceed.
- 21.7 Robert suggested an extra residential roundabout to the east on Tahuna Road would support a 60 km/h speed limit adjacent to the development.
- 21.8 Cameron considers that an extra residential roundabout is not justified by the expected traffic volumes.

- 21.9 Naomi suggested that the vehicle crossing to Lumsden Road for the Sleepyhead factory should be shown on the Structure Plan. The need for and location of the Service Centre vehicle crossings would be assessed at resource consent stage.
- 21.10 The experts agree, if plan provisions require the road intersections to be provided in general accordance with the Structure plan, with flexibility to move locations from what is shown, the detail can be determined at later resource consent stage (given there is nothing fundamental identified that intersections absolutely have to be in a certain location). All agreed that vehicle crossings for direct vehicle movements between properties and Lumsden Road should be assessed on their merits at resource consent stage. There is a need to ensure a resource consent is triggered so these are assessed. All agree that vehicle crossings for direct vehicle movements between Tahuna Road and private properties should not be allowed apart from the Service Centre one, which is to be assessed on its merits (provision to this effect is currently in Residential provisions, not in Business provisions). No agreement was reached about the existing vehicle crossing on Tahuna Road that provides access to the beehives and whether this should be allowed to remain. Cameron considers it should remain as it is existing and serves a rural activity. Robert and Naomi consider access should be provided through the site.

22. **ISSUE TWENTY-ONE – PROPOSED MITIGATION FOR TAHUNA ROAD/ LUMSDEN ROAD ROUNDABOUT**

Proposed mitigation for Tahuna Rd / Lumsden Road roundabout. (NM 83, RS 6.20)

- 22.1 Robert - considers the distance between the rail overbridge and the Tahuna/Lumsden roundabout is inadequate to accommodate two lanes and a suitable merge taper (refer also to Issue Fifteen above). He considers the length to the end of the merge taper should be at least 197 m based on a 60 km/h design speed.
- 22.2 Cameron – considers that the peak hour is when the merge would be used and operating speeds in the peak hour are likely to be in the order of 30 km/h, therefore, a shorter taper/lane is appropriate.
- 22.3 As discussed in Issue Fifteen above, Naomi and Robert asked that the roundabout design is safety audited at the concept design stage, in advance of the hearing, to obtain an independent view regarding the adequacy of the

two lanes and the merge. Cameron agreed to provide the safety audit although he does not consider it to be necessary at this time.

22.4 The experts agree that the merge taper needs to have ended in advance of the rail overbridge abutment /parapet /wing-wall for safety reasons, and that the overbridge is a significant constraint.

22.5 The experts consider that there are solutions available should a safety audit identify issues that need to be addressed. All the experts understand that if widening of Tahuna Road is needed, beyond the eastern abutment/parapet/wing-wall, it is likely that replacement of the rail overbridge would be required.

23. **ISSUE TWENTY-TWO – IMPLICATIONS OF THE DEVELOPMENT OF OHINEWAI LANDS LTD LAND ZONING**

Are the effects implications of the OLL land being identified in the District plan for possible future development, appropriately addressed? (CI 2.26, NM 64, RS 5.76)

23.1 Cameron – considers OLL would be required to address the transport implications of their development at the time of the proposing rezoning of the OLL site. He noted that the APL proposal does not prevent the development of the OLL site and that the Access 2 roundabout could be used to provide access to the OLL site.

23.2 Robert – has concerns regarding the adequacy of the mitigation likely to be identified based on the incremental effects associated with OLL and Shand. He considers it important to make sure suitable and adequate mitigation is available if OLL and Shand proceed with the development that may become possible if their sites are rezoned.

23.3 Naomi agrees that the APL proposal does not preclude OLL from developing, but that there is potential for incremental adverse effects. Naomi understands that OLL is not seeking rezoning at this time.

23.4 The experts agreed that it was not practical to continue with meaningful discussion in relation to the OLL development without OLL being present. The experts agreed to address in their respective statements of evidence.

24. **ISSUE TWENTY-THREE – IMPLICATIONS OF THE SHAND PROPERTIES LTD LAND ZONING**

Are the effects implications of the SPL land being zoned Country Living, appropriately addressed? (CI 2.29, NM 67, RS 5.79)

24.1 Further to the points raised in Issue Twenty-Two above, Robert is concerned about the potential for active mode trips between the Shand site and the APL site. He considers there is potential for the APL site to attract movements from the Shand property and, in particular, the potential for pedestrians and cyclists on the Interchange overbridges and pedestrians attempting to cross the Expressway at-grade.

24.2 All agreed that the matter is most appropriately addressed by Shand at the hearing.

25. **ISSUE TWENTY-FOUR – ADEQUACY OF DISTRICT PLAN PROVISIONS TO DEAL WITH TRAFFIC EFFECTS**

Adequacy of the proposed plan provisions developed by BBO to address any potential adverse transport effects. (CI 2.31, NM 70, RS 5.82)

25.1 Refer to issues addressed in this JWS and to the JWS for the planning conferencing.

25.2 Naomi noted that the proposed plan provisions refer to Waikato District Council as a potential funder of transport infrastructure. She noted that Table 31 of the updated ITA identifies other parties as potential funding contributors. Naomi considers that this is a matter that needs to be evaluated by the planners and potentially addressed through the planning provisions.

26. **ISSUE TWENTY-FIVE – ADEQUACY OF THE ON AND OFF-RAMP LANE LENGTHS AT THE INTERCHANGE**

Are the on and off-ramp lengths at the Interchange adequate? (RS 6.26)

26.1 Robert - noted that the ITA refers only to the southbound off-ramp length and then only in relation to the deceleration of cars. He considers that analysis of the adequacy of all ramps at the Interchange needs to be described in the ITA with particular regard to the acceleration and deceleration characteristics of the types of vehicles that will be using the Interchange (including heavy vehicles).

- 26.2 Cameron – stated that the southbound off-ramp is the shortest of the two off-ramps and, being stop controlled, is the more critical of the two off ramps. The ITA shows the 95th percentile queue length under full development of the APL site is 68m less than the maximum desirable queue while still providing the recommended deceleration length for cars travelling at 110 km/h. Stopping Sight Distance for heavy vehicles (248 m) from the southbound expressway to the back of the maximum allowable queue is easily achieved. He considers this forward sight distance is sufficient to allow drivers of heavy vehicles to see the back of queue ahead and decelerate in the mainline (that is, in the through lanes of the Expressway on approach to the off-ramp), which Cameron considers is consistent with Austroads design guidance.
- 26.3 Robert agrees that if the length of the southbound off-ramp is adequate the northbound off-ramp will also be adequate by default. He currently considers the lengths of the on-ramps are unlikely to be sufficient to allow heavy vehicles to accelerate to 90 km/h before needing to merge with through traffic on the Expressway.
- 26.4 Cameron agrees the assessment described in the ITA can be clarified; he will provide more information to determine if there is an issue. Agreed that Cameron, Naomi and Robert will discuss this matter further in advance of the hearing.

27. **ISSUE TWENTY-SIX – INTERCHANGE SPACING**

Is the distance between the Ohinewai Interchange and the Huntly Northern Interchange adequate for the traffic volumes associated with APL? (RS 6.30)

- 27.1 No agreement reached. Refer to paragraphs 7.1 to 7.4 under Issue Six of this statement.

28. **UNANIMOUS AGREEMENT OF EXPERTS**

- 28.1 The experts unanimously agreed that Emily Buckingham and Rhulani Baloyi provided invaluable support and assistance to them as the experts prepared this Joint Witness Statement.

29. **PARTIES TO JOINT WITNESS STATEMENT**

- 29.1 The signatories to this Joint Witness Statement confirm that:

(a) They agree with the outcome of the expert conference as recorded in this statement;

- (b) They have read Appendix 3 of the Environment Court's Practice Note 2014 and agree to comply with it; and
- (c) The matters addressed in this statement are within their area of expertise.

SIGNATURES:



Robert Swears

Date: 26 June 2020



Naomi McMinn

Date: 26 June 2020



Vincent Kuo

Date: 26 June 2020



Cameron Inder

Date: 26 June 2020

IN THE MATTER of the Resource Management Act 1991 ("RMA" or "the Act")

AND

IN THE MATTER of a submission by **AMBURY PROPERTIES LIMITED** in respect of the **PROPOSED WAIKATO DISTRICT PLAN** pursuant to Clause 6 of Schedule 1 of the Act seeking the rezoning of land at Ohinewai

SUMMARY STATEMENT OF CAMERON INDER IN RESPECT OF TRAFFIC AND TRANSPORTATION IN PREPARATION FOR EXPERT CONFERENCING

1. INTRODUCTION

- 1.1 My name is Cameron Beswick Inder. I am a transportation engineer and the Transportation Engineering Manager at Bloxam Burnett & Olliver (BBO). I have 20 years' experience in transportation and traffic engineering matters associated with resource management, including effects assessments for resource consents, Plan Changes and District Plan Structure Plans.
- 1.2 I also have experience in the design of traffic infrastructure and facilities, road safety engineering, traffic calming, urban design, subdivision design, and traffic modelling. I have been advising Ambury Properties Limited in relation to traffic and transportation issues to its submission seeking a rezoning of land at Ohinewai.
- 1.3 I managed the preparation of the Integrated Transport Assessment (December 2019, and updated in May 2020) in relation to the Ohinewai proposal and have had several discussions with representatives of the Waikato District Council and the New Zealand Transport Agency in relation to traffic planning and potential traffic effects.
- 1.4 I will be presenting expert evidence at the hearing of the Ohinewai submissions. That evidence is due in July 2020. In the meantime, this statement has been prepared in preparation for expert conferencing in

relation to traffic and transportation that has been scheduled for 22 and 23 June 2020, in compliance with the direction from the Hearing Panel that APL is to provide a summary of its position on the topics that are to be the subject of expert conferencing.

Scope of statement

- 1.5 As a basis for expert conferencing, this statement will:
- (a) Identify what I see as being the key issues for determination in relation to traffic and transportation and set out my expert opinion on that issue and the reasons for my views (Section 2);
 - (b) Set out my key conclusions (Section 3).

Expert Witness Code of Conduct

- 1.6 I have read the Code of Conduct for Expert Witnesses, contained in the Environment Court Consolidated Practice Note (2014) and I agree to comply with it. I can confirm that the issues addressed in this statement are within my area of expertise and that in preparing my statement I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

2. KEY ISSUES RELEVANT TO TRAFFIC AND TRANSPORTATION AND MY OPINION ON THESE ISSUES

- 2.1 I have worked with Mr Olliver and others to identify the key issues that need to be determined in relation to traffic and transportation matters for the proposed plan change. The key issues are those that I understand are not agreed, based on the s42A report and discussions with other parties. The purpose of this section is to set out the issues and then my expert opinion in relation to that issue, including the reasons for my opinion.

Transportation models

Issue

- 2.2 The key issue here is whether the transportation models (Waikato Regional Transportation Model (WRTM) with performance evaluations using SIDRA), including their underlying assumptions and validation as used in the Updated ITA, are an appropriate representation of what can be expected to occur in future.

My opinion and reasons

2.3 In my opinion, these models do provide an appropriate representation of what can be expected to occur in future for the following reasons:

- (a) The WRTM's baseline traffic volume projections include all known permitted and anticipated land use developments within the Waikato region. Unlike undertaking an effects assessment on the basis of trip generation and distribution first principles, the WRTM incorporates the effect of these other developments on the performance of the Waikato Expressway (WEX), the Ohinewai Interchange and the local road network affected by the trip generation associated with the Ohinewai Structure Plan (OSP) area.
- (b) Furthermore, the WRTM includes all planned road construction/upgrade projects of influence in the region such as the Huntly and Hamilton sections of the WEX. The corresponding change in travel behaviour/ travel patterns as a result of these planned road projects and the effect on the performance of the transportation network are incorporated within the WRTM.
- (c) The WRTM does not include other forms of transportation such as rail (including freight and passenger rail), public transport, walking and cycling. On this basis, the WRTM is considered to provide a conservative estimation of the trip generation associated with the OSP area as there is no reduction in road trips for other transport modes.
- (d) The 2013 Base Year WRTM (2,500 zone WRTM) was not initially well calibrated for the OSP area on the basis that the traffic volume projections for 2021 were significantly lower than the actual observed average daily traffic (ADT) volumes along the section of the WEX through Ohinewai, Te Kauhwata and Huntly in 2018. As a part of this assessment, the WRTM was recalibrated using 2018 traffic data for the expressway in proximity to Ohinewai from the NZTA's TMS website as well as new surveyed volumes at the on- and off-ramps and some local roads in August and December 2019 as calibration input data. The resulting 2018/19 "pseudo" base year model was considered to be sufficiently calibrated for purposes of the rezoning proposal as the modelled traffic volume figures generally reflected the observed/counted traffic volumes; furthermore, the GEH

statistic¹ showed that there is a good match between the modelled and observed hourly traffic volumes.

- (e) Given the likely interaction of the OSP area with the neighbouring townships, the validation area for the 2018/19 base year model was expanded to include Te Kauwhata and Rangiriri in the north, and Huntly in the south. This ensured that the local as well as wider transportation effects of the rezoning proposals were assessed.
- (f) From there, the proposed OSP land-use was input to the model to identify the projected future traffic volumes and trip distribution on the local network at Ohinewai.

Trip generation rates

Issue

- 2.4 Are the trip generation rates adopted in the Updated ITA from the WRTM for the industrial, residential and commercial components of the Ohinewai Structure Plan appropriate?

My opinion and reasons

- 2.5 In my opinion, the trip generation rates adopted are appropriate for the following reasons:
- (a) The WRTM based trip generation rates for the industrial, residential, and commercial components of the OSP area generally reflect trip rates specified by widely adopted trip generation manuals and related reports². With the exception of the residential component of the OSP area, the WRTM predicts higher trip rate figures for the key land use activities within the OSP area compared to these trip generation manuals and reports.
 - (b) Furthermore, when compared to the trip rates derived from WRTM based effects assessments for similar mixed land-use plan change projects³, the WRTM based trip generation rates for the various land use activities within the OSP area were found to be comparable.

¹ The GEH Statistic is a formula used in traffic engineering, traffic forecasting, and traffic modelling to compare two sets of traffic volumes.

² These include the Institution of Transportation Engineers (ITE) Trip Generation Manual's employment-based and GFA-based trip rates, the RTA Guide to Traffic Generating Developments, the New Zealand Trips and Parking Database, and the NZTA Research Report 453 (Trips and parking related to land use).

³ Including the consented Ruakura Plan Change project, and the approved Te Awa Lakes rezoning.

- (c) On the basis of the above, the WRTM's trip generation rates are considered to provide a conservative estimation of the prediction trip generation for the OSP area.

Trip adjustment factors

Issue

- 2.6 Is the adjustment factor for a mixed use development (interval vs external trips) as predicted by the WRTM based assessment for the OSP area, appropriate?

