

**IN THE MATTER**                    of applications pursuant to the  
Resource Management Act 1991

**BY**                                    Foodstuffs North Island Limited

**FOR**                                Resource consent for the  
construction and operation of a  
new supermarket with an  
associated drive through fuel  
facility including car parking and  
all other enabling works.

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**STATEMENT OF EVIDENCE (Transportation)**

**Alastair Black**

**29 April 2019**

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## INTRODUCTION

1. My name is Alastair James Black. I hold a Bachelor of Engineering degree (Civil, 2002) from the University of Canterbury. I am a Chartered Member of the Engineering New Zealand (CMEngNZ) and a Chartered Professional Engineer (CPEng). I have worked in the transportation field for 17 years.
2. I am based in Hamilton and have worked for Gray Matter Ltd as a transportation engineer since March 2009. For two years prior to that I was a Project Engineer for the London Borough of Hammersmith and Fulham. For the previous six years I was a civil/transportation engineer with Opus International Consultants Ltd in Hamilton.
3. I am familiar with the transport issues arising in and around the Waikato, having provided advice to Hamilton City Council (HCC) and other local authorities, NZ Transport Agency (NZTA) and developers on 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 traffic engineer assisting Hamilton City Council with developing the transportation provisions of the Proposed District Plan (PDP);
  - b. Consultant traffic engineer/transportation planner assisting Council's with the development of structure plans and District Plan provisions, including St Leger Concept Plan for Waipa District Council and Matamata Precinct F for Matamata Piako District Council;
  - c. Consultant civil/transportation engineer for Road Controlling Authorities assisting in the review of consent applications including quarries, industrial, commercial and residential developments within Hamilton and the wider Waikato region;
  - d. Consultant civil/transportation engineer for developers, landowners and local authorities preparing traffic impact assessments for development proposals including quarries, rest homes, museums and commercial developments.

- e. Consultant project manager for HCC and NZTA for the Southern Links Investigation relating to a Notice of Requirement for 32km of proposed arterial road network to the south of Hamilton; and
  - f. I have completed the NZTA Road Safety Engineering Workshop and have led safety audits on urban and rural improvement projects for local roads and state highways.
4. I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and have complied with that practice note in preparation of this evidence. I agree to comply with it in presenting evidence at this hearing. The evidence that I give is within my area of expertise, except where I have stated my reliance on other identified evidence. I have considered all material facts that are known to me that might alter or detract from the opinions that I express in this evidence.

#### **SCOPE OF EVIDENCE**

5. I have been retained by HCC to provide transportation advice relating to the consent application by Foodstuffs North Island Limited (the Applicant).
6. I am familiar with the site and have visited the area on a Wednesday evening and Saturday morning to observe traffic movements on Eagle Way, and the surrounding road network.
7. The purpose of this statement of evidence is to address matters raised in the application relating to transportation and consideration of submissions in this regard.
8. My evidence covers:
- a. My review and assessment of the applicant's Integrated Transport Assessment and further information response,
  - b. Strategic context;
  - c. Expected network effects at 2021;
  - d. Site access;
  - e. Site layout and parking;
  - f. Comments on submissions; and
  - g. My Conclusions.

9. In preparing this evidence I have reviewed the following:
  - a. Integrated Transport Assessment prepared by Traffic Planning Consultants Ltd, July 2018 (Ref 17119-r1v2) (now superseded);
  - b. Integrated Transport Assessment prepared by Traffic Planning Consultants Ltd, November 2018 (Ref 17119-r1v3);
  - c. Response to transportation related items raised in Council's request for further information – dated 16 August 2018, prepared by Traffic Planning Consultants Ltd, 28 September 2018 (ref 17119-r1v2); and
  - d. WSP-Opus Preliminary Design Safety Audit (March 2019).
10. At the time I prepared my Transportation Assessment, the outputs from the 2031 VISSIM modelling being undertaken by BBO were not available. I have relied on the 2021 VISSIM modelling. Mr Meister has been engaged by HCC to review this modelling and will provide evidence on the traffic modelling outputs and network performance based on the 2031 modelling.
11. I understand that additional modelling of the Te Rapa Road access is currently being undertaken by BBO.

## **THE PROPOSAL**

12. The proposal includes:
  - a. 6,358sq.m GFA including 3,925sq.m retail, 1,671sq.m of service and storage and 607sq.m mezzanine;
  - b. Petrol station with eight filling positions;
  - c. 300 car parks including 23 staff spaces, seven accessible spaces, five spaces for less mobile users, 15 cycle spaces for staff and 13 cycle spaces for visitors; and
  - d. Separate loading area accessed from the proposed Maui Street extension. Staff parking is accessed from the Maui Street extension.
13. Based on the application, the site will be accessed as follows:
  - a. Left-in and left-out access from Te Rapa Road. The crossing is proposed to be 7.5m wide at the boundary;
  - b. Left-in and left-out access from Eagle Way. The crossing is proposed to be 11m wide at the boundary with a splitter island separating the movements;

- c. Two 11m wide crossings to the proposed Maui Street extension that accesses the loading area; and
  - d. One 8m wide crossing to the proposed Maui Street extension that accesses the car park.
14. The proposed mitigation includes:
- a. Partial signalisation of the Karewa Place/ Wairere Drive intersection to facilitate right-in movements from Wairere Drive - this is to mitigate unacceptable delays that would otherwise result at Te Rapa Road/ Eagle Way/ The Base Parade and Te Rapa Road/ Wairere Drive;
  - b. A solid median island on Eagle Way, approx. 67m long – this is to prevent right-turns out of the site;
  - c. A left-turn deceleration lane on Eagle Way, approx. 20m long – this is to facilitate access to the site; and
  - d. Providing a priority-controlled intersection at the Karewa Place/ Eagle Way/ Maui St intersection with Give Way control on the Eagle Way approach.
15. The Applicant's expected trip generation of 954veh/hr appears reasonable and uses data from existing Pak'n Save stores that is similar to supermarkets in the NZ Transport Agency Research Report 453. The trip generation is reduced by 20% (191veh/hr) to account for pass-by trips. I consider this to be a reasonable assumption.
16. In summary, I consider that the trip generation for the Pak'n Save activity as described in the ITA appears reasonable.

