

**BEFORE A HEARING COMMISSIONER**

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

**AND**

**IN THE MATTER** of hearing submissions and further submissions in respect  
of Matamata-Piako District Council - Plan Change 58 -  
Avenue Business Park

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**STATEMENT OF TARA HILLS ON BEHALF OF WARWICK AND MARION  
STEFFERT**

**TRAFFIC/TRANSPORTATION ENGINEERING**

**14 FEBRUARY 2024**

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## Introduction

- 1 My full name is Tara Vanessa Hills.
- 2 I am an independent traffic consultant at Direction Traffic Design in Hamilton.
- 3 I have been employed as a consulting engineer for over 27 years.
- 4 My qualifications are a Master of Science and Technology. I have been a Chartered Professional Engineer since 2007.
- 5 My traffic experience has included five years in individual practice where I undertake traffic assessments for new developments, safe system audits, assist Waka Kotahi / New Zealand Transport Agency with land use development assessments, and teach traffic engineering for the New Zealand Institute of Highway Technology / Te Pukanga. Prior to independent practise I worked for various consultancies in New Zealand and the United Kingdom for 22 years, predominantly in the field of traffic engineering.
- 6 I have completed the Making Good Decisions Programme and have sat on panels as an independent hearing commissioner.
- 7 In relation to this hearing, I am authorised to give evidence on behalf of Warwick and Marion Steffert (**Steffert**).

## Code of Conduct

- 8 I have read the Environment Court's 'Code of Conduct for Expert Witnesses' as contained in the Environment Court's Consolidated Practice Note 2023 and agree to comply with it. I have complied with it when preparing my written statement of evidence and I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

## Executive Summary

- 9 The proposed Plan Change 58 (**PC58**) for land near the western edge of Morrinsville would provide for approximately 10.1 hectares of developable land to the industrial land supply for Morrinsville once non-developable areas such as roads, stormwater and wastewater infrastructure are excluded.
- 10 Below is a summary of the position reached in this evidence on the significant traffic matters:
  - (a) The existing and proposed road network can accommodate the predicted traffic flows from PC58.
  - (b) Appropriate provision for pedestrian and cyclist facilities is proposed.

- (c) A requirement to consider opportunities for a future pedestrian/cyclist connection to State Highway 26 (**SH26**) is included in PC58. All vehicle access will be to Avenue Road North via Magistrate Avenue. No vehicle connection to SH26 is provided for under the proposed provisions.

## **Background**

- 11 I prepared the Integrated Transport Assessments (**ITA**) for both PC58 and for the resource consent application for Stage 1 of the Avenue Business Park. I have been involved in consultation with Council's traffic consultant regarding the assessment of traffic effects and the proposed traffic related provisions for PC58.

## **Scope of Evidence**

- 12 This evidence has been prepared on behalf of the applicants, the Stefferts, who have requested a private plan change to the Matamata-Piako District Plan to rezone approximately 13.4 hectares of rural land from Rural Zone to General Industrial Zone on the western side of Morrinsville, between Avenue Road North and SH26.
- 13 My evidence addresses traffic engineering matters and responds to submissions made on the PC58 application and relevant parts of the s42A Report.
- 14 My evidence covers all traffic matters, including:
  - (a) Site layout and transportation requirements for PC58 (including for pedestrians and cyclists);
  - (b) Traffic generation and intersection capacity;
  - (c) Road cross sections; and
  - (d) Safety.
- 15 In the course of preparing this evidence I have considered:
  - (a) The application lodged with Council on 22 December 2022 and further information provided on 1 May 2023 and 30 November 2023;
  - (b) The 14 submissions received and 1 further submission; and
  - (c) The s42A report dated 7 February 2024.
- 16 My evidence is to be read in conjunction with the PC58 application and further information referred to above, and the evidence presented by the other experts on behalf of the Stefferts.

## Application Site and Surrounding Area

- 17 The PC58 site is described in the evidence of other experts for the Applicant. From a traffic perspective, the PC58 site will be accessed via Magistrate Avenue which is a newly constructed road off Avenue Road North. This new road services an existing industrial area, Avenue Business Park Stage 1, which is currently being developed.
- 18 Magistrate Avenue has been designed to a local road standard with a 20m road reserve, a 10m carriageway (two lanes with parking provided on either side), and a 1.5m footpath/cycleway on one side (see **Figure 1**). Avenue Business Park Stage 1 industrial developments are expected to generate approximately 151 vehicles per hour in the peak hour on Magistrate Avenue.