My opinion and reasons

- 2.7 In my opinion, the WRTM's trip adjustment factor of 20-25% internal trips is not appropriate for the following reasons:
- (a) The residential and commercial components (with the exception of the discount factory outlet centres) of the OSP area were intended to:
 - (i) Firstly, serve and support the industrial components of the OSP area and Ohinewai West, and
 - (ii) Secondly, serve the local neighbouring communities (Huntly, Hamilton, Te Kauwhata, etc.).
 - (b) The low internal trips figure from the WRTM (20%-25%) was related to the model being gravity based; this means that a large employer like the proposed Sleepyhead factory attracts trips from all nearby external zones with housing, and because of the much larger size of these external housing zones, more trips are assigned to them than the houses that are adjacent to the employment. This is evident from the origin-destination (O-D) outputs from the WRTM which indicate a more significant attraction to/from these neighbouring communities (including communities located within a 30km radius from the OSP area, e.g. Pokeno, Pukekohe, south Hamilton) than to the internal residential zones within the OSP area. Given the proximity of the residential component to the industrial/commercial components, and because the housing will all be new, and a high level of amenity is planned for residents in the OSP area, I would expect there will be a stronger trip attraction between the internal residential zones and the industrial/commercial components external residential zones.

- (c) Furthermore, the gravity-based model does not consider site-specific factors such as housing affordability, the type of housing or the attractiveness of the community as a place to live.
- (d) On that basis, it is my opinion that the WRTM over-estimates the external proportion by households and I anticipate that the external proportion of trips will more likely be in the region of 60% to 70%. Nonetheless, for a conservative assessment, the WRTM's internal vs external trip figures were applied.

Trip distribution

Issue

- 2.8 Are the assumptions in relation to the trip distribution from the WRTM, which has more trips assigned south than north, reasonable?

My opinion and reasons

- 2.9 In my opinion, these assumptions are reasonable for the following reasons:
- (a) An assessment of the future population and employment growth projections for both major and minor centres located within a 30km radius of the OSP area showed that future growth within the Waikato region is projected to be more towards the south, with approximately 80% of the overall growth in the district expected along the southern population centres such as Huntly and Hamilton City.
 - (b) The location of the proposed development is such that it will form part of the larger Huntly community. On this basis, a larger proportion of the trip generated by the proposed development will travel south to Huntly.
 - (c) The trip distribution generally reflects the existing travel patterns observed at the Ohinewai Interchange derived from 2019 traffic survey data collected within the vicinity of the OSP area.

Impacts on the surrounding road network

Issue

- 2.10 Are the impacts of the Ohinewai Structure Plan development on the operation of the surrounding road network, including the Waikato Expressway, acceptable?

My opinion and reasons

2.11 In my opinion, the impacts of the Ohinewai Structure Plan development on the operation of the surrounding road network are acceptable for the following reasons:

- (a) The effects assessment concludes that the effects of the OSP development traffic on the surrounding road network will be more than minor if no mitigation is planned for in terms of intersection capacity and improved safety, and convenient connectivity for walking and cycling trips to Ohinewai West and Huntly. With the implementation of the recommended mitigation measures as outlined in the ITA, the effects of the OSP development traffic on the network will be appropriately mitigated to a minor and acceptable level.
- (b) Sensitivity testing confirms that the proposed mitigation measures are robust and will remain appropriate for various realistically possible trip generation and distribution assumptions.
- (c) The effects assessment further confirms that sufficient capacity will remain for other potential developments within the Ohinewai area on the basis that the effects assessment was based on the WRTM's conservative estimation of the OSP developments traffic generation and internal vs external trip estimations.

Issue

2.12 Is the surrounding transport network able to accommodate additional heavy traffic projected to be generated by the industrial and commercial components of the Ohinewai Structure Plan if the rail siding was not constructed?

My opinion and reasons

2.13 In my opinion, the transport network will be able to accommodate additional heavy traffic projected to be generated by the industrial and commercial components of the Ohinewai Structure Plan if the rail siding was not constructed for the following reasons:

- (a) Given that the WRTM based assessment does not account for rail-based freight trips (effectively all freight trips were modelled as trips on the road network), the effects assessment already shows that the proposed mitigation measures will be able to accommodate the

heavy vehicle traffic projected to be generated by the industrial and commercial components of the OSP.

- (b) In reality, the implementation of the rail siding will effectively help to reduce traffic capacity and operations effects at the Ohinewai Interchange and the intersection of Tahuna Road and Lumsden Road, over that demonstrated in the ITA and subject to the proposed mitigation.

Need for capacity-related upgrades

Issue

- 2.14 The Updated ITA concludes that no capacity-related upgrades to the Ohinewai interchange are required based on the WRTM trip generation and distribution. Is this a reasonable conclusion?

My opinion and reasons

- 2.15 In my opinion, it is reasonable to conclude that capacity-related upgrades to the Ohinewai interchange are not required on the basis that:
- (a) Despite the conservative trip generation predictions in the 2041 WRTM, the effects assessment show that capacity-related upgrades for the Ohinewai Interchange will not be required.
 - (b) Sensitivity testing for various realistically possible trip generation and distribution alternatives showed that the existing interchange configuration has sufficient capacity to operate without adverse effects that are anything more than minor.
 - (c) Capacity upgrade solutions at this interchange involve significant infrastructure works that will be both complex and expensive to achieve. The updated ITA demonstrates that the effects of the total development traffic are likely to be no more than minor, and therefore such upgrades are not justified.

Public transport accessibility

Issue

- 2.16 Are the proposals to enable future public transport accessibility appropriate?

My opinion and reasons

2.17 In my opinion, the proposals to enable future public transport accessibility are appropriate on the basis that:

- (a) The proposal of an interim bus stop on Tahuna Road would allow for a bus service to be provided at an early stage of development, ensuring that public transport becomes an integral part of the transport options for residents and workers from day one.
- (b) Both the interim and long-term public transport proposals offer ease of access for current and future users and a convenient and quick route to minimise delays to the services.
- (c) WRC has since clarified (post updated draft ITA) that it would be possible to add a PT stop at Ohinewai near or within the development, utilising the existing off-peak service between Hamilton and Pukekohe and/or the existing limited frequency peak service between Te Kauwhata and Hamilton.

Lumsden Road realignment

Issue

2.18 Is the realignment of Lumsden Road to provide for the rail siding and associated level crossing acceptable?

My opinion and reasons

2.19 In my opinion, the proposal to realign Lumsden Road to provide for the rail siding and associated level crossing is appropriate on the basis that:

- (a) The introduction of the level crossing on Lumsden Road needs to be seen in the context of the overall urbanisation of this section of road, associated with the OSP development. The urbanisation works will result in lower operating speeds on the section between Balemi Road and Tahuna Road from that which currently exist. With the envisaged future speed limit (60km/h) for this urbanised section of Lumsden Road, together with the geometry of the approach curves and provision of safety barriers and street lighting, plus appropriate advanced warning signs and markings, the associated safety risks are considered to be appropriately mitigated.
- (b) The rail crossing would, however, only be established once 50% of the manufacturing factory and 50% of the light industrial land is developed (development Year 6)– at this point, the area surrounding

Lumsden Road will be urbanised. This will avoid providing out of context curves on the road.

- (c) An independent road safety audit (RSA) of the concept design of the road realignment and level crossing identified only moderate and minor concerns that have been addressed in the updated design drawings in the updated ITA report, together with the RSA and designer responses.

Walking/cycling connections

Issue

- 2.20 Are the proposed local road and walking/cycling connections to and within the Ohinewai Structure Plan area appropriate?

My opinion and reasons

- 2.21 In my opinion, the proposed local road and walking/cycling connections to and within the Ohinewai Structure Plan area are appropriate on the basis that:

- (a) The extensive walking and cycling network within the OSP area would ensure that future residents are provided with convenient, efficient and safe off-road connections between the residential, commercial and industrial precincts such that active mode travel will be a viable and attractive alternative to car-based travel within the OSP.
- (b) The walking and cycling network includes shared paths within the public open spaces, paths on one or both sides of the internal road network, and a walking/ cycling corridor through the business area connecting the neighbourhood centre (convenience retail) to the future PT hub and service centre.
- (c) The preferred walking and cycling connection between the OSP and Ohinewai West (Primary School and the old village) will be a new purpose-built shared path bridge located approximately 315m south of the Ohinewai Interchange. This will span both the North Island Main Trunk Railway and the SH1 Expressway to provide a safe and efficient grade separated solution. The location provides the most direct and convenient connection to the primary school and south to Huntly, and shortest bridge span of the two options considered (the alternative was located north of the Tahuna Road overbridge). The route / connection is in line with the anticipated predominant

pedestrian/ cyclist desire lines. (For completeness, some privately-owned land is required for the path approaches on both the eastern and western sides of the expressway; however, affected landowners have provided their in principle support to the land being obtained for the new bridge connections).

- (d) The NZ Transport Agency has confirmed in principle that a new pedestrian bridge can be established over the SH1 expressway in the preferred location, subject to design conditions and approvals including that the bridge could be removed temporarily if significant over-dimension loads need to pass through, and for future maintenance purposes.
- (e) In terms of walking and cycling connections south to Huntly, there is a sufficient amount of redundant sealed surface in the carriageway of Ohinewai South Road that could be reallocated to accommodate a 2.5m wide segregated shared path on the east side of the sealed surface, while still providing two narrowed lanes for traffic (3.3m wide each) and a 0.3m wide sealed shoulder on the west side. A concept plan of this proposed arrangement is included in the updated ITA, and includes a design for connecting the shared path to a potential shared path on the river stop bank for connection to Huntly. This concept design has been Road Safety Audited, and all identified issues addressed in the updated ITA.

Transportation infrastructure improvement triggers

Issue

- 2.22 Are the transport upgrade triggers for the Ohinewai Structure Plan appropriately aligned with the development staging plan?

My opinion and reasons

- 2.23 In my opinion, the transport upgrade triggers for the Ohinewai Structure Plan are appropriate on the basis that:
- (a) The triggers associated with each improvement are related to safety improvements associated with the subdivision and/or development of specific land use areas/ activities, as well as increasing demand as development stages are completed and the need for people to travel is induced.

- (b) The proposed improvements relate to the associated number of trips (vehicles, public transport commuters and walking and cycling trips) that are expected to be generated and distributed on the surrounding road network as the site is progressively developed.

Internal road network

Issue

- 2.24 Are the proposed internal road network and cross sections for the Ohinewai Structure Plan area acceptable?

My opinion and reasons

- 2.25 In my opinion, the proposed internal road network and cross sections for the Ohinewai Structure Plan area are appropriate on the basis that:

- (a) The internal roads are configured in a grid-network formation based around the site's geotechnical constraints, connectivity between the different land use areas, and connection to the existing external road network.
- (b) The street hierarchy has been designed to be logical, intuitive with a high degree of internal connectivity, and legible. The configuration avoids the need for heavy commercial traffic to use the residential streets while at the same time providing a high degree of connectivity between the land uses, including for active transport such as walking, cycling, e-scooters, etc.
- (c) The proposed road typologies have been guided by the provisions in the District Plan as well as the New Zealand Standard for Land Development and Subdivision Infrastructure. While the residential typologies do not fully comply with the standards set out in the Proposed District Plan in terms of providing a narrower road reserve width, the narrower width (16m) is considered appropriate for the reasons described below:
 - (i) There is limited land that is developable due to significant geotechnical issues and stormwater management and treatment requirements associated with the site being near a significant wetland. The costs associated with stabilising the marginal areas of land is high, so the 'good ground' areas of land need to be used as efficiently as possible for the purpose intended. In this regard, the narrower road reserve width of

16m for access streets is proposed to support the development of medium density housing. The operational purpose and function of the residential road classes (primarily being for property access) is not expected to be unduly impacted by the reduced road reserve width. Such widths for residential access streets have been successfully implemented in recent developments in Hamilton City.

- (ii) The proposed cross-section elements align well with the road design standards set out in NZS 4404:2010 for a local road providing primary access to housing. In addition, all services, pedestrian facilities and road furniture can be adequately accommodated within the road reserve.
- (iii) As described in the Urban Design Assessment report for the Ohinewai rezoning, the reduced width will promote safer vehicle speeds and thus a safer and more user-friendly environment to support the viability of active mode travel for internal short trips.

Implications of the development of the Ohinewai Lands Ltd land zoning

Issues

- 2.26 Are there any transport implications if the OLL land is identified in the District plan for possible future development?

My opinion and reasons

- 2.27 In my opinion, the OLL proposal being identified in the District plan as possible future development does not cause any transport implication on the OSP. OLL will however have to provide their own transportation assessments at the relevant time for any proposed Plan Change, and if necessary, depending on the activity types and level of travel generated, plan and provide for any infrastructure upgrades to mitigate the related effects.
- 2.28 The capacity of the Tahuna Road / Lumsden Road roundabout could be potentially adversely affected by the OLL proposal, and similarly, so too could the Ohinewai Interchange intersections. Contributions to safety and capacity upgrades may be required from OLL depending on the level of effects anticipated at the time of assessment.

Implications of the Shand Properties Limited proposed land zoning

Issue

2.29 Are there any transport implications if the SPL land is zoned Country Living?

My opinion and reasons

2.30 In my opinion, the SPL proposal is likely to result in localised transport effects with the OSP approved, in the following way:

- (a) Safe and efficient walking and cycling connectivity will be required between the SPL site and proposed OSP walking and cycling path over the expressway and railway, and proposed shared path on Ohinewai South Road.
- (b) The safety of active and vulnerable transport modes crossing Tahuna Road near its intersection with Ohinewai South Road requires appropriate consideration and assessment that takes account of the increased traffic volumes associated with OSP and pedestrian / cycling demands from SPL. Safety effects will need to be acceptably avoided or mitigated.

Adequacy of district plan provisions to deal with traffic effects

Issue

2.31 Do the proposed plan provisions developed by BBO adequately address any potential adverse transport effects?

My opinion and reasons

2.32 In my opinion, the proposed plan provisions are appropriate on the basis that they specifically target the recommended connectivity, safety, and capacity infrastructure provision as anticipated travel demand increases, to avoid or mitigate the assessed associated effects.

3. CONCLUSION

3.1 For the reasons outlined above, and as a result of my broader analysis, there is in my professional opinion no reason on the basis of traffic or transportation effects why the rezoning of Ohinewai should not be approved as proposed, subject to the plan provisions proposed.

Cameron Inder

29 May 2020

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of a submission by Ambury Properties Limited in respect of the Proposed Waikato District Plan pursuant to Clause 6 of Schedule 1 of the Act seeking the rezoning of land at Ohinewai.

Summary Position Statement of

Naomi McMinn

17 June 2020

2 Alfred Street
PO Box 14178
Hamilton, 3252
Tel: 07 853 8997



INTRODUCTION

1. My name is Naomi Claire McMinn. I hold a Bachelor of Engineering degree (Civil, 2002) from the University of Canterbury. I am a Member of Engineering New Zealand. I have worked in the civil and transportation field since 2002.
2. I am based in Hamilton and have worked for Gray Matter Ltd as a civil/transportation engineer since 2011. I have also worked for the London Borough of Richmond upon Thames and for the City of Melville, Western Australia. Prior to this, I was a civil engineer with Opus International Consultants Ltd in Hamilton and Whakatane for six years.
3. I am familiar with the transport issues arising in and around the Waikato, having provided advice to Waikato District Council (WDC) and other local authorities, Waka Kotahi NZ Transport Agency (NZTA) and developers on a range of transport related projects in the area. I have the following specific experience relevant to the matters within the scope and purpose of this statement of evidence:
 - (a) Consultant civil/transportation engineer for the Access Hamilton Programme (2017);
 - (b) Consultant civil/transportation engineer for Road Controlling Authorities assisting in the review of consent applications including quarries, industrial, commercial and residential developments within the wider Waikato region;
 - (c) Consultant civil/transportation engineer for developers, landowners and local authorities preparing integrated transport assessments for development proposals including quarries, rest homes and commercial developments;
 - (d) Consultant transportation engineer for the Builtsmart Property Partnership Private Plan Change (PPC 22) to the Waikato District Plan; and
 - (e) I have completed the NZTA Road Safety Engineering Workshop and have been a team member for safety audits on urban and rural improvement projects for local roads and state highways.