## **STRATEGIC CONTEXT**

17. Wairere Drive forms part of the Hamilton Ring Road and has an important strategic function that is recognised by its classification as a:
- a. Significant Road Corridor in the Regional Policy Statement (RPS);
  - b. Regional Road Corridor in the 2018 Update to the Regional Land Transport Plan 2015-2045 (RLTP);
  - c. Major arterial transport corridor with a Strategic Network overlay in the District Plan. *"The Strategic Network overlay recognises the significant strategic role that these transport corridors perform for moving goods and people as part of the wider national and regional transport*

*network. Protecting the efficient and effective operation of the strategic network so it can continue to provide its wider transport functions is a critical outcome”;* and

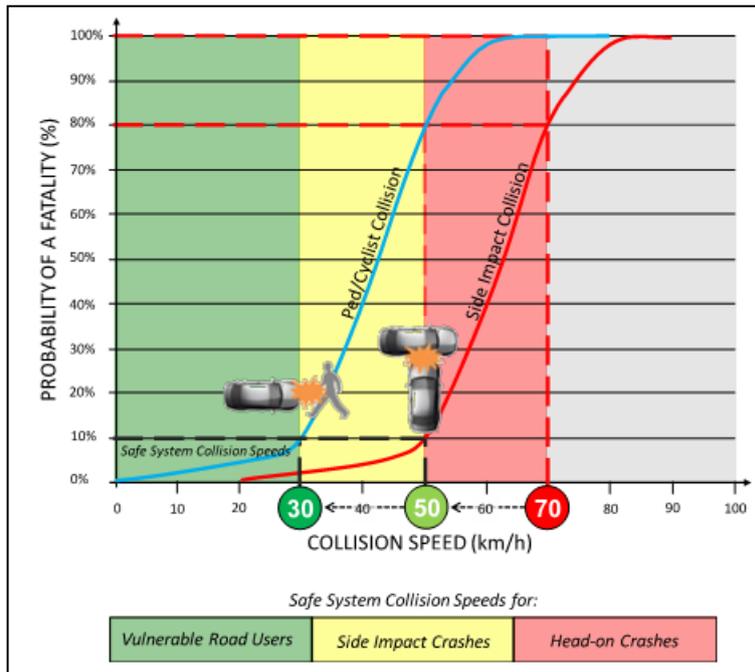
d. Arterial in the One Network Road Classification (ONRC).

18. On 20 June 2017<sup>1</sup>, HCC’s Growth and Infrastructure Committee resolved to “*express Hamilton City Council’s road death target in 10 year’s time as zero in the Access Hamilton Programme 2017.*” I understand this to mean that HCC has adopted Vision Zero as part of the its citywide transport strategy. The District Plan provides the framework for the assessment of transportation effects through objectives, policies and standards which take into consideration road safety. This includes Policies 25.14.2.1b which states “*The transportation network ... is planned, designed, constructed and managed in a manner that: (iv) Promotes a safe and efficient transport network.*”
19. Vision Zero refuses to accept that fatalities and serious injuries are inevitable consequences of mobility on the transport network. Vision Zero challenges system designers to adapt the transport system to advance safety for all users. A core principle of the vision is that 'Life and health can never be exchanged for other benefits within society’.
20. Vision Zero and the Safe System recognise that people make mistakes and are vulnerable in a crash. Mistakes are inevitable – deaths and serious injuries from road crashes are not. The Safe System approach to road safety ensures that in a crash impact energy remains below the thresholds likely to results in death or serious injury.
21. Speed at the time of a crash is the biggest predictor of crash forces. The figure below shows the Safe System collision speeds for vulnerable road users, side impact and head-on crashes. At a collision speed of 50km/h the risk of death and serious injury is low (10%) for vehicle-vehicle impacts but very high (80%) for pedestrian/cyclist-vehicle conflict.

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<https://www.hamilton.govt.nz/AgendasAndMinutes/20170620%20-%20Growth%20and%20Infrastructure%20Minutes%20-%20Confirmed%20Minutes%20-%202020%20June%202017.pdf>



**Figure 1: Probability of a Fatality vs Collision Speed<sup>2</sup>**

22. The Integrated Transport Assessment Requirements (Appendix 15, Section 15-2, Page 15-11) provide further guidance on 'safety' and 'efficiency' which I have relied on to inform my assessment of effects. When assessing the efficiency effects of the proposal I have considered the desirable levels of service and acknowledge where the proposal mitigates its effects to the pre-proposal level of service.

*As part of assessing the effects on the transport network the ITA should consider any changes over the relevant assessment period to the:*

- a. Predicted level of personal risk to individuals (safety) using the network*
- b. Levels of service (efficiency) of the network.*

*This should include specific consideration of whether the desirable levels of service below can or should be maintained. This should recognise the pre-proposal levels of service and whether other benefits accrue that could have the potential to offset or otherwise support a lesser level of service. For example longer traffic delays resulting in slower speeds may support a pedestrian-friendly land use environment in the Central City.*

*It is not a requirement of the Plan that individual proposals mitigate the effects of other proposals in order to achieve the desirable levels of service. Where the pre-proposal desirable levels of service over the assessment period have already been exceeded, it is not expected that a proposal be required to restore the network to the desirable levels of service, rather it is expected that the proposal mitigates its effects to maintain the pre-proposal level of service for the relevant assessment period.*

<sup>2</sup> Vicroads, Road Design Note RDN 03-07 Raised Safety Platforms (RSPs), September 2018

*Desirable levels of service:*

*i. An average delay per vehicle during Peak Periods on the approaches to intersections of no greater than:*

- *55 seconds for the Strategic Network, Major and Minor Arterial transport corridors*
- *80 seconds for all other transport corridors*

*ii. On the Strategic Network, Major and Minor Arterial transport corridors during Peak Periods:*

- *Average vehicle speeds between intersections restricted to no less than 90% of the posted speed limit*
- *Average vehicle speeds, including intersections, constrained to no less than 18 km/h*