Figure 1: Magistrate Avenue – Avenue Business Park Stage 1

- 19 The recently constructed Magistrate Avenue/Avenue Road North intersection consists of a T-intersection with a right turn bay.
- 20 Avenue Road North is an arterial road under the roading hierarchy in the Matamata-Piako District Plan (**MDP**). The road has a 20m road reserve and 10m carriageway (two lanes, a 2m central flush median, and 0.5m sealed shoulders). Recently constructed footpaths are provided on either side of the road in the site vicinity, excluding to the north on the west side of Avenue Road North. Avenue Road North currently carries approximately 386 vehicles per hour in the peak hour.

- 21 The southern end of Avenue Road North connects to SH26 via a temporary roundabout which was installed at the end of 2019. Waka Kotahi plans to construct a permanent roundabout in the near future, the timing of these works is subject to funding confirmation. At its northern end, Avenue Road North turns into Snell Street, which then intersects with Studholme Street via a T-intersection.

## Overview of Plan Change Proposal Traffic Matters

### Site Layout and Transportation Requirements

- 22 PC58 proposes to introduce the Avenue Business Park Development Area Plan (**ADAP**) into the MDP (see **Figure 2**). The ADAP consists of a graphic plan showing key planned outcomes and text in Appendix 9.6 which outlines the works that are required to support development of the PC58 site. Of relevance to traffic and transportation matters are Appendix 9.6.1 – Transportation Works, and Appendix 9.6.2 – Walking and Cycling.
- 23 The ADAP identifies a vehicle connection to Avenue Road North (via Magistrate Avenue) and an indicative local road network (refer to Figure 1). As well as providing access to future development areas within the PC58 site, the location of the indicative local road network will enable access to be provided in future to adjacent land to the north and southwest, should it be required.
- 24 The Morrinsville Town Strategy (2013-2033) indicates a ‘future road link’ near the PC58 site to connect SH26 and Hangawera Road. The notified ADAP sought to ‘future proof’ a road connection from SH26 to the southern boundary of the PC58 site. However, Waka Kotahi made a submission on PC58 which opposes vehicular access to SH26. Matamata-Piako District Council (**MPDC**) staff have advised the Applicant, following the close of submissions, that they do not wish to pursue such a connection at this time, nor do they consider it necessary for a roading connection to SH26 to be ‘future proofed’ as part of PC58. The ADAP has subsequently been amended to reflect this change of position<sup>1</sup>. While the SH26 connection would improve site connectivity, it would do so at the detriment of state highway safety and efficiency. Therefore, if the connection is not strategically required then in my opinion it should not be provided.
- 25 The proposed text in Appendix 9.6.1 details the requirement for PC58 access to be via Avenue Road North (i.e. via Magistrate Avenue), the requirement for the north-south aligned road to adjoin the northern and southern boundaries and sets out the minimum design standards for the public roads within the ADAP. Appendix 9.6.1 specifically states that no vehicle access shall be provided directly to SH26. It currently refers to the

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<sup>1</sup> Figure 1 is the amended ADAP which was included as part of the further information submitted on 30 November 2023.

possibility of the north-south aligned road being constructed to collector road standard if MPDC confirms this is required and has funding to meet the costs of such an upgrade. This provision was included due to the previous proposal to future proof a connection to SH26. Now that this connection is no longer required by MPDC, it would be appropriate to amend the text to remove the collector road references.