EXPERT CODE OF CONDUCT

4. I confirm that I have read and am familiar with the Code of Conduct for Expert Witnesses in the Environment Court, Practice Note (2014), and agree to comply with that Code of Conduct. I state where I have relied on the statements of evidence of others for my assessment. I have not omitted to consider material facts known to me that might alter or detract from my opinions.

BACKGROUND AND SUMMARY OF ADVICE PROVIDED

5. I have been retained by Waikato District Council to provide traffic engineering and transportation planning advice relating to submissions on the Proposed District Plan in the Ohinewai area.
6. In March 2020, I undertook a peer review of the relevant technical information provided by the submitters. My report is attached to the Section 42A report. At the conclusion of the expert conferencing, I will be providing an update to my review report based on the relevant submitter's evidence.
7. In preparing this statement, I have reviewed:
 - (a) The Updated Integrated Transport Assessment, Final Draft Issue 2, prepared by BBO dated 20 May 2020;
 - (b) The APL AEE Addendum final draft prepared by BBO dated 21 May 2020, including the following Appendices:
 - (i) Appendix A including proposed planning provisions to Chapters 14, 16, 17 and 20;
 - (ii) Appendix B including the Zoning Plan (Rev D), Business Area Structure Plan (Rev C), Structure Plan (Rev H)
 - (iii) Appendix C Illustrative Masterplan (Rev N)
 - (iv) Appendix E Staging Plan (Rev 1) ; and
 - (c) The Summary Statement of Cameron Inder dated 29 May 2020.
8. The purpose of this Summary Position Statement is to prepare for expert conferencing. This statement outlines my position on the matters that were raised in Mr Inder's statement. This statement also includes additional matters that were not raised by Mr Inder, that I consider to be significant matters for addressing during expert conferencing.

MATTERS RAISED BY MR INDER

Transportation models

Issue

2.2 The key issue here is whether the transportation models (Waikato Regional Transportation Model (WRTM) with performance evaluations using SIDRA), including their underlying assumptions and validation as used in the Updated ITA, are an appropriate representation of what can be expected to occur in future.

9. The Waikato Regional Transportation Model (WRTM) is the strategic transport model in the Waikato Region. I agree that the WRTM is the most appropriate tool and provides an appropriate representation of what is currently expected of the future transportation network.
10. In my opinion, Sidra modelling is an appropriate means for modelling the performance of individual intersections.

Trip generation rates

Issue

2.4 Are the trip generation rates adopted in the Updated ITA from the WRTM for the industrial, residential and commercial components of the Ohinewai Structure Plan appropriate?

11. The Updated ITA assessment of trip generation is extracted from the WRTM and is based on land use and the number of trip generators. In the Business and Industrial Zones, trip generators are the number of employees and in the Residential Zone trip generators are the number of dwellings.
12. I agree with the assessment of trip generation for the proposed Sleepyhead Factory and the Residential Zone.
13. The submission includes a Service Centre (including the service station, bus stops and emergency services buildings) within the Business Zone. The WRTM trip generation is based on 10 employees and is assessed as 49 vph during the PM peak. I expect the trip generation of the service centre could be higher,

considering published trip generation rates¹ for a service station as well as the close proximity to the SH1 Ohinewai interchange.

14. The submission includes 26.5ha of general industrial activity. The Proposed District Plan (PDP) allows a range of industrial activities in the Industrial Zone. I consider that the trip generation of the general industrial activity could be greater than the ITA expects, for example if a factory activity, similar to the Sleepyhead Factory, were to establish.
15. In summary, I consider that the trip generation of the Industrial and Business Zones could be higher than the WRTM expects. This would be reviewed as part of the activity specific resource consent applications that require an ITA to be prepared. The PDP Rules require an ITA for an activity with trip generation of 300vpd or more in the Business Zone, and 250vpd or more in the Industrial Zone.

Trip adjustment factors

Issue

2.6 Is the adjustment factor for a mixed use development (interval vs external trips) as predicted by the WRTM based assessment for the OSP area, appropriate?

16. In my opinion, the WRTM allowance of 20% for internal trips is reasonable given the size of the development, it's remote location and the need for residents to travel outside of Ohinewai to access other services, education and employment. In addition, the service station and DFOs primarily attract traffic from the external network.
17. The effect of reduced trips on the external network due to the internal trips is not likely to be fully realised until the full development, when the houses are fully occupied and local trips between residential and employment areas can be maximised.

¹ NZTA Research Report 453 Land Use 8.10 (Service Station) (50th percentile: 65.1 vph/100m² GFA and 85th percentile: 100.9 vph/ 100m² GFA).

Trip distribution

Issue

2.8 *Are the assumptions in relation to the trip distribution from the WRTM, which has more trips assigned south than north, reasonable?*

18. I agree with Mr Inder that the trip distribution from the WRTM is acceptable for this assessment.

Impacts on surrounding road network

Issue

2.10 *Are the impacts of the Ohinewai Structure Plan development on the operation of the surrounding road network, including the Waikato Expressway, acceptable?*

19. I consider that the efficiency impacts of the proposed development on the surrounding network are expected to be acceptable.

20. In my view, there are potential safety impacts arising from the development that are not addressed by the proposed mitigation measures.

21. There is an existing safety deficiency on the southbound off-ramp. The Updated ITA (page 29) states that the “high crash rate indicates a need to improve the existing advanced warning signs and road markings on the southbound off-ramp”.

22. The Updated ITA also identifies that the current sight distances at the southbound off-ramp are deficient. The Updated ITA proposes trimming vegetation to improve visibility to the east. The Updated ITA proposes improving the sightlines to the west by relocating the limit line 0.3-0.5m from the current position.

23. The posted speed limit is 100km/hr. The Updated ITA’s assessment of the required safe intersection sight distance (SISD) is based on operating speeds recorded during the site investigation (49 km/hr travelling eastbound and 55 km/hr traveling westbound). These are lower than we would typically expect for a 100 km/hr environment. The method of collecting the operating speed data is not stated. I am concerned that the recorded speeds may not accurately represent the operating speed.

24. There is an existing safety deficiency evident in the crash history of vehicles not stopping at the stop control. I am concerned that shifting the limit line will make the existing approach visibility deficiency worse by making the requirement to stop harder for approaching drivers to see. Austroads requires an approach sight distance (ASD) of 200m for a 110 km/hr design speed².
25. There is no existing footpath or cycle facilities between Ohinewai west and Ohinewai east along Tahuna Road and due to the overbridges (NIMT and SH1) there is no berm space. Existing demand across the bridges is low given the lack of development and rural nature on the eastern side. With the development and introduction of people living, working and shopping at Ohinewai east, the demand for short trips between Ohinewai east and west will increase.
26. The submission includes a new walking and cycling bridge passing over SH1 to the south of the development connecting to the Ohinewai School. The distance between the centre³ of the proposed residential development and Ohinewai School is around 1.8km along the proposed link, around a 20-35 minute walk⁴. For primary school aged children, the distance to school may be not be attractive for walking as it is more than 1.3km⁵.
27. For active modes trips between the Ohinewai Hall and the Ohinewai Structure Plan (OSP) area, using the proposed bridge is expected to be undesirable because of the additional distance⁶ a pedestrian would need to walk compared to a direct route along Tahuna Road. There is a risk of pedestrians and cyclists using the most direct route, along Tahuna Road, which does not provide footpaths and does not have adequate shoulder width to safely accommodate cyclists. The provision of an additional footpath along the northbound off-ramp and along Tahuna Road (Figure 1 below) would reduce the distance for walking and cycling between Ohinewai east and west and may be a more attractive route for people traveling by active mode. This link would also have benefits for pedestrians walking to the existing WRC bus stop on the western side.

² AGRD4A: Equation 1. Assumed 2.5% grade on the off-ramp approach.

³ Presumed to be the corner shop/playground (location indicated on the Masterplan)

⁴ Walking speed varies between 0.8 m/s and 1.8 m/s. Average adult walking speed is around 1.5 m/s and 1.2 m/s for impaired/older pedestrians. We presume school children would walk no faster than an average adult.

⁵ Children living within 1.3km are the most likely to walk to school and this reduces by a third where the distance to school is 1.3-2.3km. (source: Built environment associates of active school travel in New Zealand children and youth: A systematic meta-analysis using individual participant data. <https://www.sciencedirect.com/science/article/pii/S2214140518300240?via%3Dihub>)

⁶ Approximately 700m extra.

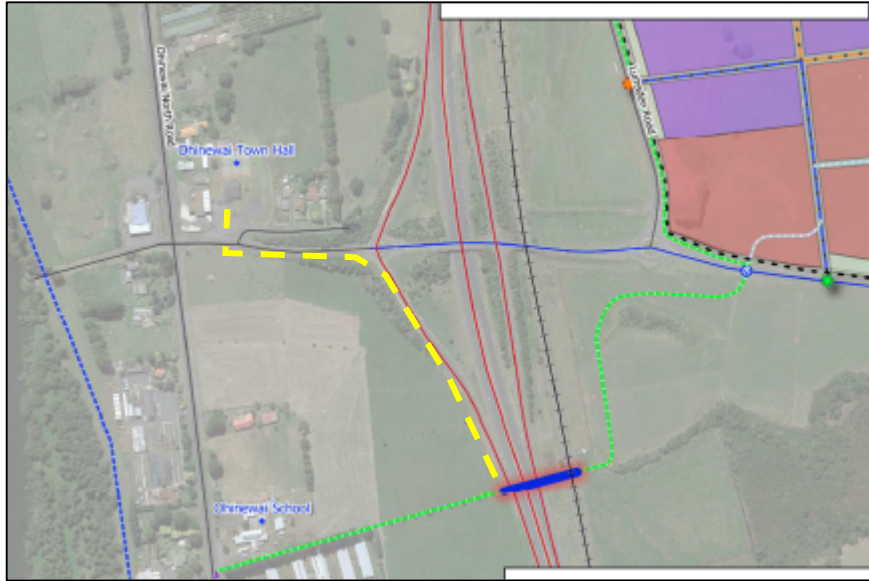


Figure 1: Possible path link to Ohinewai Hall (yellow broken line) (Figure 33 snipped from the Updated ITA)

Issue

2.12 Is the surrounding transport network able to accommodate additional heavy traffic projected to be generated by the industrial and commercial components of the Ohinewai Structure Plan if the rail siding was not constructed?

- 28. I agree with Mr Inder that the WRTM modelling has not reduced heavy vehicle trips due to the rail siding and that the rail siding would likely reduce heavy vehicle trips. I note that the proportion of heavy vehicle trips contribute to my road safety concerns especially for trips by active modes on Tahuna and Lumsden Roads.
- 29. The proposal includes a new level crossing of Lumsden Road for the rail siding. I consider that the rail siding introduces a safety risk that could be avoided by grade-separation of the crossing.

Need for capacity related upgrades

Issue

2.14 The Updated ITA concludes that no capacity-related upgrades to the Ohinewai interchange are required based on the WRTM trip generation and distribution. Is this a reasonable conclusion?

- 30. The initial ITA (December 2019) included capacity upgrade on the southbound off-ramp by providing an additional lane for right turns. The upgrade is no longer

proposed due to the updated WRTM forecasting lower traffic volumes and more southbound traffic compared to the initial ITA (December 2019).

31. The initial ITA (December 2019) included sidra modelling for sensitivity testing of a range of scenarios. The sensitivity testing has not been updated to reflect the updated WRTM and trip generation predictions. It is unclear how the intersections perform under the sensitivity scenarios with the updated WRTM trip generation, underlying traffic volumes and distribution to the network.
32. However, based on the range of scenarios that were sensitivity tested as part of the initial ITA (December 2019) I agree with Mr Inder that capacity-related upgrades to the Ohinewai interchange are unlikely to be required.

Public transport accessibility

Issue

2.16 Are the proposals to enable future public transport accessibility appropriate?

33. I support the provision of a bus stop inside the development as well as an interim bus stop on Tahuna Road to facilitate public transport. However, the WRC operates the public transport services and until the current service includes a new stop on the eastern side, people who want to catch the bus will need to get to the western side of SH1. As discussed in paragraph 27, there is no connection for pedestrians along Tahuna Road. A new path along the northbound off-ramp and Tahuna Road (north) as indicated on Figure 1 above would provide a route for people to walk between the existing bus stop and the proposed development. Noting that this route is 1 km long (11 minute walk).
34. The existing WRC Hamilton- Te Kauwhata service stops at the Ohinewai Hall once in the morning (southbound) and returns to the same location once in the evening (northbound). Mr Inder states that WRC has clarified it would be possible to add a PT stop at Ohinewai near or within the development. My understanding is that WRC has confirmed that it would consider increasing the number of daily stops in Ohinewai potentially by diverting the existing once a day off-peak service between Hamilton and Pukekohe or an additional stop of the existing Hamilton- Te Kauwhata service. However, the existing services are limited in their utility and have low service frequency. I also understand WRC's preference is for safe bus stop facilities on the interchange that could be also be used by commercial services rather than diverting into the OSP area.

35. In my view, in order to support safe access to future public transport services, a new pedestrian facility between the west and east sides of the SH1 is needed to safely provide for people wanting to walk to bus stops.

36. **Lumsden Road realignment**

Issue

2.18 *Is the realignment of Lumsden Road to provide for the rail siding and associated level crossing acceptable?*

37. The introduction of a new level crossing introduces a new hazard and a safety risk. From a road safety perspective, a grade separated facility is preferred and aligned with the desired outcomes of the Government's National Road Safety Strategy Road to Zero.

38. KiwiRail⁷ provides guidance on applying for new crossings and states "Level crossings are recognised internationally as introducing risk into the rail and road/pathway networks. KiwiRail regards safety as paramount, and endeavours to reduce the number of level crossings in New Zealand through closure and grade separation to make roads safer. When a new crossing is requested or required, KiwiRail's preference is for it to be grade separated (above or below the level of the rail network, such as a bridge or tunnel)." The Kiwirail "Applications for New Rail Crossings -Guidance for Applicants" document provides guidance for parties considering new crossings and sets out the process for application and approval.

39. The Lumsden Road realignment is proposed to accommodate the angle of the rail crossing needed to meet the relevant design standards. It introduces curves which are out of context with the speed environment and the road alignment which is relatively straight. It introduces signs and markings which are needed to warn drivers of the curvature and slow traffic speeds. Providing a level crossing is inconsistent with Vision Zero and the strategic direction set out by Kiwirail. It is inconsistent with the PDP Policy 6.5.2 viii) which discourages the installation of new at grade road and pedestrian rail level crossings.