*iii. Unless demonstrated otherwise with site specific data, Peak Periods are taken to be 7am to 9am and 4pm to 6pm Monday to Friday.*

## **2021 NETWORK PERFORMANCE**

23. At the time I prepared my Transportation Assessment, the outputs from the 2031 VISSIM modelling being undertaken by BBO were not available. I have relied on the outputs from the 2021 VISSIM modelling. Mr Meister is presenting evidence on the 2031 VISSIM modelling.
24. Based on the ITA and BBO modelling report, I understand the 2021 VISSIM modelling includes the underlying consented trips and slightly overestimates trip generation. This will likely over represent the adverse efficiency effects of the proposal. The detailed VISSIM outputs for 2021 are provided at Appendix B of the ITA. The modelling included three scenarios:
  - a. Scenario 1 (2021 baseline modelling);
  - b. Scenario 2 (2021 with Pak'n Save); and
  - c. Scenario 3 (2021 with Pak'n Save and signalised right turn at Wairere Drive with signalised intersection at Karewa Place/ Eagle Way).
25. Table 1 summarises my interpretation of the efficiency related outputs and provides a comparison between the scenarios.

Intersection (baseline volume)	Effects of Pak'n Save - Differences between Scenario 1 and Scenario 2	Effects from introduction of signalised right-turn - Difference between Scenario 2 and Scenario 3
Te Rapa Road/ Church Road	<ul style="list-style-type: none"> <li>• Average intersection delay increases by 8s/veh</li> <li>• Southbound maximum queues increase from 84m to 135m</li> <li>• Southbound average queues increase from 4m to 10m</li> <li>• <b>Acceptable</b></li> </ul>	<ul style="list-style-type: none"> <li>• No significant change with introduction of signalised right-turn</li> </ul>
Te Rapa Road/ The Base Parade/ Eagle Way	<ul style="list-style-type: none"> <li>• Average intersection delay increases by 5s/veh</li> <li>• Right-turn into Eagle Way increase from 214veh/h to 265veh/h</li> <li>• No change in u-turns (1veh/hr)</li> <li>• <b>Acceptable</b></li> </ul>	<ul style="list-style-type: none"> <li>• Total traffic volume increases by 822veh/hr (or 20%) from Scenario 1, with no change in average delay</li> <li>• Right-turns decrease to 172veh/h (less than Scenario 1)</li> <li>• U-turns increase from 28veh/h to 45veh/h</li> <li>• <b>Acceptable</b></li> </ul>
Wairere Drive/ Te Rapa Road/ Avalon Drive	<ul style="list-style-type: none"> <li>• Average intersection delay increases by 42s/veh to 102s/veh</li> <li>• Delay for right-turn from Wairere Drive to Te Rapa Road increase from 90s/veh to 130s/veh, with an average queue length 45m longer</li> <li>• <b>Not acceptable</b></li> </ul>	<ul style="list-style-type: none"> <li>• Delays and queues are reduced. Average intersection delay decreases to 55s/veh</li> <li>• Total traffic volume increases by 312veh/hr (or 6%) from Scenario 1, but delays and queues are reduced</li> <li>• Right-turn delays reduce to 80s/veh</li> <li>• U-turns associated with Gull Holdings development increase from 25veh/h to 34veh/h</li> <li>• <b>Acceptable</b></li> </ul>
Wairere Drive/ Karewa Place	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Right-turn movement is 514veh/hr with maximum queues of 215m extending into westbound lane (average queue = 24m)</li> <li>• Average intersection delay is 13s/veh (and excluding the EB through movement)</li> <li>• <b>Acceptable</b></li> </ul>
Wairere Drive/ Pukete Road	<ul style="list-style-type: none"> <li>• Average intersection delay increases by 7s/veh</li> <li>• Max. queue length on Wairere Drive (east) increase from 322m to 512m (reaches Te Rapa intersection).</li> <li>• <b>Not acceptable</b></li> </ul>	<ul style="list-style-type: none"> <li>• Delays and average queues are reduced by 6s/veh and 19m respectively when compared to Scenario 2</li> <li>• Delays and average queues essentially the same as Scenario 1 – Baseline</li> <li>• <b>Acceptable</b></li> </ul>

Intersection (baseline volume)	Effects of Pak'n Save - Differences between Scenario 1 and Scenario 2	Effects from introduction of signalised right-turn - Difference between Scenario 2 and Scenario 3
Karewa Place/ Eagle Way	<ul style="list-style-type: none"> <li>Model outputs not included</li> </ul>	<ul style="list-style-type: none"> <li>Modelled as a signalised intersection which is different to the Applicant's proposed priority-controlled intersection.</li> <li><b>Acceptable</b></li> </ul>
Overall	<ul style="list-style-type: none"> <li>Longer delays and queues in Scenario 2</li> <li>Significant increases in delay and queues for some movements</li> <li>Does not achieve HCC minimum desirable LOS (equivalent to 55s/veh on the approaches)</li> <li><b>Not Acceptable</b></li> </ul>	<ul style="list-style-type: none"> <li>Delays and average queues are reduced through introduction of signalised right-turn</li> <li>Delays and average queues are generally similar to Scenario 1 – Baseline</li> <li>Improvements in average intersection delay. Worst is 62s/veh at Te Rapa Road/ The Base Parade/ Eagle Way</li> <li><b>Acceptable, with improvements at some intersections</b></li> </ul>

**Table 1: 2021 Network Performance**

26. Without the proposed signalised right-turn, the Pak'n Save results in significant increases in delay and queuing at the Te Rapa Road/ Eagle Way/ The Base Parade and Te Rapa Road/ Wairere Drive intersections in 2021.
27. Based on the 2021 modelling, I consider there are efficiency benefits for the wider transport network in 2021 from providing the signalised right-turn into Karewa Place. The main benefits are at the Wairere Drive/ Te Rapa Road and Te Rapa Road/ Eagle Way/ Base Parade where the average intersection delays remain the same as the baseline scenario or are slightly improved.

**2031 NETWORK PERFORMANCE**

28. The Applicant's s92 response included Sidra modelling of the affected intersections based on 10% and 20% increases in background traffic volumes to test a future year. I have concerns with the outputs of this Sidra modelling, including:
  - a. The isolated Sidra assessments do not recognise the need for coordination with adjacent signalised intersections.
  - b. Inconsistent average delay and queue length outputs from the VISSIM and Sidra models.

- c. The Sidra modelling does not include u-turns at the Wairere Drive/ Te Rapa Road/ Avalon Drive and Te Rapa Road/ The Base Parade/ Eagle Way intersections.
29. I do not consider the future assessment provided by the Applicant to be adequate. HCC has engaged BBO (the model operator) to complete additional modelling using the 2031 Te Rapa North VISSIM model. Mr Meister's evidence addresses the 2031 network performance.

### **ROAD SAFETY AUDIT**

30. Following receipt of the Applicant's s92 response, HCC commissioned WSP-Opus to complete a preliminary design road safety audit for the proposal. A road safety audit is an independent review of a future road project to identify any safety concerns that may affect the safety performance. The safety audit report including the Designer (Applicant) and Safety Engineer responses is included as Appendix 4 to my Transportation Review.
31. I have reviewed the safety audit report and provided comments on behalf of HCC as the 'Safety Engineer'. I do not consider that the Designer's responses fully address or resolve the safety concerns raised by the safety auditors because effects on pedestrians and cyclist or safety effects at the proposed signalised intersection have not been addressed. I discuss specific concerns in the following sections.

### **PROPOSED KAREWA PLACE/ WAIRERE DRIVE INTERSECTION**

32. The Applicant proposes to construct a signalised right-turn from Wairere Drive into Karewa Place. The proposed intersection will be located approx. 165m from the existing Wairere Drive/ Pukete Road intersection and 170m from the Wairere Drive/ Te Rapa Road intersection.
33. Wairere Drive forms part of the Hamilton Ring Road and has an important strategic function which is recognised by its classification in the District Plan and RLTP<sup>3</sup>. Currently major intersections on the Hamilton Ring Road are generally >0.5km and typically >1km apart. While the proposal meets the District Plan standards for intersection spacing, the diverge lane for the

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<sup>3</sup> 2018 Update to the Regional Land Transport Plan 2015-2045

signalised right-turn commences 20m west of the pedestrian crosswalk at the Wairere Drive/ Pukete Road intersection.

34. I am concerned that the close intersection spacing is likely to have adverse effects including reduced legibility, reduced queuing space, and potential for reduced efficiency through poor signal coordination. My safety concerns with the proposed intersection are discussed in Table 2 and rated on a High/ Medium/ Low scale.

Concern	Significance
<p>Closely spaced signalised intersections can result in drivers “looking through” one set of signals to the next and miss-interpret the intersection.</p> <p>In the proposed layout there is the risk that eastbound traffic could continue through the red light resulting in crashes with vehicles turning into and out of Karewa Place.</p>	<p>High – no options to retrofit safety improvements to manage this risk once the intersection is constructed</p>
<p>Partially signalised intersections are uncommon. There is the potential for the new signals to confuse eastbound drivers potentially resulting in sudden breaking or late-lane changes leading to crashes.</p>	<p>Medium – no options to retrofit safety improvements to manage this risk once the intersection is constructed</p>
<p>The diverge point is located close to the Pukete Road intersection (approx. 20m from the pedestrian crosswalk) and there is the risk of conflict:</p> <ul style="list-style-type: none"> <li>• Between vehicles decelerating to enter the right-turn lane and following high speed vehicles; and</li> <li>• With vehicles merging and weaving when entering Wairere Drive from Pukete Road.</li> </ul>	<p>Medium – frequency of manoeuvre partially managed by signal timing which should minimise the risk of conflict between of vehicles merging from Pukete Road</p>
<p>The queuing space is shown as 118m (excluding the 27m taper). The 2021 VISSIM modelling shows an average queue length of 24m and maximum queue length of 215m. This leads to a risk of queues extending beyond the right-turn bay potentially resulting in potentially high speed rear-end crashes.</p>	<p>Medium – no options to provide additional queuing space once the intersection is constructed Potential for high speed rear-end crashes.</p>
<p>The diverge taper is short (26.9m), and it does not meet MOTSAM guidance (30m) for right-turn bays in raised medians. In urban areas this diverge is not always fully utilised, potentially reducing the effective length of the auxiliary lane. This increases the risk of rear-end type crashes occurring.</p>	<p>Low – review during detailed design.</p>
<p>There is a risk that introducing the new intersection on Wairere Drive may increase the road safety risk potentially requiring a lower speed limit to manage this risk.</p>	<p>High - reducing the speed limit is inconsistent with the corridor's strategic movement function, but has safety benefits.</p>

Concern	Significance
<p>Given the proximity of the proposed intersections and existing signage it may be challenging to provide appropriate advanced warning signs to ensure that westbound drivers on Wairere Drive are in the correct lane. This will likely require additional overhead gantry signs on Wairere Drive potentially on both sides of the Wairere Drive/ Pukete Road intersection.</p> <p>Poor advanced directional signage can lead to crashes from late lane changes, or u-turns if the turn is missed.</p>	<p>Low – poorly located signs can create clutter and potentially confuse drivers.</p>
<p>The proposed Karewa Place/ Wairere Drive intersection includes zebra crossings marking on the left-turn slip lanes with Give Way triangles.</p> <p>HCC does not use zebra crossings at slip lanes due to safety concerns and is increasingly using raised safety platforms to reduce vehicle speeds and improve pedestrian safety.</p>	<p>Low – raised safety platforms could be included in detailed design but requires change in speed limit to 60km/h</p>
<p>Cycle lanes are provided on Wairere Drive and there is no specific provision in the concept design for cyclists to turn right into Karewa Place.</p> <p>There are grade-separated facilities at the Pukete Road intersection, but additional signage is required to provide advanced guidance to cyclists so they use the underpass rather than the signalised intersection.</p> <p>Potentially serious consequences if there are on-road cyclists who do not use the grade-separate facility.<sup>5</sup></p>	<p>Low – signage could be provided at detailed design.</p>
<p>The queuing space for vehicles turning right from Wairere Drive north in to Te Rapa Road will be reduced by 20m to approx. 140m.</p> <p>The modelled queues are 64m (average) and 192m (max) indicating there will be some periods where the queues extend into the through lanes.</p> <p>Currently queues in the Saturday afternoon peak are observed approx. 160m long. On Saturday afternoon, it is noticeable that queues in the left lane are twice as long as those in the right lane. If this pattern continues once the signalised turn into Karewa Place is introduced, there is a risk queuing in the left lane will be fully utilised, but the right lane underutilised.</p>	<p>Low risk of high speed rear end crashes during peak periods</p>