40. A Road Safety Audit of the conceptual Lumsden Road realignment, level crossing and rail siding layout is provided with the Updated ITA although this is not

⁷ <https://www.kiwirail.co.nz/how-can-we-help/level-crossings/new-crossings/>

complete as it does not have the Safety Engineer's comments. Kiwirail has not been involved in this audit process.

41. The Safety Audit Team (SAT) identified two items of Moderate concern based on the matrix with "occasional" frequency and "likely" severity. The Road safety audit procedures for projects -guidelines Table 8.2 suggests that moderate concerns "should be addressed to improve safety".
42. The first concern relates to protecting sight lines at the realigned Balemi Road intersection as they cross outside of the road reserve. The Designer's response includes two options either expropriating the land for road reserve or a new "no build" zone. The affected area includes land owned by APL, but the affected land north of Balemi Road is privately owned. I am concerned that there are no planning provisions demonstrating how this land would be protected.
43. The second Moderate concern relates to the short distance between the level crossing and the siding/NIMT junction. The SAT identifies a risk that southbound through trains may trigger the warning signals on Lumsden Road when there is no train crossing the road. The concern relates to the potential for pedestrians and drivers to ignore the warnings and continue over the crossing. As rail design is outside of my expertise, I consider that confirmation should be sought from KiwiRail that the concept design satisfies their safety team to provide assurance that road users will not be adversely affected by the interaction of the rail siding and level crossing.
44. The rail siding and realignment are proposed in Year 6. In my opinion, protection of the sightlines needs to be confirmed now to ensure the Balemi Road intersection will be safe.

Walking and cycling connections

Issue

2.20 Are the proposed local road and walking/cycling connections to and within the Ohinewai Structure Plan area appropriate?

45. I agree that the walking and cycling connections within the development appropriately connect the employment, shopping, recreational and residential areas. The internal path network is likely to encourage short trips (such as

between residential areas and employment/shopping areas) by walking or cycling.

46. As discussed above in paragraph 27 there are likely to be trips made by walking or cycling between Ohinewai west and the proposed development to access bus stops, community facilities, employment, shopping and recreational areas. I agree that the proposed walking/cycling bridge over SH1 is well connected to the school. However, I consider that a more direct link to the existing residential properties, bus stop and the Ohinewai Hall is needed to provide a safe and attractive connection that avoids pedestrians walking along Tahuna Road to reach the Ohinewai Structure Plan area. There are no dedicated walking and cycling facilities along Tahuna Road or Ohinewai South Road and the proposal significantly increases traffic.
47. While the Updated ITA states that the route for the proposed walking and cycling link and bridge over SH1 and the NIMT has been agreed with the affected landowners in principle, I am concerned that there are no planning provisions demonstrating how this land would be protected so there is no certainty that the land will be available. I understand that the affected landowners include DOC, Kiwirail, NZTA and private landowners.
48. In addition to crossing facilities at intersections which are indicated on the proposed development access drawings provided in the Updated ITA, safe crossing facilities of Lumsden Road should be provided to ensure connectivity between the existing houses (western side of Lumsden Road) and the Ohinewai Structure Plan area. I consider a refuge island to be the minimum treatment.
49. Within the development, I support crossing facilities at the intersections in the form of raised table platforms to encourage slower vehicle speeds and provide safe crossing for pedestrians and cyclists.
50. I note that the staggered crossing east of the Tahuna-Lumsden Road intersection is located in close proximity to the roundabout and there is the potential for adverse safety effects on pedestrians and vehicles due to the minimal separation distance. I consider that the detailed design should be subject to a Road Safety Audit.
51. In year 6, the proposal includes extending the walking and cycling link from Ohinewai School south along Ohinewai South Road to SH1 and along the

existing Waikato River stop bank from SH1 to Huntly. The Updated ITA (Table 31) states that WDC and NZTA as well as other developers would fund these walking and cycling links. APL is not currently identified as a funding party.

52. I understand that the stopbank walking and cycling path is identified in the Waikato Blueprint as a community aspiration. It is not identified for funding in the WDC LTP. Therefore, it is unlikely that other parties (such as WDC and NZTA) would fund the proposed walking and cycling links when it's not currently planned or funded in their long term plans. It's not clear how these infrastructure improvements would be implemented by other developers and there is a risk the intended upgrade will not eventuate. This would result in additional reliance on car travel to access services and employment within Huntly.

Transportation infrastructure improvement triggers

Issue

2.22 Are the transport upgrade triggers for the Ohinewai Structure Plan appropriately aligned with the development staging plan?

53. In my opinion, initial access to the development area should be a roundabout on Tahuna Road to safely facilitate for all movements. I consider there is a risk that the proposed staging plan and the provision of a left in, left out only intersection to Tahuna Road without the roundabout will lead to driver confusion and inappropriate movements (such as U-turns) and result in adverse safety effects for road users.
54. I support the provision of the cycling and walking bridge and path as part of the first stage of the residential development (year 3).
55. The Updated ITA (page 101) states that the capacity upgrade at the Lumsden - Tahuna Roundabout is triggered by 1000vph and an ITA would be needed to confirm prior to stage F3 and 5A+5B (Year 6 Business, Industrial). This trigger is not included in the planning provisions.

Internal road network

Issue

2.24 Are the proposed internal road network and cross sections for the Ohinewai Structure Plan area acceptable?

56. I agree that the layout of the internal road network is reasonable and appropriate. However, I have concerns with some of the proposed cross-sections.
57. I agree the proposed industrial roads (commercial roads 1 and 2) cross-sections are acceptable. The Updated ITA (page 49) refers to a flush median to ensure adequate manoeuvring space for truck and trailers turning at industrial vehicle crossings. I agree that flush medians would provide space for manoeuvring. However, I note that the flush median is not indicated on the commercial road cross-sections.
58. The commercial road 3 cross-section includes parallel parking on one side with 90 degree angle spaces on the other side. I am concerned that vehicles parking in the 90 degree spaces will need to track over the centreline and into the opposing lane to manoeuvre in and out of the 90 degree spaces. The proposed footpath is 4m wide and the parking space dimensions will mean that parked vehicles will overhang the kerb and reduce the available width of footpath. If the footpath is used by street frontage businesses (such as cafes) there is a risk the useable path width will be reduced even further by café tables etc.
59. I consider that the proposed cross section for the residential road 1, a short section of road connecting from Tahuna Road into the development is appropriate. The proposed shared path along Tahuna Road and into the OSP (indicated on the Business Area Structure Plan) development will facilitate active modes.
60. The proposed cross-sections for residential 2 and 3 include parking on one side only. The PDP requires a minimum total seal width of 11m for collectors (>100 lots) and 8m for a local road (8 -100 lots) with parking provided on both sides. The proposed road reserve width of the residential 3 is 16m, which is narrower than the PDP requirement of 20m.
61. WDC have expressed their concern with the reduced road reserve width, seal widths and potential tensions between providing on street parking and vehicle crossings.
62. I am concerned that the reduced seal width (residential 3) will lead to inappropriate parking behaviour and potential for damage to berms or parked cars preventing access for rubbish trucks or emergency vehicles. Vehicle crossing locations, such as at adjoining boundaries, should be considered at

detailed design to optimise the space available for on-street parking. In my view, the proposed residential 3 cross-section is not appropriate where it serves more than 20 lots. There are short sections of the internal road layout where the narrower cross-section serving 20 lots or fewer would be appropriate.

63. For roads serving 20-100 lots, I consider that the minimum seal width should be 8m in accordance with the PDP with a minimum road reserve of 17m.

Implications of the development of the Ohinewai Lands Ltd land zoning

Issues

2.26 Are there any transport implications if the OLL land is identified in the District plan for possible future development?

64. The land use and transport effects of development on the OLL land are not clearly understood. There is no assessment of non-rural land use against the RPS, Future Proof or the PDP. In my opinion the OLL should not be included in the District Plan.
65. I agree with Mr Inder that the OLL proposal will need to mitigate the effects of trips from a change in land use.
66. If the OLL development were to go ahead in the future, it would be appropriate to review the road cross sections to provide for short trips between the developments by active modes. This is likely to include a crossing facility on Tahuna Road and a link to the OSP potentially by providing a footpath/shared path on the residential road 1.

Implications of the Shand Properties Limited proposed land zoning

Issue

2.29 Are there any transport implications if the SPL land is zoned Country Living?

67. I agree with Mr Inder that safe and efficient walking and cycling connections will be required if the SPL land is zoned Country Living. In addition, I expect that urbanisation upgrades to the existing Ohinewai North and Tahuna Roads and the provision of walking and cycling facilities are likely to be appropriate.
68. The APL proposed walking/cycling bridge is unlikely to be an attractive route for people living in Ohinewai north (such as the within the SPL area) who may work

or shop in Ohinewai east. Providing connectivity for active modes along Tahuna Road would better facilitate these movements and reduce the diversion time.

69. There is a risk of cumulative effects that are not appropriately mitigated if the development of the SPL land occurs in stages as a permitted activity (up to 10 dwellings).

Adequacy of district plan provisions to deal with traffic effects

Issue

2.31 Do the proposed plan provisions developed by BBO adequately address any potential adverse transport effects?

70. The proposed staging plan includes the internal road development but does not include the new/upgraded infrastructure needed on the external network outside of the development including the new intersections.
71. In my view, rather than adding new planning provisions to the relevant Zone chapters, a new separate chapter for the Ohinewai Structure Plan that clearly sets out the full set of staging and infrastructure upgrades would be clearer. The Staging Plan and corresponding schedule of infrastructure upgrades should be included. In my view it is not clear that the infrastructure upgrades shall be operational before the houses/business/industrial developments during the same stage are occupied.
72. To avoid confusion, I consider that references to relevant drawings (such as the road cross-sections and proposed infrastructure) should be referenced in the upgrade tables and provided within the planning provisions.
73. The Updated ITA identified cost contributing parties for each of the infrastructure upgrades. The proposed planning provisions include a note that a private developer agreement between the developer and Council will allocate financial responsibility for the upgrades where there are shared benefits. However, it's not clear if the other identified parties will be included in this agreement, or if further agreements would be needed with 3rd parties to deliver infrastructure required to mitigate the effects of this development. Furthermore, Council has advised there is no committed funding in the Waikato District LTP for any of the improvements identified in the Updated ITA. The Updated ITA does not include any

correspondence from NZTA confirming if they would contribute to funding of the proposed upgrades.

74. I consider that an additional rule is required that prohibits direct property access to Lumsden Road and Tahuna Road except as shown on the Structure Plan.

ADDITIONAL MATTERS

Relevant Transport Policy

75. In my view, the proposed APL development is not well aligned with relevant transport policy of the RPS as it is likely to result in reliance on private vehicles for trips outside of the immediate OSP area due to:

- = the location of the OSP being away from existing services (schools, health, employment);
- = the existing SH1 and NIMT overbridges being constraints to pedestrian and cyclist connections between the proposed OSP area and the existing Ohinewai and Huntly communities;
- = the lack of existing public transport accessibility and infrequent services to the area;
- = the distance to the Ohinewai School potentially being too far to be attractive for primary school children to walk /cycle; and
- = the distance and lack of certainty for walking and cycling connections to Huntly and other employment areas such as Hamilton.

76. In my view, the provision of a new level crossing on Lumsden Road is not consistent with PDP Policies 6.4.4 and 6.5.2.

Service Centre vehicle access

77. Two vehicle crossings to the proposed Service Centre are shown on the Business Area Structure Plan but are not assessed in the ITA. I prefer that these crossings are not shown on the Structure Plan and that the vehicle crossing locations be assessed as part of an ITA at the time of resource consent application.

78. The proposed shared path will cross the Service Centre crossing and the provision of the vehicle crossing introduces a potential conflict point between pedestrians/cyclists and vehicles accessing the Service Station. The effects of this conflict have not been assessed.

Development access

79. Compared to the initial ITA (December 2019) the Updated ITA includes one fewer intersection along Tahuna Road. I support the roundabout at Access 2.

80. The staged development proposes constructing Access 1 (left in, left out with solid median islands to prevent right turns) with Tahuna Road to provide access to the first stages of development with expected circulation being left in from Tahuna Road to access the business area and left out at Access 3 (Lumsden Road). Access 2 is not proposed until year 5. I am concerned that the inability to turn right out of the Access 1 will lead to unsafe movements (such as U-turns on a busy rural arterial road) and result in adverse safety effects on road users. A roundabout would safely facilitate all movements. There is a long term risk if Stage 5 of the development does not go ahead and the roundabout (Access 2) is not implemented.
81. Figure 5 of the Updated ITA shows the existing and proposed intersections and accesses. Figure 5, the Business Area Structure Plan, the Structure Plan and the Masterplan are inconsistent as they do not show all accesses. The Business Area Structure Plan also includes vehicle crossings to the proposed Service Centre. The Masterplan shows an additional access to the factory site along Balemi Road and one along Lumsden Road. Given the proposed staging, initial access to the factory site will be required from Lumsden Road. I support a single vehicle crossing on Lumsden Road constructed to meet the appropriate industrial standards to facilitate interim access. The proposed factory access (north of the Development Access 4) should be included on the Structure Plan layout.
82. As in paragraph 74 above, I support a rule in the planning provisions only allowing direct vehicle access to Lumsden, Balemi and Tahuna Roads as indicated on the Structure Plan, with all other vehicle access from the internal roads.

Proposed Lumsden-Tahuna Road roundabout upgrade

83. The proposed upgrade includes an additional right turn lane between Lumsden Road and Tahuna Road west. In my experience, roundabouts with both dual and single lanes can be confusing for drivers due to lane assignment. This should be addressed at detailed design stage to avoid adverse safety impacts on road users.
84. The existing NIMT overbridge is located within around 140m from the centre of the existing roundabout. The close proximity of the structure could impact on the ability to upgrade the Lumsden-Tahuna Road roundabout to meet the required Austroads design standards. Although this could be dealt with at detailed design,

I would prefer that the concept design be safety audited now to confirm if the proposed upgrade can be provided within these constraints.

Internal speed limits

85. WDC staff have indicated they support a uniform speed limit inside the development of 40 km/hr. I also support a 40km/h speed limit within the OSP.

Proposed road cross section upgrades

86. I agree that the Tahuna Road Rural cross-section (A-A) is appropriate.
87. I agree that the Tahuna Road Semi-rural cross-section (B-B) is appropriate except that 1.5m shoulders should be provided on both sides, particularly east of where the proposed shared path diverts into the OSP area to provide enough space for cyclists to ride on the road where there is no off-road option. I note that the extent and routes of the shared path, along Tahuna Road frontage are inconsistent between Figure 33 of the Updated ITA and the proposed Structure Plans.

The Tahuna Road Urban cross-section (C-C) does not include a shared path within the road reserve, which is inconsistent with the description in the Updated ITA (Table 10). A continuous shared path along Tahuna Road between the Tahuna Road-Lumsden Road roundabout and the development is shown on the Structure Plan, Business Area Structure Plan and the Masterplan. In my opinion, this is sufficient to provide for active modes and an additional shared path within the road reserve is not necessary. The drawings (including 145860-08-0221) and cross-sections should be updated to be consistent and avoid confusion.