**Table 2: Safety Concerns at the Proposed Wairere Drive/ Karewa Place Intersection**

35. I am concerned that introducing a new signalised intersection onto Wairere Drive will result in adverse safety effects due to the existing 80km/h speed limit, the close intersection proximity and increased complexity of the road environment. I consider that introducing another signalised intersection in this environment would be inconsistent with the Safe System approach which seeks to ensure that in a crash impact energy remains below the thresholds likely to result in death or serious injury.
36. Raised safety platforms can be used at signalised intersections to lower the speed of vehicles to a Safe System collision speed. Due to the current 80km/h speed limit and high proportion of heavy vehicles, I do not consider a raised safety platform appropriate without other mitigation.

37. With the reduced intersection spacing I consider it appropriate to review the speed limit. Lowering the speed limit to 60km/h is unlikely to have a noticeable efficiency effect during peak periods when congestion generally manages travel speeds. There may be slightly longer travel times during inter-peak and off-peak periods, but over a 400m length I consider the change in travel time is negligible (approx. 6s/veh).
38. For 60km/h speed limits, the Land Transport Rule Setting of Speed Limits 2017 (Rule 54001/2017) requires a minimum length of 500m. There is only 400m between the Pukete Road and Te Rapa Road intersections meaning that the 60km/h speed limit will need to extend beyond these two intersections. I note that changing the speed limit requires HCC to complete public consultation prior to changing the Hamilton City Speed Limit Bylaw 2018.
39. With mitigation including a 60km/h speed limit and an eastbound raised safety platform, I consider that the safety effects at the Wairere Drive/ Karewa Place intersection are likely to be acceptable. To provide consistency for drivers and avoid adverse effects, I consider that raised safety platforms should also be provided at the Te Rapa Road/ Wairere Drive and Pukete Road/ Wairere Drive intersections.

#### **EAGLE WAY/ KAREWA PLACE/ MAUI STREET EXTENSION INTERSECTION**

40. Based on the Applicant's Sidra modelling and the 2021 VISSIM modelling, I consider the efficiency effects of priority-controlled and signalised intersections at the Eagle Way/ Karewa Place/ Maui Street extension intersection are both acceptable.
41. I have safety concerns with the priority-controlled intersection layout including lack of pedestrian/ cycle facilities, lack of integration with Couplands and potential visibility limitations. Without mitigation to address these issues, I consider that the priority-controlled intersection is likely to have adverse safety effects. While the risk of death or serious injury occurring from vehicle-vehicle conflict is low due to the likely collision speed, the risk is higher for pedestrians and cyclists.

42. I acknowledge that the priority-controlled intersection layout is consistent with that currently consented for the Porters subdivision<sup>4</sup> which does not specifically provide pedestrian or cycle facilities. I consider that the proposed supermarket is unlikely to create significantly more demand for pedestrians and cyclists compared to the consented land use and improved facilities are not specifically required to mitigate the effects of Pak'n Save. However, these facilities are desirable and it would be more cost effective to provide safe facilities for pedestrians and cyclists during construction of the intersection, rather than retro-fitting them at a later date.

### **KAREWA PLACE**

43. Karewa Place currently carries approx. 4,700veh/day with 6% HCV<sup>5</sup> and is identified as a collector corridor in the District Plan hierarchy and as a Primary Collector in the One Network Road Classification (ONRC). The carriageway is 8.5m wide including some on-street parking.
44. While Karewa Place is identified as a collector road it does not meet the District Plan criteria<sup>6</sup> for a collector road which requires 2x4.5m lanes with a 2m flush median and recessed parking. It is narrower than the recently consented Maui Street extension which has an 10m wide carriageway including a flush median.
45. The 2021 VISSIM modelling shows the traffic volume increasing to 1,182veh/hr, or approx. 11,000veh/day (assuming a 10% peak hour). The proposal results in approximately 2,500veh/day more on Karewa Place compared to the Porters consented baseline which expected a traffic volume of 840veh/hr or 8,400veh/hr.
46. For properties along Karewa Place, it is the sole point of access and submitters have expressed existing concerns about sight distance and vehicle manoeuvring at the property accesses.
47. I consider that the increase in traffic on Karewa Place is likely to result in short delays at existing property accesses along Karewa Place, especially for exiting vehicles and increases the risk of crashes at these property accesses. I consider that sight distance could be improved, and the risk of crashes mitigated, by introducing additional parking restrictions to remove all on-street parking on

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<sup>4</sup> HCC Ref: 010.2018.10068.001

<sup>5</sup> Mobileroad.org

<sup>6</sup> Hamilton District Plan, Volume 2, Appendix 15, Table 15-7a

Karewa Place. This will require Council approval of changes to parking restrictions.

#### **SITE ACCESS - GENERAL**

48. The site is proposed to be accessed as follows:
- a. Left-in and left-out access from Te Rapa Road. The crossing is proposed to be 7.5m wide at the boundary;
  - b. Left-in and left-out access from Eagle Way. The crossing is proposed to be 11m wide at the boundary with a splitter island separating the movements and a solid median on Eagle Way;
  - c. Two 11m wide crossings to the proposed Maui Street extension that access the loading area; and
  - d. One 8m wide crossing to the proposed Maui Street extension that accesses the customer car park.
49. I have safety concerns with the proposed accesses. Four of the five vehicle crossings are wider than the 7.5m maximum allowable under the District Plan standards but based on the current site layout they appear necessary to provide sufficient manoeuvring space for heavy vehicles. Provided that they are designed to provide pedestrian priority and a continuous footpath the risk of adverse effects appears acceptable. I consider this should be required through a condition of consent and design approval by Council.
50. I am concerned that car parks are located close to the Te Rapa Road and Eagle Way vehicle crossings. This increases the risk of off-site queuing as vehicles manoeuvring at these spaces will block other vehicles from entering the site. I discuss my concerns and options for mitigation later in this statement.
51. In my view, the location of the fuel station results in undesirable movements by the fuel tanker that:
- a. Require it to turn right at the Eagle Way access, where all other vehicles are required to turn left. This could lead to driver confusion and potential off-site queuing;
  - b. Means it occupies the full 8m width of the car park vehicle crossing to the Maui St Extension. This means that other vehicles will not be able

to enter the site at the same time resulting in short delays for those other vehicles; and

- c. Means it occupies the full width of the internal aisles when manoeuvring.

52. I would prefer that the site layout is revised to improve the fuel tanker manoeuvring. If the layout is not revised, I consider that consent conditions should restrict tanker movements to off-peak periods to minimise the risk of off-site effects.

### ***Site Access – Te Rapa Road***

53. While the location of the proposed Te Rapa Road access is in general accordance with the consented Porter development, transportation planning principles indicate that direct access from properties adjoining roads of higher classification should be limited in recognition of their through-traffic function. Based on this, I consider that there should be no access to Te Rapa Road (a major arterial and part of the strategic network) as the site has access to Eagle Way (local road) and Maui St Extension (collector road). The Applicant has not provided an assessment that demonstrates the need for an access to Te Rapa Road.
54. The 2021 VISSIM modelling indicates 271veh/h (or one vehicle every 13s) making a left-turn into the site. This requires them to slow in the southbound through lane, where the left-turn lane into Eagle Way commences. The ITA considers that the risk of confusion and safety effects is negligible based on the past performance of seven other vehicle crossings to Te Rapa Road.
55. I do not consider these comparisons appropriate as none of the activities using these crossings generates traffic volumes similar to the proposed Pak'n Save. With the exception of Highway Supplies Fruit & Vege, none are located near the diverge point to a slip lane and all are further away from the signalised intersection.
56. I consider there is the potential for confusion and crashes as drivers slow to turn left into Pak'n Save from:
  - a. Confusion on whether drivers on Te Rapa Road are turning left into Pak'n Save or Eagle Way. There is a risk that drivers may exit Pak'n

Save when the approaching vehicle is continuing past to turn left at Eagle Way. This has the potential to result in crossing type crashes.

- b. Vehicles turning left into Pak'n Save will be decelerating in the shoulder shadowing any following vehicles that are continuing south on Te Rapa Road. There is a risk that drivers may exit Pak'n Save without seeing these following vehicles resulting in crossing type crashes.
  - c. Confusion for following drivers on whether drivers are slowing to access Highway Supplies Fruit & Vege immediately north of the site, Pak'n Save or Eagle Way. This could result in rear-end crashes.
57. Providing a left-turn deceleration lane for Pak'n Save would reduce the risk of rear-end crashes, but would require land from the adjacent property. I note that the access into Jim Wright Nissan and the development south of Eagle Way both include left-turn deceleration lanes as does the New World supermarket on Te Rapa Road.
58. There is a risk of merging and weaving crashes from vehicles turning left out of Pak'n Save onto Te Rapa Road before crossing the two southbound lanes to turn right into The Base Parade. The s92 response makes a general comparison to crash records for the existing crossings north of the site. Again, I consider this comparison inappropriate as none of these crossings generate similar levels of traffic. I consider that the applicant's assessment understates the potential risks associated with vehicles exiting the supermarket.
59. The vehicle crossing is located where the existing shared path exits to join the on-road cycle lane. It is unclear how the vehicle crossing will be designed to accommodate cycling. Relocating the cycle cutdown further south has the potential to result in crashes between departing vehicles and cyclists. Relocating the cycle cutdown further north is likely to result in conflict with other vehicle crossings. I understand that HCC's preference is to retain the shared path past the site and provide a raised platform at the crossing of the left-turn slip lane. The raised platform will manage vehicle speeds, provide a safer crossing facility for pedestrians and cyclists and allow cyclists to change from the off-road to on-road facilities.

60. Traffic exiting the site is required to turn left, meaning the driver is likely to be looking to the right for a gap in on-coming traffic. The applicant's modelling indicates 277veh/h (or one vehicle every 13s) making this turn. Drivers looking right, means that pedestrians and cyclists on the shared path are vulnerable to conflict with vehicles (NC type crashes)
61. The pedestrian connection to Te Rapa Road connects midway along this frontage providing an indirect connection to the Te Rapa Road/ Eagle Way/ The Base Parade intersection. This creates longer and less desirable pedestrian connections, which is likely to lead to pedestrians walking through the car park at risk of conflict with vehicles.
62. The location of the Te Rapa Road access is close to a signalised intersection and deceleration lane. When combined with the relatively high traffic volumes this increases the risk of safety and efficiency effects on a major arterial. The proposed layout of the Te Rapa Road access increases the risk to pedestrians and cyclists. Departing drivers will be looking right for approaching vehicles increasing the risk of conflict with pedestrians and cyclists approaching from the driver's left.
63. The Applicant has not provided an assessment that demonstrates the need for an access to Te Rapa Road. Based on the information provided in the ITA, I cannot support an access to Te Rapa Road.
64. If an access is to be provided to Te Rapa Road, my preferred approach to mitigate the adverse safety is for the Applicant to provide a left-turn deceleration lane on Te Rapa Road and address concerns raised in the safety audit.

***Site Access – Eagle Way***

65. The access to Eagle Way prioritises vehicle movements and increases the risk of conflict with other traffic, pedestrians and cyclists. It does not provide pedestrian priority or continuous cycle facilities increasing the risk of conflict with vulnerable road users. The layout is potentially confusing for drivers, especially those manoeuvring at the Countdown access.