88. I agree that the proposed cross-sections for Lumsden Road (D-D, E-E, F-F) and Balemi Road (G-G) are appropriate.

Ohinewai South Road opening -proposed left turn slip lane

89. A new left turn slip lane is proposed in the Updated ITA to connect Great South Road to Ohinewai South Road for northbound local trips between Huntly and Ohinewai.
90. The Updated ITA states that the proposed slip lane would be used for trips in the afternoon to collect children from school on the way to the OSP. In my view, the benefits are limited to the afternoon school pick up because the distance along

Ohinewai South Road from Huntly to the OSP or the Ohinewai Hall is much the same as traveling along SH1. In addition, the school collection trips are likely to be outside of the network peak periods and any reduction in vehicles using SH1 at these times and for such a short distance (around 3km between Great South Road and the Ohinewai interchange) is not likely to be noticeable.

91. A Road Safety Audit of the conceptual Ohinewai South Road proposed slip lane is provided with the Updated ITA although this is not complete as it does not have the Safety Engineer's comments.
92. I have discussed this proposal with WDC Roading staff. Their initial comments include that a 50 km/hr speed would not be supported and that there may be additional work required to upgrade the existing seal because of the lack of use recently. Whilst not opposed to the proposal in principle, WDC would need to better understand the benefits in order to properly support the proposal and are unlikely to provide any funding.

Other minor matters and suggested amendments

93. The ITA states that the industrial area will include a proposed inland port with rail siding access to the NIMT. The rail siding is not referred to as an "inland port" anywhere else in the application. The function of the proposed rail siding in my view is consistent with the function of a "inland port" including storing and transporting product by rail. In this application, I understand the purpose of the rail siding is to enable the transportation of product to/from the proposed Sleepyhead Factory and is not expected to service any other industrial activity.
94. The Proposed Development Access 4 preliminary layout (drawing 145860-08) includes the shared path along Lumsden Road and crossing at the intersection and into the OSP. The shared path should be continued north along Lumsden Road and a footpath on the opposite side to be consistent with the proposed cross-sections (E-E) which includes shared path on the eastern side to the proposed Factory access. The drawing should be updated to show the extent of the shared path and footpath consistent with the Updated ITA (Figure 17) and the cross-section (E-E).
95. The proposed Structure Plan includes the internal road layout with the exclusion of Road Typology 6. This terminology is inconsistent with the Updated ITA Figure 20 which illustrates the internal road network and hierarchy. To avoid confusion,

the Structure Plan legend should be updated to use consistent terminology. All proposed public roads should be laid out on the Structure Plan to clarify the proposed public roads and avoid the potential for confusion between the proposed private rear access ROWs and public roads.

96. The 90 degree parking spaces shown on the proposed cross section for commercial 3 roads are not shown to scale at the width annotated. This should be addressed.
97. The Access 5 to Lumsden Road is referred to as a Left in, Left out intersection (page 53 of the Updated ITA). However, I understand it is intended to facilitate all movements.

Conclusions

98. In my opinion, the location of the OSP and the lack of alternatives for travel is likely to result in a high proportion of private vehicle trips to access employment and services. In my view, this is not well aligned with relevant transport policy of the RPS.
99. The NIMT and SH1 overbridges are significant constraints to the provision of improved infrastructure on Tahuna Road. The proposal includes pedestrian and cyclist connections and a new overbridge for walking/cycling over the NIMT and SH1 to the south of the area which is not a direct route between Ohinewai east and west. In my view, the use of the active modes link is not likely to be as well utilised as it would be if it were a direct route.
100. I have concerns relating to transport safety that are not adequately addressed by the Updated ITA or proposed planning provisions. My concerns include the existing visibility deficiency at the SH1 southbound off-ramp, the proposed rail level crossing of Lumsden Road and the initial access arrangement for stages 1-3 (inclusive).



Naomi McMinn

Dated 17 June 2020

In the matter of the Resource Management Act 1991 (“the Act”)

And

In the matter of a submission by **AMBURY PROPERTIES LIMITED** in respect of the **PROPOSED WAIKATO DISTRICT PLAN** pursuant to Clause 6 of Schedule 1 of the Act seeking the rezoning of land at Ohinewai

SUMMARY STATEMENT VINCENT KUO – PUBLIC TRANSPORT PLANNING IN PREPARATION FOR EXPERT CONFERENCING

1 Background and experience

- 1.1 My full name is Vincent Yu-Wen Kuo. I am employed by the Waikato Regional Council as a Senior Policy Advisor in the Transport and Infrastructure team.
- 1.2 I hold a Bachelor of Planning degree from the University of Auckland in 2007 and have been employed by Waikato Regional Council (WRC) since 2008.
- 1.3 I have 12 years’ experience in transport planning, transport investment (infrastructure and services) and public transport planning and service delivery.
- 1.4 I have worked on a variety of transport projects throughout my career, including the development of regional land transport plans, regional public transport plans, and public transport network reviews and tender documents.
- 1.5 This summary statement is in respect of public transport planning in relation to Ambury Properties Ltd (APL or the Applicant) proposal to seek rezoning of land (the Proposal) at Ohinewai (the Site).

2 Code of conduct

- 2.1 I confirm that I have read and am familiar with the Code of Conduct for Expert Witnesses in the current Environment Court Practice Note (2014). I have complied with it in the preparation of this summary statement and during expert

witness conferencing. I also confirm that the matters addressed in this statement are within my area of expertise, except where I rely on the opinion or evidence of other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

3 Scope of this summary statement

3.1 In my summary statement, I have focused on the transport issues relating to the accessibility of public transport to the proposed development area in response to the issues identified in the 29 May 2020 Summary Statement of Mr Inder (transport engineer for the Applicant).

3.2 In preparing my statement, I have reviewed the following documents:

- a Section 42A Report prepared by Waikato District Council (dated 13 March 2020) and Transport Peer Review report prepared by Naomic McMinn (Gray Matter).
- b Integrated Transportation Assessment (ITA) prepared by Bloxham Burnett and Olliver (BBO) for the Applicant (dated 20 May 2020).
- c Summary statement of Cameron Inder (dated 29 May 2020) in respect of traffic and transportation on behalf of the Applicant.

4 Response to issues in Mr Inder's Summary Statement

Public Transport Accessibility

4.1 In Mr Inder's Summary Statement, he has concluded that "*the proposals to enable future public transport accessibility are appropriate*¹".

4.2 I generally do not agree with the opinion of Mr Inder on the following basis.

4.3 Section 6.7.1 of the ITA provides a brief summary of key issues identified by Mr Wilson (Manager of Public Transport Operations, WRC) in relation to the provision of public transport connections to the Ohinewai area.

4.4 The key issues can be summarised as follows:

- a *Council's ability to fund or extend public transport services to the development site.*

¹ Paragraph 2.17 Cameron Inder summary statement dated 29 May 2020.

b Efficiency and effectiveness of diverting existing services.

c Connections to possible future services.

4.5 In my opinion, the Applicant has not adequately addressed the issues raised by Mr Wilson to ensure the accessibility and connectivity of public transport to the Site, and my reasons are set out below.

Council's ability to fund or extend public transport services to the development area

4.6 Waikato Regional Council has indicated there are currently no plans or funding for additional public transport services in the Ohinewai area. The planning and funding of public transport must be undertaken in accordance with the Land Transport Management Act 2003 (LTMA).

4.7 In my view, there are strategic and operational reasons as to why Council is unable to provide a public transport service to the development site at this time, these include:

a The site is not located within the existing growth areas identified under the Future Proof Strategy and accordingly Council has not undertaken any forward planning or detailed assessment to ensure the strategic integration of land use, infrastructure and service provision.

b The proposal does not align with current Council's strategic priorities to provide and enhance public transport services in the existing or future planned growth areas, as well as areas where there is demonstrated demand or social needs; and

c Operationally, it is not cost-efficient to provide a public transport service to the development site due to likely low demand and longer journey times (and higher operating costs).

4.8 Council has limited funding available for public transport that must be allocated in accordance with legislative requirements, and any new service will need to be prioritised against: strategic fit (to national and regional policy policies), benefits to the community and cost-effectiveness (wider network benefits, patronage and operating costs).

4.9 In my view that the Proposal would not score highly against these criteria to warrant a new service to the development area. If a service is to be provided, it

will only be viable if the cost of service is met by the Applicant (or otherwise operated on a fully commercial basis).

Public transport connections to existing services

- 4.10 Mr Inder's summary statement refers to "*... it would be possible to add a PT stop at Ohinewai near or within the development, utilising the existing off-peak service Hamilton and Pukekohe and/or the existing limited frequency peak service between Te Kauwhata and Hamilton*".
- 4.11 Whilst I agree that operationally it is possible to connect the Site with the existing services via the proposed interim bus stop on Tahuna Road (refer to Figure 23 of the ITA), these services are very limited in their utility due to very low service frequency (i.e. one return trip per day).
- 4.12 In my opinion, the long walking distances (estimated 1 to 2 km) between the residential area and the interim bus stop will make use of the bus less attractive and is a barrier for public transport users.
- 4.13 Therefore, it is unlikely that the existing services will have high usage and will provide very little benefit in terms of providing attractive public transport options and reducing reliance on private vehicles.
- 4.14 Section 8.5 of the ITA also assumes that "*according to the most recent NZ Household Travel Survey data, proximately 1% of the trips within the Waikato district are undertaken using public transport [...] this equates to 25-35 public transport commuters that can be expected from the proposed development during the AM and PM peak periods [...] based on the figures, one or two bus services during each peak period would accommodate this demand*".
- 4.15 Whilst I do not dispute these figures, I do question the use of this data as the basis to determine potential public transport demand from the proposed development. It should be noted that the Household Travel Survey only provides a snapshot of travel patterns and mode share results, but it does not reflect the actual growth patterns, or the level of services being provided, which have significant influence on people's choice of travel.
- 4.16 In my opinion, the Travel Survey data could be used as a reference but not as a tool to gauge the potential public transport demand for the Site.

Possible future public transport connections

- 4.17 Section 6.7 of the ITA report refers to a long-term public transport proposal developed by Waikato Regional Council, which could provide future public transport connections to the development area (via the proposed bus stop facility).
- 4.18 I note that there is a long-term network concept² developed and anchored in the 2018-28 Waikato Regional Public Transport Plan. The network concept helps to guide the planning and development of future public transport services in the region.
- 4.19 Under the network concept, there is a long-term aspiration to provide frequent/express public transport services along the Hamilton to Auckland corridor to support existing communities and to enable future growth.
- 4.20 Under this network scenario, high frequency services will be provided along the corridor with minimal diversions to towns/communities in between to ensure travel time advantage. It is envisaged that for smaller communities, such as Ohinewai, a central bus interchange would be built near the highway on/off ramps, with privately or publicly-funded feeder services picking up local residents to the bus interchange to allow transfer onto the frequent public transport network
- 4.21 I acknowledge that the Proposal has included a proposed bus stop/terminal facility within the service station precinct near the Expressway Interchange, which could enable future connections to public transport services.
- 4.22 However, as noted above the walk distances between the residential area and the proposed bus stop present a significant barrier for users.
- 4.23 To enable possible future connections to public transport, the Applicant will need to consider appropriate first/last mile service solution (i.e. a shuttle or on-demand service) to provide improved public transport accessibility as part of their Proposal.
- 4.24 This type of solution will not only ensure the Site can be effectively connected to the existing services (either via existing bus stop on the western side or proposed bus stop at the development area), but would also provide improved connectivity to potential future service enhancements along the Auckland to Hamilton Corridor.

² Figure 1 of the Waikato Regional Public Transport 2018-28

4.25 As noted above, Waikato Regional Council is currently unable to fund any new service to the development area, and the Proposal is unlikely to meet the criteria to do so. However, if there is a genuine desire from the Applicant to ensure the Site can connect to existing or future services, it will need to work with the Regional Council to explore potential first/last mile options and work towards a funding solution for such a service.

Vincent Yu-Wen Kuo

17 June 2020

- c Coombes Sand Quarry: proposed expansion of sand quarry;
- d Proposed service centre at interchange with the Huntly section of the Waikato Expressway; and
- e Te Awa Lakes: proposed accommodation, housing, and recreation facilities in Waikato District.

1.4 I have been engaged by Waka Kotahi to provide transport engineering evidence in relation to the proposal by Ambury Properties Ltd (the Applicant) to seek rezoning (the Proposal) of land at Ohinewai (the Site).

2 Code of conduct

2.1 I have read and am familiar with the Code of Conduct for Expert Witnesses in the current Environment Court Practice Note (2014). I have complied with it in the preparation of this summary statement and will comply during expert witness conferencing. I also confirm that the matters addressed in this statement are within my area of expertise, except where I rely on the opinion or evidence of other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

3 Scope of this summary statement

3.1 This summary statement covers the following:

- a Consideration of strategic and localised transport engineering implications of the Proposal;
- b A response to the issues identified in the 29 May 2020 summary statement of Mr Inder (transport engineer for the Applicant); and
- c The following additional issues that I consider should be discussed at the expert conferencing:
 - i Sight distances at the Ohinewai interchange (the Interchange);
 - ii The lack of a suitable turning path for design heavy vehicles at the Interchange;
 - iii The number and separation of accesses and intersections on the Tahuna Road frontage of the Site;

- iv Constraints to proposed mitigation due to the inadequate distance between the Tahuna Road / Lumsden Road roundabout and the railway overbridge at the Interchange;
- v The length of on and off-ramps at the Interchange; and
- vi The separation between the Interchange and the Northern Interchange.

3.2 In preparing my statement, I have made reference to the following documents commissioned by the Applicant:

- a Integrated Transportation Assessment (ITA), dated 20 May 2020, prepared by Bloxham Burnett and Olliver (BBO) for the Applicant.
- b Summary statement of Cameron Inder (dated 29 May 2020) in respect of traffic and transportation on behalf of the Applicant.

4 Strategic Versus Localised Effects

4.1 I consider the transport engineering matters associated with the Proposal need to be evaluated on two levels:

- a Strategically: on the basis of whether the Proposal at Ohinewai is an appropriate fit with the broader transportation needs and demands of the region and growth patterns. Those strategic matters are addressed by Ms Loynes and Mr Mayhew and I make the following observations in relation to their comments:
 - i Through not reducing dependence on motor vehicles the Proposal will create adverse transport engineering effects that would not exist (or would not exist to the same extent) if the Proposal was located within or adjacent to existing urban areas.
 - ii Because the Interchange was not designed with the expectation Ohinewai would grow to the extent proposed by the Applicant, any adverse effects associated with the design of the Interchange will be exacerbated due to the additional traffic.
 - iii Developing a new industrial and residential node with the community divided by the Expressway will promote private vehicle use and may result in unsafe road use by vulnerable road users.

- b Localised: on the basis that the Site will generate trips within the Site and on the road network relatively close to the Site. Those trips will be undertaken using motor vehicles and / or potentially via active modes (walking and cycling) or public transport.
- 4.2 In this statement I have focused on the localised transport engineering matters associated with the Proposal.

5 Response to issues in Mr Inder's summary statement

- 5.1 In the following paragraphs I have made reference to the "key issues relevant to traffic and transportation" identified by Mr Inder. To assist with comparing this statement with Mr Inder's statement I have adopted the titles and order of his subsections.