66. My specific safety concerns include:
- a. Vehicles slowing in the left-turn lane obscuring following vehicles leading to an increase risk of crashes.
  - b. The left-turn deceleration lane is designed to facilitate and prioritise access by left-turning vehicles. The crossing is 11m wide at the property boundary to accommodate the fuel tanker. The proposed design appears likely to result in relatively high-speed movements and does not provide for vulnerable users on the shared path.
  - c. The Proposal includes a left-turn deceleration lane at the point where vehicles are turning right into and out of Countdown and where Eagle Way forms two lanes for eastbound traffic. This layout is potentially confusing for drivers, especially those manoeuvring at the Countdown access.
  - d. Parking spaces are located close to the access point and manoeuvring vehicles are likely to create queues that could extend on to Eagle Way creating off-site effects.
  - e. The on-road cycle lane terminates east of the crossing which could lead to confusion for cyclists and crashes with vehicles as they form two lanes for the intersection further east.
67. The potential adverse effects could be mitigated by:
- a. Creating a combined access with Countdown that better provided for all movements. This would require agreement with other parties and is likely to be beyond what the applicant can implement.
  - b. Reviewing the lane arrangements and widths on Eagle Way to reduce the number of conflict points and better provide for cyclists.
  - c. Redesigning the access to provide a full range of movements at the internal intersection reducing the risk of queues developing.
  - d. Redesigning the car park layout to avoid spaces close to the access to minimise the risk of off-site queuing. It is acknowledged that this is likely to require removal of some car parks, but the site currently has a surplus of 43 spaces.
  - e. Constructing the site accesses to provide pedestrian priority. This could include replacing the hatched markings with a raised area (approx. 50mm lip) including a different colour/texture to allow tracking

by the fuel tanker, but discourages higher speed movements by cars. This could be required through condition requiring Council review of the detailed design.

68. Without addition mitigation I consider the proposed layout will result in adverse effects from off-site queuing and safety effects on vulnerable road users that are unacceptable. I consider the risk of death or serious injury occurring from vehicle-vehicle conflict at this access is low due to the likely collision speed.

**Site Access – Maui Street Extension**

69. The Maui St access is located close to the Eagle Way intersection and creates the potential for confusion and crashes, particularly at peak times when there are likely to be queues extending back from the intersection.
70. The 2021 VISSIM model outputs indicate 223veh/h will use the Maui Street car park access, equivalent to 3-4 movements/min. Pak'n Save customers will be turning right to and from the flush median/ right-turn bay which increases the risk of:
- a. Rear-end crashes as following vehicles may be expecting vehicles to turn at Eagle Way (not Pak'n Save).
  - b. Crossing crashes if departing vehicles pass through the right-turn queue to access the southbound lane. The frequency of this manoeuvre should be low as there is an alternative egress to Eagle Way but this has safety concerns associated with weaving.
  - c. Long delays for exiting vehicles which can leave to poor driver behaviour, e.g. turning left-out prior to u-turning elsewhere on Maui St to travel south.
71. The risk of adverse safety effects at the Maui Street is highest at peak times when there are likely to be queues extending back from the Eagle Way intersection. I consider the risk of death or serious injury occurring from vehicle-vehicle conflict is low due to the likely collision speed.
72. Provided that my concerns relating to manoeuvring of the fuel tanker are addressed through redesign of the car park or restricted hours, I consider this access to be acceptable.

### **Site Access – Conclusion**

73. I consider it desirable for the proposal to have no access to Te Rapa Road to recognise its through-traffic function, and for traffic safety reasons. As the site has access to two other roads, I consider that the Applicant should provide an assessment of the proposed supermarket with no access to Te Rapa Road. This could require other mitigation to be provided to avoid effects from the redistribution of traffic.
74. Without further mitigation, I consider that the proposed access arrangements are likely to have significant adverse safety and efficiency effects. If the proposal is approved with access to Te Rapa Road, I consider that the further mitigation should include:
- a. A left-turn deceleration lane of sufficient length on Te Rapa Road;
  - b. Constructing the site accesses to provide pedestrian priority;
  - c. Redesigning the Eagle Way access to provide a full range of movements to reduce the risk of queues developing;
  - d. Redesigning the car park layout to avoid spaces close to the access to minimise the risk of off-site queuing; and
  - e. Limiting the hours of fuel tanker deliveries.

### **SITE LAYOUT AND PARKING**

75. The proposed number of parking spaces for vehicles and cycles complies with the District Plan standards.
76. The ITA describes the car park spaces as 2.6m wide, but the parking schedule on the site plan describes them as 2.5m wide. NZS2890.1 indicates the 2.5m spaces are appropriate for long term parking, and 2.6m wide spaces are appropriate for short-term, high turnover spaces. I recommend that 2.6m wide spaces are provided to better accommodate the short term, high turnover parking expected at a supermarket.
77. Parking spaces are located close to all three car park access points. At the Te Rapa Road vehicle crossing, the nearest car park is located within 5m of the property boundary and has the potential result in queuing, delays and crashes as vehicle manoeuvring at the car park prevent other vehicles from entering or exiting the site.

78. District Plan Rule 25.14.4.2n requires vehicle queuing space to be provided. The ITA (Table 2) expects that 20.9% of trips will approach from Te Rapa Road north. Assuming that 20.9% of parking spaces are also accessed from this crossing a 12m queuing space is required ( $20.9\% \times 300 \text{ spaces} \times 0.03 = 1.8 \text{ vehicles}$ ;  $2 \text{ vehicles} \times 6\text{m} = 12\text{m}$ ) where only 5m is provided.
79. Similarly, at the Eagle Way vehicle crossing, the nearest vehicle control point (the internal intersection) is located approx. 10m from the property boundary. Assuming that 65% of parking spaces are accessed from this crossing, a 36m queuing space is required ( $65\% \times 300 \text{ spaces} \times 0.03 = 5.9 \text{ vehicles}$ ;  $6 \text{ vehicles} \times 6\text{m} = 36\text{m}$ ) where only 10m is provided.
80. I consider that the car park layout and lack of queuing space increases the risk of off-site queuing, delays and crashes as a vehicle manoeuvring at these car parks prevent other vehicles from entering or exiting the site. The risk of adverse effects is greatest at the Te Rapa Road and Eagle Way vehicle crossings. Without mitigation, I consider the potential safety and efficiency effects of the internal layout to be unacceptable.
81. I consider that the risk of adverse effects would be avoided by redesigning the car park layout to avoid parking spaces close to the vehicle crossings to Te Rapa Road and Eagle Way. I acknowledge that this is likely to require removal of some car parks, but the site currently has a surplus of 43 spaces.