Transportation Models

- 5.2 Mr Inder¹ has identified the issue of "[...] whether the transportation models (Waikato Regional Transportation Model (WRTM) with performance evaluations using SIDRA), including their underlying assumptions and validation as used in the Updated ITA, are an appropriate representation of what can be expected to occur in future."
- 5.3 I **generally agree** with the opinion of Mr Inder as follows (subject to my further comments below):
- a The Waikato Regional Transport Model (WRTM) is the most appropriate network model to be used for considering changes in traffic volumes associated with the Proposal.
 - b Performance evaluations of the individual intersections using SIDRA is the most appropriate approach.
 - c While I have not reviewed the WRTM inputs and outputs developed to assist with analysis regarding the Proposal, I am not aware of a better model that could be used to evaluate the Proposal.
- 5.4 However, it needs to be kept in mind that the WRTM is only a model; it represents a technical best guess of what the implications of certain changes to the road network and / or changes in land use will have on the road network. Also, the WRTM does not always provide reliable data at the local level; it is

¹ Paragraph 2.2 Cameron Inder summary statement dated 29 May 2020.

primarily a strategic regional model. I understand that network parameters need to be checked and calibrated at the local level for each particular project on which it is employed. Notwithstanding that it is the best predictive tool available, the results need to be subject to reality checks.

- 5.5 While the accuracy and adequacy of the WRTM outputs could be debated, I consider the most appropriate approach is to accept the shortcomings with WRTM outputs and apply a measure of conservatism in relation to any mitigation identified based on those outputs. Depending on the rate and extent of development at the Site, I consider it appropriate for there to be triggers associated with initiation of any mitigation. However, I consider the Applicant should identify practicable additional mitigation, which is built into the planning and development process, to allow for the mitigation identified based on WRTM outputs being inadequate. For example, if delays at an intersection are greater than those modelled based on WRTM outputs, potential intersection capacity improvements should be identified from the outset that could address the adverse effects that would otherwise arise.
- 5.6 With regard to the provision of mitigation I note that the planning provisions link this to specific stages / years of the Proposal. However, I consider that mitigation should be based on anticipated necessity rather than on arbitrary stages.
- 5.7 Mr Inder² notes “The WRTM does not include other forms of transportation [...] On this basis, the WRTM is considered to provide a conservative estimation of the trip generation associated with the OSP area as there is no reduction in road trips for other transport modes.”
- 5.8 I understand that the WRTM is based on vehicle trip generation from the household travel survey, this means the model effectively takes account of trip making associated with other modes. As noted in this statement, I consider the distances associated with active mode journeys outside the Site create an obstruction to those journey such that it is unlikely there will be a significant uptake in active mode transport beyond the boundaries of the Site. I also consider it appropriate for mitigation options to be identified in the event that the WRTM outputs do not adequately describe the quantum of traffic movements associated with the Proposal. Therefore, unless the Proposal is configured such that there is a robust basis on which to assume some trips, which would otherwise be in motor vehicles, will be carried out using active modes, I consider that we should not regard the WRTM outputs as being conservative.

² Paragraph 2.3(c) Cameron Inder summary statement dated 29 May 2020.

- 5.9 With respect to the WRTM being recalibrated using surveyed volumes at the on and off-ramps³ based in part on a traffic survey conducted in December 2019, it would be useful to know exactly when in December the survey was conducted. The reason for this is that December is a time of year when schools finish teaching and traffic volumes may decrease, therefore, it is important to know the date(s) in December when the survey was carried out.
- 5.10 Regarding the peak hour SIDRA modelling described in Appendix C of the ITA, the traffic volumes used for the modelling are based on WRTM modelled two-hour peak values that have been converted to one-hour peak values for SIDRA modelling. However, it is not clear whether modelling consideration has been given to the potential for one or more significant peaks to occur within the peak hour if working hours on the Site will result in relatively short very intense periods of trip generation.
- 5.11 Noting that some sensitivity testing has been undertaken, I consider the Applicant should describe proposed planning provisions for working hours that can be used to spread peak hour trip generation within the modelled peak hour periods. Alternatively, it may be possible to demonstrate through SIDRA modelling whether intense peaks within the peak hour will have adverse effects on the performance of the Interchange and the intersections affected by vehicle movements associated with the Proposal.
- 5.12 In summary, I do not challenge the WRTM findings described by Mr Inder. However, I consider it important to note that the model does not describe future reality, it is just a mathematical representation of what the future reality may be. I also consider that:
- a The WRTM findings should be regarded as representative rather than conservative; and
 - b Further sensitivity testing is required to determine whether peaks within the peak hour will result in adverse effects for which additional mitigation is required.

³ Paragraph 2.3(d) Cameron Inder summary statement dated 29 May 2020.

Trip generation rates

- 5.13 Mr Inder⁴ has identified the issue of “Are the trip generation rates adopted in the Updated ITA from the WRTM for the industrial, residential and commercial components of the Ohinewai Structure Plan appropriate?”
- 5.14 I **do not agree** with the opinion of Mr Inder because I do not consider we have enough information to draw the conclusion that the trip generation rates are conservative and therefore appropriate.
- 5.15 In my opinion, the fact that the “[...] WRTM predicts higher trip rate figures for the key land use activities within the OSP area compared to [...] trip generation manuals and reports”⁵ could indicate there is an element of conservatism in the analysis derived from the model outputs based on those trip generation rates. However, the key point is that we do not know.
- 5.16 Although the three trip generation references to which Mr Inder⁶ refers are the “go to” references for trip generation, a significant proportion of the trip generation data contained in those references relates to urban locations. I am not familiar with trip generation data directly applicable to land use activities such as those associated with the Proposal. Therefore, I consider it desirable for trip generation rates to be explored more thoroughly and for trip generation at an exemplar location (if one exists) to be measured to obtain a comparison with the information on which the modelling is based.
- 5.17 The trip generation rates used may be conservative⁷, however, I consider that we do not have sufficient information to be able to reach that conclusion. While I consider the most appropriate approach is for the Applicant to obtain trip generation data from exemplar locations, an alternative approach is to assume the WRTM is no more than representative. On this basis, I propose the Applicant should apply an incremental “sensitivity” factor to the underlying trip generation to allow appropriate mitigation to be identified in the event that the WRTM trip generation underestimates the traffic volumes associated with the Proposal.
- 5.18 Another matter in relation to trip generation regarding which I consider the Applicant should provide certainty is the basis on which trip generation for the industrial portions of the Site have been determined. If they are based on industrial trip generation for a specific area of land, I consider that reasonable.

⁴ Paragraph 2.4 Cameron Inder summary statement dated 29 May 2020.

⁵ Paragraph 2.5(a) Cameron Inder summary statement dated 29 May 2020.

⁶ Paragraph 2.5(a) Cameron Inder summary statement dated 29 May 2020.

⁷ Paragraph 2.5(c) Cameron Inder summary statement dated 29 May 2020.

However, if they are based on the assumption that the Site will be occupied by specific types of industrial activity (for example, bed manufacturing), then unless there is certainty through the plan provisions that only those specific types of activity will be permitted at the Site (which I understand is not presently the case), the trip generation should be based on more generic land use as would be allowed within the plan provisions.

Trip adjustment factors

- 5.19 Mr Inder has identified the issue of “Is the adjustment factor for a mixed use development (interval vs external trips) as predicted by the WRTM based assessment for the OSP area, appropriate?”
- 5.20 I generally **do not agree** with the opinion of Mr Inder on the following basis.
- 5.21 Mr Inder⁸ considers that “[...] the WRTM’s trip adjustment factor of 20-25% internal trips is not appropriate [... because] the residential and commercial components of the [Ohinewai Structure Plan] OSP were intended to [...] Firstly, serve and support the industrial components of the OSP area and Ohinewai West [...]”.
- 5.22 In my opinion, it is not reasonable to assume that the Site will be any different to any other area unless we can be confident there will be higher than normal proportions of workers associated with the Proposal living on the Site, when compared to other developments of a similar type. As identified in the statement from Mr Mayhew, no plan provisions are specifically proposed to achieve this outcome.
- 5.23 Assuming that the trip adjustment contained in the WRTM is based on a conventional gravity model approach (which I consider Mr Inder needs to clarify), applying WRTM values is a reasonable approach. However, depending on the presently unquantifiable potential benefits associated with some workers at the Site potentially living on the Site, the WRTM may present a conservative position.

Trip distribution

- 5.24 Mr Inder⁹ has identified the issue of “Are the assumptions in relation to the trip distribution from the WRTM, which has more trips assigned south than north, reasonable?”

⁸ Paragraph 2.7 Cameron Inder summary statement dated 29 May 2020.

⁹ Paragraph 2.8 Cameron Inder summary statement dated 29 May 2020.

- 5.25 I **generally agree** with the opinion of Mr Inder subject to the following comments.
- 5.26 Although it is not entirely clear whether Mr Inder considers a gravity model approach should apply to traffic modelling for the Proposal, my understanding is that the WRTM results applied to the analysis have not been adjusted to provide a modified version of gravity for the trip distribution associated with Proposal.
- 5.27 While I do not disagree with Mr Inder¹⁰, I consider it a matter of concern that the Site “[...] will form part of the larger Huntly community.” The most efficient route for travelling from the main part of Huntly to another part of Huntly (that is, the Site) will be the portion of the Waikato Expressway between the Interchange and the Northern Interchange of the Huntly Section of the Waikato Expressway.
- 5.28 The Expressway is the road at the top of the roading hierarchy through the Waikato. Its intended function is to provide a safe and efficient inter-regional corridor, however, the Proposal would have local traffic travelling on the Expressway for the approximately 2 km between the Interchange and the Northern Interchange. This means that the Applicant is reliant on an inter-regional corridor to function as a local road to provide the facilities needed for the Site that are not being provided at the Site. Ms Loynes addresses this issue further in her summary statement.

Impacts on the surrounding road network

Impacts on Road Network including Expressway

- 5.29 Mr Inder¹¹ has identified the issue of “Are the impacts of the Ohinewai Structure Plan development on the operation of the surrounding road network, including the Waikato Expressway, acceptable?”
- 5.30 I **do not agree** with Mr Inder’s opinion for the following reasons:
- a It is undesirable and inappropriate to use the Expressway as a local road as proposed by the Applicant.
 - b Mr Inder’s¹² conclusion there will be sufficient capacity for other potential developments within the Ohinewai area is based on the assumption there will be a higher than normal proportion of internal trips associated with the

¹⁰ Paragraph 2.9(b) Cameron Inder summary statement dated 29 May 2020.

¹¹ Paragraph 2.10 Cameron Inder summary statement dated 29 May 2020.

¹² Paragraph 2.11(c) Cameron Inder summary statement dated 29 May 2020.

Proposal. As noted above, there are no planning provisions to achieve this outcome and there is limited potential for this to be the case in perpetuity.

- c There is no certainty regarding the scale and nature of other potential developments, therefore, there cannot be certainty there is sufficient capacity on the road network to accommodate vehicle movements associated with those developments.

Impacts of Heavy Vehicles if No Railway Siding

- 5.31 Mr Inder¹³ has identified the issue of “Is the surrounding transport network able to accommodate additional heavy traffic [...] if the rail siding was not constructed?”
- 5.32 I **do not agree** with Mr Inder’s opinion for the reasons set out below.
- 5.33 Mr Inder notes that his modelling demonstrates the proposed mitigation measures will be able to accommodate all heavy vehicle traffic movements that would be associated with the Proposal if the rail siding is not constructed.
- 5.34 As noted in Ms Loynes’ summary statement, the Interchange was not designed and constructed with the expectation Ohinewai would grow to the extent proposed by the Applicant. Therefore, if the Applicant proposes to use the Interchange to accommodate more traffic than was reasonably expected at the time it was constructed, I consider the Applicant should provide the necessary upgrades to the Interchange. As noted in this statement, the upgrades may include, but are not necessarily limited to, sight distance improvements and provision for active mode road users. If the upgrades are not provided the potential exists for traffic movements associated with the Proposal to adversely affect the safety and / or efficiency of the Interchange.
- 5.35 I have not seen anything in the ITA which confirms the adequacy of the Interchange for all heavy vehicle movements that would be associated with the Proposal if the rail siding is not provided.
- 5.36 Further work is needed by the Applicant to consider the implications of heavy vehicle movements in terms of the geometry of the constructed interchange and proposed local road network to accommodate the movements that may be associated with the Proposal.

¹³ Paragraph 2.12 Cameron Inder summary statement dated 29 May 2020.

Need for capacity-related upgrades

- 5.37 Mr Inder¹⁴ has identified the issue of “The Updated ITA concludes that no capacity-related upgrades to the Ohinewai interchange are required based on the WRTM trip generation and distribution. Is this a reasonable conclusion?”
- 5.38 I **do not agree** with Mr Inder’s opinion. As noted above, further information is required in order to conclude (as Mr Inder has done) that the trip generation predictions are conservative. I cannot provide an opinion on whether capacity-related upgrades are required until that information is provided.

Public transport accessibility

- 5.39 Mr Inder¹⁵ has identified the issue of “Are the proposals to enable future public transport accessibility appropriate?”
- 5.40 I **do not agree** with the opinion of Mr Inder on the following basis.
- 5.41 While the detail associated with public transport accessibility will be addressed by Waikato Regional Council, there is a range of matters that need to be addressed in relation to public transport accessibility; these include:
- a The position of any interim bus stops on Tahuna Road and the pedestrian routes to and from those bus stops.
 - b Whether there will be bus stops on both the eastern and western sides of the Expressway or only on one side.
 - c If bus stops are only on one side of the Expressway, how will public transport users access a bus stop if they need to cross the Expressway as pedestrians.
- 5.42 In paragraph 2.17(c) Mr Inder notes that Waikato Regional Council has advised “[...] it would be possible to add a PT stop at Ohinewai near or within the development [...]”. In my opinion, unless there is certainty regarding the public transport solutions that can provide alternatives to private transport for journeys to and / or from the Site, we should not place any reliance on public transport as a viable alternative. In this respect the Applicant is reliant on implementation of as yet undefined public transport proposals by Waikato Regional Council at some

¹⁴ Paragraph 2.14 Cameron Inder summary statement dated 29 May 2020.

¹⁵ Paragraph 2.16 Cameron Inder summary statement dated 29 May 2020.

unknown date in the future. There is nothing in the planning provisions that would ensure these public transport proposals are put in place.

- 5.43 Mr Inder also refers to utilising existing off-peak services, however, I consider there is little benefit in only off-peak services being available using bus stops on the eastern side of the Expressway given that providing access to peak hour services is likely to achieve higher levels of public transport uptake.
- 5.44 In order for public transport to present a viable alternative to private vehicle trips, the two following demands need to be met:
- a Public transport is available at times of day when residents of the Site need to travel from the Site (and vice versa).
 - b Public transport is available at times of day when workers at the Site, who do not live at the Site, need to travel to the Site (and vice versa).
- 5.45 If public transport routes and timetables for travel to and from the Site are not aligned with the travel time needs of potential passengers, I consider it unlikely that public transport will result in noticeable reductions in private vehicle trips to and from the Site. As noted by Mr Kuo in his summary statement, public transport trips are typically a relatively low proportion of all trips. However, if the public transport options available to residents and workers of the Site are unsuitable for the needs of those potential passengers, the associated journeys will either not occur or will be transferred to private motor vehicle journeys. While I do not anticipate that the provision of suitable public transport will make a significant difference to the adverse transport effects associated with the Proposal, the potential lack of suitable public transport emphasises the importance of not regarding the modelled trip generation information as conservative.

Lumsden Road realignment

- 5.46 Mr Inder¹⁶ has identified the issue of “Is the realignment of Lumsden Road to provide for the rail siding and associated level crossing acceptable?”
- 5.47 I **generally agree** with Mr Inder’s opinion but note that the details of the level crossing need to be resolved with KiwiRail. Unless there is certainty that KiwiRail will accept a level crossing we cannot be sure that the rail siding can be provided

¹⁶ Paragraph 2.18 Cameron Inder summary statement dated 29 May 2020.

nor that a significant proportion of the freight associated with the Proposal will be carried by rail rather than by road.

- 5.48 The key question I have in relation to the Lumsden Road realignment relates to the potential that a rail siding will not be constructed and all freight movements to and from the Site will be on the road network.
- 5.49 However, if we assume that the rail siding will be constructed, but not from the outset, I consider that the Applicant should provide information regarding the proposed configuration, alignment, and speed limit for Lumsden Road until the rail siding is constructed.
- 5.50 Notwithstanding the points above, the design of the rail siding is not straightforward and there is nothing in the planning provisions that requires the rail siding to be constructed. I have discussed the Proposal with a colleague¹⁷ with expertise in design for rail systems who commented as follows:
- a A level crossing is not a recommended / preferred solution as there are issues with maintenance, operation, and safety of both road and rail infrastructure.
 - b Movements of trains in / out of the siding need to be evaluated to determine whether they are fit for purpose.
 - c Siding access to both tracks of the NIMT will require a diamond crossing or "slips". It is likely that KiwiRail will reject this non-standard solution.
 - d The track layout of the yard needs to be reviewed in terms of track lengths, shunt limits, and spacing through a "fit for purpose" analysis exercise.
 - e Access from the siding to NIMT needs safety arrangements (trap-switches) to prevent "runaway" trains.
 - f The yard may need a shunting track (tail track) to facilitate coupling and decoupling of sets of trains.
 - g Train travel northbound must reverse to enter the siding. Movement from the Up Main must travel through the crossover to the Down Main.
 - h Track layout in the storage area seems not to be optimised from a usage, handling, and loading of freight point of view.

¹⁷ Michael Than, Rail Engineering Services Lead, WSP NZ Ltd, Auckland.

- 5.51 For these reasons, I consider it important that the Waikato District Council has oversight of the design of the rail siding (if it is ever built) and the associated design of Lumsden Road on the approaches to and at the level crossing.

Walking / cycling connections

- 5.52 Mr Inder¹⁸ has identified the issue of “Are the proposed local road and walking/cycling connections to and within the Ohinewai Structure Plan area appropriate?”

- 5.53 I **do not agree** with the opinion of Mr Inder on the following basis.

Overview

- 5.54 Walking and cycling connections have not been adequately considered. I consider it inappropriate and undesirable to encourage vulnerable road user movements from one side of and Expressway to the other side unless there are suitable facilities to accommodate the desire lines of these active mode users.
- 5.55 I have not considered in any detail the walking and cycling network within the Site, however, I consider there is significant potential to provide attractive and suitable facilities for active modes within the Site. Therefore, I consider it important for there to be discussion and agreement between the transport engineers that the plan provisions adequately address the manner in which the Site will be configured to ensure adequate provision for active mode travel within the Site.
- 5.56 My concerns regarding active mode journeys primarily relate to movements to and from the Site.

Ohinewai School (years 1 to 8)

- 5.57 In my opinion it is not appropriate for the major population centre at Ohinewai (that is, the Site) to be located on the other side of the Expressway from Ohinewai School (the School) with a connection via the proposed overbridge requiring long journeys for active modes that encourage the use of private motor vehicles in preference to active mode travel.
- 5.58 Adopting the point annotated “16” (refer to Figure 1 below) on Figure 2 of the ITA as the approximate centroid of the residential area on the Site, the walking distance to the Tahuna Road / Lumsden Road intersection is approximately 1.18 km. The distance from the intersection to the Ohinewai Road frontage of

¹⁸ Paragraph 2.20 Cameron Inder summary statement dated 29 May 2020.

Ohinewai School (following the approximate route illustrated in Figure 33 of the ITA) is approximately 0.83 km. Therefore, the average walk to school distance would be about 2.0 km.



Figure 1: Approximate centroid of residential area (highlighted by blue circle) on the Site (image source: ITA, Figure 2)

- 5.59 Based on searches conducted by me and WSP's research librarian, there appears to be very little information available regarding the average speed of children walking to and from school.
- 5.60 Notwithstanding the limited data available, I consider it likely that the 2 km journey distance from the Site to the School will discourage travel by active modes. The basis for my opinion is as follows:
- a Statistics New Zealand¹⁹ states that the average walk to work journey is 1.2 km.
 - b An Otago University study²⁰ of active transport (walking and cycling) to school identified that the average journey distance for secondary school students is 1.4 km.
 - c Ministry of Transport²¹ data indicates that 11 minutes is the average time spent walking per trip leg for education purposes for people aged 5 to 17 years. If we assume a walking speed²² of 5 km/h for a child, the walking trip length within an 11-minute average period is 0.92 km.

¹⁹ Statistics New Zealand Household Travel Survey (July 2011-June 2014),

<http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7432>, accessed on 3 June 2020.

²⁰ Personal, social and environmental correlates of active transport to school among adolescents in Otago, New Zealand. Mandic S., et al 2015 in Journal of Science and Medicine in Sport.

²¹ Ministry Transport, New Zealand, Walking, New Zealand Household Travel Survey, 2011 - 2014, September 2015.

²² The Mechanics of Walking in Children, Cavagna, GA., et al, Journal of Physiology, 1983, 343, pp. 323-339.

- 5.61 This means that the walking journey from the Site to the School is considerably further than the average walking journey adults or children will make. Therefore, I do not consider that the shared path overbridge will mitigate the discouragement to active mode use associated with the Site being on the other side of the Expressway from the School.
- 5.62 Although the length of the journey will discourage the use of the connection, unless the Applicant owns the land required to construct the connection, there is no certainty as to whether the active mode connection can be established. While the planning provisions (Residential Zone) indicate that the connection to Ohinewai West will be constructed in Year 3, I understand that Mr Mayhew has concerns as to whether the provisions are sufficiently strong to ensure the connection is constructed.

Huntly

- 5.63 I have the following concerns regarding Mr Inder's assumptions about a walking and cycling connection to Huntly:
- a The cycling connection relies on a shared path along the river stop bank that is yet to be constructed;
 - b If we consider the alternative of a shared path alongside the old SH1, the overall cycling route distance from the approximate centroid of the residential area on the Site through to Huntly College (as an example destination) would be approximately 10.5 km. Statistics New Zealand²³ states that the average cycle to work journey is 5.1 km. On this basis, a cycle trip from the Site to Huntly College is about twice the length of the average cycle to work journey. Therefore, I consider it unlikely that many people working or being educated in Huntly will adopt cycling as their mode of travel to and / or from the Site.
- 5.64 The active mode journey distance from the Site to Huntly reinforces the question of the appropriateness of the Site being "[...] part of the larger Huntly community."²⁴

²³ Statistics New Zealand Household Travel Survey (July 2011-June 2014), <http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7432>, accessed on 3 June 2020.

²⁴ Paragraph 2.9(b) Cameron Inder summary statement dated 29 May 2020.

Shand Properties

- 5.65 In addition to the matters identified by Mr Inder, I consider that the active mode connections with the Shand Properties site are a concern. Development of this site may attract residents who are workers at the Site.
- 5.66 If the Shand Properties site on the western side of the Expressway is developed, the proposed active mode connection from the Shand Properties site through to the Ambury site will be unattractive for active mode users because of its length.
- 5.67 For cyclists, the alternative is to use the overbridges of the Interchange, which do not have adequate width to accommodate cyclists in a separate lane or on a shoulder of adequate width.
- 5.68 I consider it likely that pedestrians would use the Interchange bridges or cross the Expressway at grade in preference to using the proposed shared path overbridge route. The journey across the Expressway from the approximate centroid of the Shand Properties site to Lumsden Road (approximately midway between Balemi Road and Tahuna Road) is 0.72 km (as illustrated in Figure 2). The route via the Interchange is approximately 2 km, while the route via the shared path overbridge is approximately 2.7 km.



Figure 2: Potential pedestrian route from Shand Properties site to Ambury site²⁵

- 5.69 Although the Shand Properties site could be configured to make at grade crossings of the Expressway less attractive, pedestrians will tend to find the route they regard as suitable.

²⁵ Image source: Google Earth and Maxar Technologies, accessed from Google Earth 3 June 2020.

- 5.70 Depending on the configuration of the Ohinewai Lands site (to the south of Tahuna Road), connection to the shared path overbridge may be relatively direct. However, further information is required regarding the adequacy of any connection from the Ohinewai Lands site to the shared path.

Transportation infrastructure improvement triggers

- 5.71 Mr Inder²⁶ has identified the issue of “Are the transport upgrade triggers for the Ohinewai Structure Plan appropriately aligned with the development staging plan?”
- 5.72 Section 12 of the ITA describes the Applicant’s proposed staging of transportation infrastructure improvements.
- 5.73 Mr Inder²⁷ considers the transport upgrade triggers are appropriate, however, given the uncertainty associated with trip generation and active mode use, I consider it premature to conclude that the triggers are appropriate.

Internal road network

- 5.74 Mr Inder²⁸ has identified the issue of “Are the proposed internal road network and cross sections for the Ohinewai Structure Plan area acceptable?”
- 5.75 It appears that the narrower road reserve width²⁹ described by Mr Inder is proposed based on economic factors rather than transport engineering. However, I accept Mr Inder’s argument that appropriately designed relatively narrow carriageway roads, whose primary function is property access, will promote safer vehicle speeds and thus a safer environment to support the viability of active mode travel³⁰.

Implications of the development of the Ohinewai Lands Ltd land zoning

- 5.76 Mr Inder³¹ has identified the issue of “Are there any transport implications if the OLL land is identified in the District plan for possible future development?”
- 5.77 Although individual proposals in the area, including but not limited to Ohinewai Lands Ltd (OLL), will need to be supported by their own transportation assessment, my concern is that the Proposal may be permitted to proceed and

²⁶ Paragraph 2.22 Cameron Inder summary statement dated 29 May 2020.

²⁷ Paragraph 2.23 Cameron Inder summary statement dated 29 May 2020.

²⁸ Paragraph 2.24 Cameron Inder summary statement dated 29 May 2020.

²⁹ Paragraph 2.25(c) Cameron Inder summary statement dated 29 May 2020.

³⁰ Paragraph 2.25(c)(iii) Cameron Inder summary statement dated 29 May 2020.

³¹ Paragraph 2.26 Cameron Inder summary statement dated 29 May 2020.

the OLL analysis (and that of other developments) would be built on a permitted baseline that incorporates the Proposal.

- 5.78 My preference is that the analysis associated with the Proposal takes into account the big picture. This approach will determine whether there are practicable mitigation options available to accommodate the cumulative adverse effects associated with traffic to and from the potential development areas in the vicinity including the Site, OLL, Shand, and the additional areas of land identified through Waikato 2070. From this analysis it could be concluded whether the transport network as a whole is adequate and, if not, what infrastructure investment is required.

Implications of the Shand Properties Ltd proposed land zoning

- 5.79 Mr Inder³² has identified the issue of “Are there any transport implications if the SPL land is zoned Country Living?”
- 5.80 I agree with Mr Inder that routes for vulnerable road users crossing Tahuna Road near its intersection with Ohinewai South Road need to be provided to accommodate demand for active mode use. However, for the reasons outlined above, I do not consider the active mode route to the Site, which would be facilitated through the Tahuna Road crossing, would make the use of the active mode Expressway overbridge significantly more attractive.
- 5.81 While mitigation of the associated adverse effects would fall to the developers of the Shand site, the mitigation may not be needed if the Proposal did not exist. Therefore, I consider the Applicant should identify the cumulative adverse effects associated with potential developments at Ohinewai (including the Proposal, Shand, Ohinewai Lands, Waikato 2070, et cetera) and identify practicable solutions to address the likely cumulative adverse effects that may be created if the Proposal is permitted to proceed.

Adequacy of district plan provisions to deal with traffic effects

- 5.82 Mr Inder³³ has identified the issue of “Do the proposed plan provisions developed by BBO adequately address any potential adverse transport effects?”
- 5.83 As noted in this statement I have concerns regarding the analysis of the transportation effects of the Proposal, therefore, I consider it premature to conclude that the proposed planning provisions are appropriate. Even if we were

³² Paragraph 2.29 Cameron Inder summary statement dated 29 May 2020.

³³ Paragraph 2.31 Cameron Inder summary statement dated 29 May 2020.

to put aside those concerns, I also consider that the planning provisions are not sufficient to ensure all the outcomes sought by the Applicant to address traffic effects can necessarily be adequately achieved. This issue is discussed further by Mr Mayhew.

6 Additional issues identified

Sight distances at the Interchange

6.1 Issue: Are the sight distances at the Interchange appropriate?

6.2 Section 8.3.1 and Appendix I of the ITA include the Applicant's assessment of sight distances at the Interchange. I have significant concerns about the sight distance assessment as follows:

- a The ITA (Table 28) describes the results of a survey of vehicle operating speeds on Tahuna Road at the Interchange and notes that the 85th percentile speeds at the southbound off-ramp were 49 km/h eastbound (that is, looking west) and 55 km/h westbound (that is, looking east). Confirmation is required regarding the scale and timing of the survey (we are only advised that it was undertaken in February 2020).
- b The ITA compares the measured sight distances with the Safe Intersection Sight Distance (SISD) criteria described in Austroads Part 4A³⁴. However, the comparison does not include details of the reaction time criteria applied for determining the "Minimum Required SISD" (to which reference is made in Table 28 of the ITA) and this information needs to be provided.
- c The Appendix I memorandum observes the following in relation to sight distance from the southbound off-ramp:
 - i "[...] sightlines looking east [...] can be achieved if the overgrown vegetation [...] is cleared."
 - ii "[...] sightlines looking west do not comply with the minimum site [sic] distance requirements - the sightlines were observed to be obstructed by overgrown vegetation and possibly by the bridge parapet [...]".
 - iii "[...] vehicles approaching from the west (from roundabout) are not readily visible due to the vertical alignment of the road [...]".

³⁴ Austroads, 2017, Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, Austroads, Sydney, Australia.

- iv “[...] the sightlines looking west can effectively be improved by moving the stop line at the intersection approximately half a metre south.”
 - d Figure 3.2 in Austroads 4A indicates that the position from which safe intersection sight distance should be determined on the side road (in this case the southbound off-ramp) is 5 m back from the edgeline although a minimum distance of 3 m is acceptable. The Applicant is proposing to reduce the 3 m minimum to 2.5 m; in my opinion, this is inappropriate.
 - e The ITA indicates that the sight distance to the east is acceptable and that the sight distance to the west can be brought within acceptable bounds by compromising the minimum setback described by Austroads. In my opinion, we should not be determining the acceptability of facilities for the Proposal based on compromised minimum design criteria that are reliant on a limited speed survey.
 - f Based on my observations on-site, it appears the sight distance from the southbound off-ramp to the east and west is affected by the vertical alignment of Tahuna Road, therefore, I consider it unlikely that vegetation trimming alone would resolve the sight distance constraints.
- 6.3 I consider that further work is required to identify the available sight distance at the Interchange and from that to determine the mitigation required to produce adequate sight distances.