## **SUBMISSIONS**

82. Four submissions include transport comments, including the submissions from:
- a. J McCracken (139 Karewa Place);
  - b. S Jones (9 Karewa Place);
  - c. The Base Te Awa Ltd; and
  - d. Woolworths NZ Ltd.
83. The following table summarises the key transport submission topics, summarises my discussion and indicates whether I consider that further mitigation is required.

Submitter Concerns	Discussion	Reviewer's opinion on whether further mitigation is required?
Safety concerns from increased traffic on Eagle Way	Agree there is an increase in the number of conflict points and risk of driver confusion from closely spaced, high volume vehicle crossings	Yes – crossing should provide pedestrian priority, continuous cycle routes and address the potential for vehicle conflict.
Safety concerns from increased traffic on Karewa Place where parked vehicles currently limit sight distance at property accesses	The traffic volume is expected to increase by 2,500veh/day. Currently on-street parking limited to the western side of Karewa Place and approx. 200m on eastern side (40% of total length). Potential for further parking restrictions to manage on-street parking	Yes - parking restrictions could be introduced by Council, through a separate LGA process.
Form of the Eagle Way/ Karewa Place intersection	Agree with submission point, there are concerns with safety of proposed priority-controlled intersection. No pedestrian facilities provided (consistent with consented layout).	Desirable to include pedestrian and cycle facilities, but demand unlikely to be significantly different from the consented environment.
Safety concerns for traffic exiting Pak'n Save and weaving cross Te Rapa Road to access The Base Parade	Agree there is a safety concern with departing traffic weaving across Te Rapa Road to access The Base.	Yes – effects could be avoided by removing the left-out movement
Failure to consider trips generated by the additional commercial activities to be established within The Base sub-regional centre	VISSIM modelling has included the consented development at The Base, including development not yet established. Unclear what additional development could occur.	No – the assessment has included all consented development at The Base
Increased queuing resulting in adverse traffic effects on the operation and safety of the Countdown site and Te Rapa Road	VISSIM modelling for 2021 show no significant change in queuing on Eagle Way that would affect the Countdown access. Left-turn queues increase slightly from 376m to 390m, through queues increase from 156m to 161m.	No
Concerns around access and trip generation on Eagle Way including the potential adverse safety effects on customers accessing the Countdown site.	Agree there is an increase in vehicle movements and risk of conflict immediately adjacent to the Countdown access.	Yes – redesign of car park layout to avoid off-site effects. Redesign of vehicle crossing for vulnerable users. The risk of death or serious injury from vehicle-vehicle conflict is low due to the likely collision speed.

## **OPTIONS FOR MITIGATION**

84. I have safety and efficiency concerns relating to introduction of a new signalised intersection onto Wairere Drive, the internal car park layout and the vehicle crossings that have not been mitigated.
85. With mitigation including a 60km/h speed limit and raised safety platforms I consider that the potential safety effects of the proposed signalised intersection are likely to be acceptable. To provide consistency for drivers and avoid adverse effects, raised safety platforms should also be constructed at the Te Rapa Road/ Wairere Drive and Pukete Road/ Wairere Drive intersections.
86. If an access is to be provided to Te Rapa Road, I consider it necessary for the Applicant to provide a left-turn deceleration lane on Te Rapa Road and to address concerns raised in the safety audit.
87. I consider that redesign of the car park layout and site accesses is necessary to avoid manoeuvring vehicles creating off-site queuing effects and to improve safety of the access both for customers accessing the site and pedestrians and cyclists on the shared paths.
88. Sight distance would be improved, and the risk of crashes mitigated, by introducing additional parking restrictions to remove all on-street parking on Karewa Place. This will require Council approval of changes to parking restrictions.
89. For the benefit of the Applicant and Commissioner's I have considered mitigation options that would, if fully implemented, likely address the potential adverse safety and efficiency effects to an acceptable level. These mitigation measures are outlined as conditions in Appendix 1.

## **SUMMARY AND CONCLUSION**

90. Without significant mitigation, a high trip generating activity has significant adverse effects on the strategic transport network.
91. While there are efficiency benefits for the wider transport network from providing the signalised right-turn into Karewa Place, I am concerned that introducing a new intersection onto Wairere Drive will result in adverse safety

effects due to the speed environment, close intersection proximity and increased complexity of the road environment.

92. The Applicant has not provided an assessment that demonstrates the need for an access to Te Rapa Road. Based on the information provided in the ITA, I cannot support an access to Te Rapa Road.
93. I confirm the conclusion of my transportation assessment review that without further mitigation the proposed supermarket is likely to have adverse safety and efficiency effects that are unacceptable and cannot be supported.

A handwritten signature in black ink, appearing to read 'A. Black', written in a cursive style.

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Alastair Black

Dated 29 April 2019

## **APPENDIX 1: SUGGESTED CONDITIONS**

If Council decides to approve the application with an access to Te Rapa Road, it should be subject to conditions that require:

- a. Construction of the signalised right-turn at Wairere Drive/ Karewa Place including a 60km/h speed limit and construction of a raised safety platform on the eastbound approach.
- b. Construction of raised safety platforms at Te Rapa Road/ Wairere Drive and Pukete Road/ Wairere Drive intersections.
- c. Construction of a left-turn deceleration lane of sufficient length at the Te Rapa Road access.
- d. Redesigning the car park layout to avoid manoeuvring vehicles creating off-site queuing effects on both Te Rapa Road and Eagle Way.
- e. Constructing all site accesses to provide pedestrian priority and a continuous footpath as illustrated in Waikato Regional Infrastructure Technical Specification (RITS) Figure D3.3.1.
- f. Limiting the hours of fuel tanker deliveries to outside shop opening hours (i.e. fuel deliveries between 10pm and 7am).
- g. Parking restrictions (no stopping lines) on Karewa Place