Swept paths at the interchange

- 6.4 Issue: Are swept paths at the Interchange appropriate?
- 6.5 No swept path analysis has been provided by the Applicant to demonstrate that the vehicle movements associated with the Proposal can occur without those movements coming into potential conflict with other vehicle movements.
- 6.6 Based on swept path analysis completed by one of my design colleagues³⁵, it appears that the Interchange can accommodate most turning movements by a design semi-trailer that are likely to be associated with movements to and from the Site. However, as illustrated in Figure 3, a left turn movement from the southbound off-ramp requires the turning design vehicle to encroach into the westbound lane of the Interchange. There is potential for this movement to result in conflict between turning vehicles and through traffic on the Interchange or for the drivers of turning semi-trailers needing to wait until both lanes on the

³⁵ Kimiora Ngatai, WSP NZ Ltd, Tauranga.

Interchange bridges are clear before commencing a turn; this could result in delays on the southbound off-ramp being longer than indicated by the Applicant's modelling.



Figure 3: Swept path for design semi-trailer turning left from southbound off-ramp

- 6.7 Mitigation is required to ensure that the turning path can be accommodated without crossing the centre line. This issue needs to be resolved by the Applicant.

Intersections on Tahuna Road

- 6.8 Issue: Is the Tahuna Road layout appropriate?

Positions of Accesses and Intersections

- 6.9 The ITA indicates that the Applicant proposes the following features on Tahuna Road that have the potential to affect the safety and efficiency of Tahuna Road:
- a Existing and partially reconstructed Tahuna Road / Lumsden Road roundabout intersection, but with traffic volumes increased.
 - b Interim bus stop³⁶.
 - c “Two new intersections, one Left In / Left Out (LILO) and one full movement roundabout [...]”³⁷; the location of these is illustrated as points 21 and 23 in Figure 4 below.

³⁶ Paragraph 2.17(a) Cameron Inder summary statement dated 29 May 2020.

³⁷ ITA, page 2.

- d “Reduction to 60km/h posted speed limit [...] from the SH1 interchange off ramps to 200m east of Access 1 to the APL site, then 80km/h to the eastern extents of the development. [sic]”.³⁸
- e Access of an unknown nature to orchard / beehives and processing area, illustrated as point 20 on Figure 2 in the ITA.
- f Left turn in to the service centre between the Tahuna Road / Lumsden Road intersection and the left turn in / left turn out (LTI / LTO) intersection described in item c above.



Figure 4: Tahuna Road intersections for the Site (source: Figure 2, ITA)

- 6.10 On this basis, within an overall length of approximately 210 m (centreline of intersection to centreline of intersection)³⁹ there would be the:
 - a Tahuna Road/Lumsden Road intersection,
 - b LTI to the service centre, and the
 - c LTI / LTO intersection on Tahuna Road.
- 6.11 Based on the existing 100 km/h speed limit for Tahuna Road (and potential future speed limit⁴⁰ (80 km/h) as identified through preliminary analysis), it appears there is inadequate spacing between the intersections and / or the access in terms of the requirements of Table 14.12.5.1 of the Waikato District Proposed District Plan (PDP).

³⁸ ITA, page 3.

³⁹ Scaled from drawing 145860-08-0221 in Appendix B of the ITA.

⁴⁰ Information obtained from Waka Kotahi secure website <https://megamaps.abley.com/Maps/>, accessed on 8 June 2020.

- 6.12 Section 14.12.1.1(e) of the PDP requires sites with legal access to two roads to access the road with the lower classification in the road hierarchy (or where roads have the same classification access should be to the road with the lower average daily traffic movements). Table 14.12.5.6 of the PDP describes Tahuna Road as an Arterial and (by omission) describes Lumsden Road as being lower in the hierarchy. Therefore, the question arises as to whether there should be any access to the service centre from Tahuna Road.
- 6.13 Recognising that the ITA⁴¹ refers to the potential for a 60 km/h speed limit along a portion of Tahuna Road, it would be useful to receive clarification from the Applicant regarding the manner in which PDP requirements will be met.
- 6.14 Notwithstanding the points above, one of the issues with providing a left turn in and left turn out facility is that visitors to a site may seek to exit that site in the same location they entered. In the case of the Tahuna Road LTI / LTO intersection, a visitor that turns left into the Site and then endeavours to leave the Site at the same access location will be forced into a left turn out, whereas they may be seeking to turn right from the Site to return in the direction from which they came. This raises the question as to the manner in which the equivalent right turn manoeuvre can be achieved. It appears the intention is that the roundabout further along Tahuna Road would provide for the right turn manoeuvre, however, given the distance along Tahuna Road to the roundabout there is potential for undesirable manoeuvres to occur on Tahuna Road. In my opinion, it would be better to have a single access point on Tahuna Road that accommodates all turning movements than to have the LTI / LTO and roundabout configuration proposed by the Applicant.
- 6.15 Drawing number 145860-08-0221 in Appendix B of the ITA illustrates the LTI / LTO intersection referred to above; it also illustrates a pedestrian crossing facility near the Tahuna Road / Lumsden Road roundabout (refer to Figure 5 below).
- 6.16 However, the location of the pedestrian crossing facility and shared path with which it connects appears to conflict with the left turn in access for the service centre (refer to Figure 6).

⁴¹ ITA, page 3.

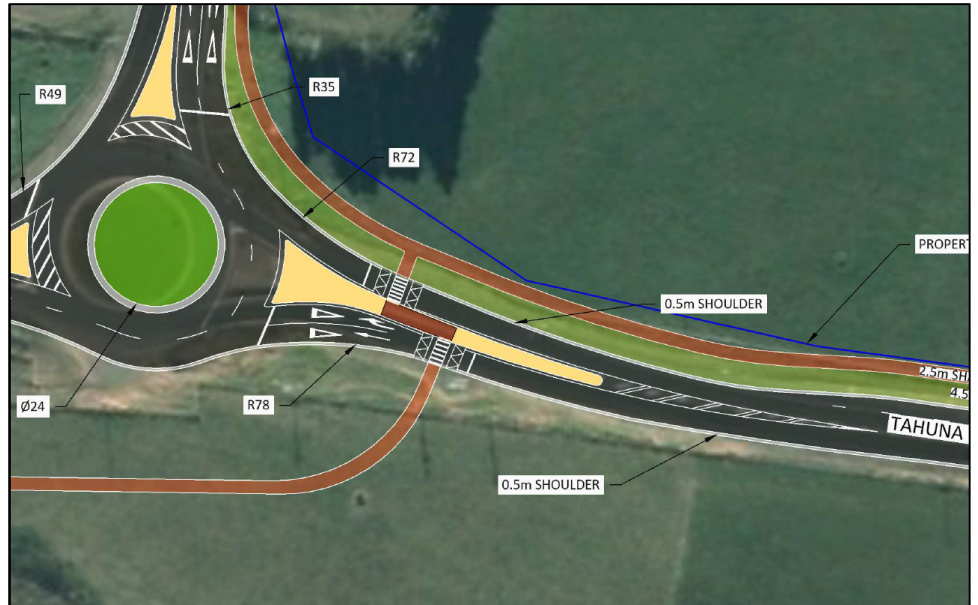


Figure 5: Pedestrian crossing facility on Tahuna Road to the east of the Tahuna Road / Lumsden Road intersection (source: extract from Drawing number 145860-08-0221, Appendix B, ITA)

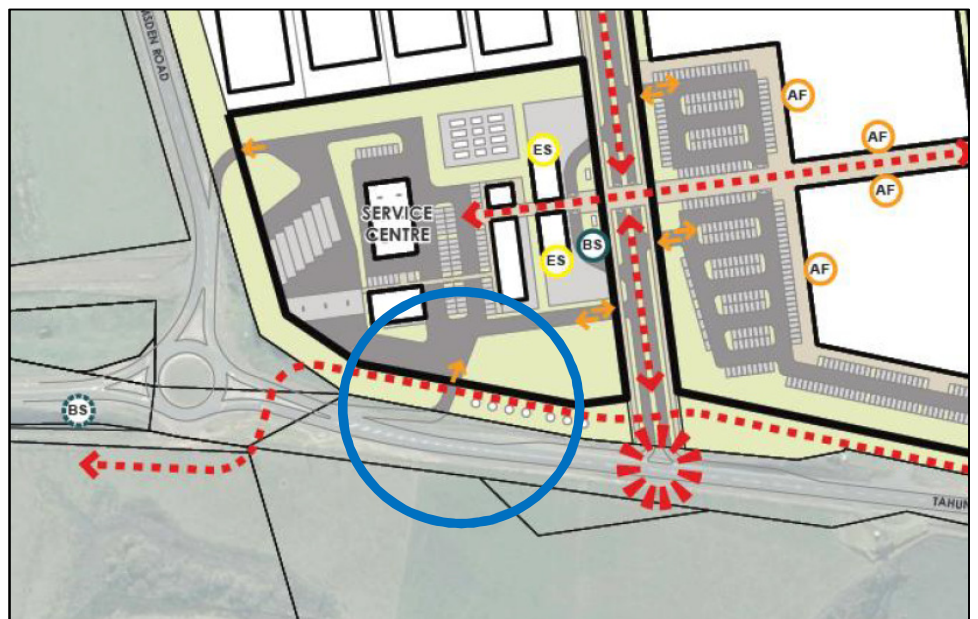


Figure 6: Left turn in to service centre (highlighted by blue circle) appears to conflict with shared path and pedestrian crossing facility (source: Figure 4, ITA)

- 6.17 In my opinion, additional analysis is required to either reduce the number of intersections along Tahuna Road and / or to reconfigure those intersections to reduce the potential for adverse effects associated with movements to and from the Site. In addition, I consider further analysis is needed to address the apparent conflict between the pedestrian crossing facility and the left turn in access to the service centre.

- 6.18 Notwithstanding the points above, unless the mitigation and trigger points for that mitigation are clearly defined in the plan provisions there will be uncertainty regarding the appropriateness and adequacy of the mitigation.
- 6.19 Based on the manner in which the draft planning provisions present the upgrade requirements in tables separated across industrial, residential, and business zone rules, it is difficult to clearly determine what is required and when. I consider it preferable for the upgrade requirements to be clearly linked to effects-based triggers rather than specific timeframes and / or stages of development of the Site.

Separation from the Interchange

- 6.20 The ITA⁴² refers to two southbound right turn lanes being required to accommodate turning movements from Lumsden Road onto Tahuna Road. A drawing⁴³ in Appendix B of the ITA illustrates that the full length of the two westbound lanes on the Tahuna Road exit from the roundabout will be 52 m long followed by a 56 m taper.
- 6.21 With regard to merging two lane exits from a roundabout down to one lane Austroads⁴⁴ states “It is desirable that the two lanes extend from the exit a distance equivalent to six seconds of travel time (absolute minimum of four seconds), followed by a merge length based on 0.6 m/s lateral shift. It is also desirable that a run out (e.g. a shoulder) area be provided as an escape path in the event of potential conflict between merging vehicles.”
- 6.22 While there is presently some uncertainty regarding the intended speed limit and design speed for the Tahuna Road / Lumsden Road roundabout, the table below describes the length required to accommodate four seconds and six seconds of travel time and an adequate length over which a 3.5 m wide lane can be merged into another lane.

Design speed	Two lane length (m)		Merge length (m)	Total length (m)	
	Desirable	Minimum		Desirable	Minimum
40 km/h	67	44	65	131	109
50 km/h	83	56	81	164	137
60 km/h	100	67	97	197	164
70 km/h	117	78	113	230	191
80 km/h	133	89	130	263	219

⁴² ITA, pages 4, 67, and 68.

⁴³ Drawing 145860-08-0219 in Appendix B of the ITA.

⁴⁴ Austroads, 2015, Guide to Road Design Part 4B: Roundabouts, page 17.

- 6.23 The distance from the eastern end of the splitter island on the Tahuna Road exit from the roundabout to the eastern abutment of the NIMT railway overbridge is about 120 m. Noting that it would not be good practice to have the single lane portion commencing at the abutment of the bridge (notwithstanding the earthworks that would be required to achieve this in any case), it appears there is not sufficient length between the roundabout and the bridge to allow for a two-lane westbound exit from the Tahuna Road / Lumsden Road roundabout.
- 6.24 Questions also arise as to whether the mitigation proposed by the Applicant will accommodate the turning movements associated with Ohinewai Lands Limited and the Shand Properties site.
- 6.25 Therefore, I consider that the practicality of the solution proposed by the Applicant needs further consideration.

Acceleration and deceleration at the Interchange

- 6.26 Issue: Are the on and off-ramp lengths at the Interchange adequate?
- 6.27 The ITA includes reference to the length of the southbound off-ramp at the Interchange and notes “The length of this off ramp is 312m [sic] from the stop line to the nose of the gore area of the ramp. [...] The required deceleration distance (comfortable deceleration) from 110km/h [sic] to a stop is 185m [sic] [...]”⁴⁵.
- 6.28 While I agree with the Austroads⁴⁶ deceleration length to which the ITA refers, it is important to note that the table consulted relates to deceleration distances required for cars on a level grade. The positive gradient of the off-ramp will effectively extend the available deceleration length, however, consideration needs to be given to the fact that the Proposal will generate a relatively large number of heavy vehicle movements, therefore, consideration needs to be given to the needs of those heavy vehicles.
- 6.29 The ITA does not appear to include consideration of the lengths of the two on-ramps. I consider the Applicant should provide analysis of the effects of Proposal related traffic (particularly heavy vehicles) on the Expressway at the locations where accelerating Proposal traffic merges with through traffic on the Expressway.

⁴⁵ ITA page 65.

⁴⁶ Table 5.2, Austroads, 2017, Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, Austroads, Sydney, Australia.

Distance between interchanges

- 6.30 Issue: Are the distances between the Interchange ramps and the Northern Interchange ramps adequate given the volumes of traffic associated with the Proposal that will be travelling between the two interchanges?
- 6.31 While Waka Kotahi has approved the separation between the ramps of the Northern Interchange and those of the Ohinewai Interchange, Ms Loynes' (in her summary statement) notes that when the Interchange was designed it was not anticipated there would be significant development in the Ohinewai area. Therefore, by extension, when the Northern Interchange was designed it was not anticipated there would be significant development in the Ohinewai area.
- 6.32 Austroads⁴⁷ notes "The spacing of interchanges is important because it can result in issues associated with overlapping or insufficient separation of entry ramps and exit ramps. [...] The general conclusion that can be drawn [...] is that the minimum spacing of interchanges is [...] in rural areas between 5 km and 8 km."
- 6.33 The separation between the Interchange and the Northern Interchange ramps is approximately 1.5 km. I consider the Applicant should provide analysis of the effects of the increased traffic associated with the Proposal on the spacing between the interchanges.

Robert Clive Swears
17 June 2020

⁴⁷ Page 14 and 15, Austroads, 2015, Guide to Road Design Part 4C: Interchanges, Austroads, Sydney, Australia.