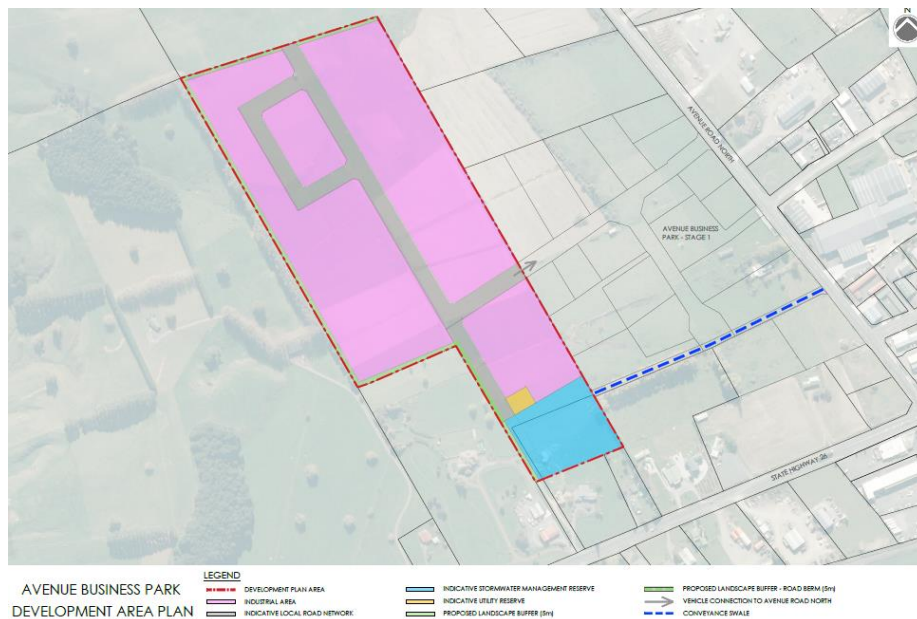


Figure 2: Proposed Avenue Business Park Development Area Plan

- 26 A requirement to consider opportunities for a pedestrian/cyclist connection from the PC58 site directly to SH26 is included in Appendix 9.6.2. In my opinion, this connection would only be appropriate to consider if the speed limit on SH26 was reduced to 50km/h and a footpath was provided along the north side of SH26. The speed limit on SH26 is currently 70km/h and there is currently a footpath on the south side of SH26 only, with no pedestrian/cyclist crossing facility. The construction of a pedestrian/cyclist connection from PC58 to SH26 would be unsafe without these changes. The speed reduction and/or footpath are largely matters for Waka Kotahi to consider.
- 27 If no pedestrian/cyclist connection is constructed directly onto SH26 then safe and efficient access for pedestrians and cyclists can still be achieved along Magistrate Avenue and Avenue Road North. Pedestrians can use the recently constructed footpaths and cyclists will have the option to either use the road or the footpath. The 1.5m wide footpath along the northern side of Magistrate Avenue is compliant with the Matamata-Piako Development Manual.
- 28 I expect the number of pedestrians and cyclists accessing the site will be relatively low. Pedestrians and cyclists who use Magistrate Avenue and roads within the PC58 site are expected to predominately consist of staff from site businesses. Given the proposed

industrial land use of the PC58 site I expect most site visitors will arrive by vehicle. For the predicted volume of pedestrians and cyclists the existing 1.5m wide footpaths provided on the surrounding roads are considered to be acceptable. It is proposed that the new roads will have one 1.8m wide footpath (greater than the 1.5m originally proposed). This footpath will be a continuation of the facility provided in the Stage 1 area and is also considered to be acceptable for this site and the predicted pedestrian and cyclist volumes.

### **PC58 Traffic Generation and Intersection Capacity**

- 29 The PC58 site is expected to generate approximately 256 vehicles per hour in the peak hour. Adjacent intersections, including Magistrate Avenue/Avenue Road North and Avenue Road North/SH26, are appropriately designed and have capacity to accommodate PC58 traffic.
- 30 Intersection capacity assessments provided in the ITA show that the Magistrate Avenue/Avenue Road North intersection will operate at a Level of Service A in the 10-year assessment. The capacity assessment includes a robust allowance for growth of 3%. This growth rate includes an allowance for the development of residential areas at the north end of Morrinsville.
- 31 Waka Kotahi have advised that the temporary roundabout layout at the Avenue Road/SH26 intersection is to be constructed in the near future, subject to funding. The permanent roundabout will formalise the existing temporary arrangements, although both the temporary and permanent roundabouts will safely provide for the increased traffic flows at this intersection following development of the PC58 site. Intersection capacity assessments for the Avenue Road/SH26 intersection show that it will operate at a Level of Service C in the 10-year assessment (provided in Appendix C of this evidence). This assessment uses 2023 traffic count data and a 3% growth allowance.

### **Road Cross Sections**

- 32 The new roads and pedestrian/cyclist facilities within the PC58 site will be constructed to Council's industrial standards and will tie in with the roading design in Avenue Business Park Stage 1, adjacent to the site. The proposed road and pedestrian/cyclist provisions in Appendix 9.6.1 and 9.6.2 respectively are considered to be appropriate, with design details to be provided at the subdivision consent stage. I provide comments later in my evidence on some specific matters which have been raised in the Transportation Review, including the minor amendments that I support.

## **Safety**

- 33 For the reasons set out above and, in the ITA, the proposed PC58 provisions will ensure that traffic and transportation effects will be appropriately managed so that the roading network operates safely.

## **Response to Matters Raised in Submissions**

- 34 Fourteen submissions were received, of which five referred to traffic matters. Three of the submissions which included traffic matters generally support PC58 with minor/no amendments (Waikato Regional Council, Waka Kotahi and Andrew Barker) and two submissions oppose some aspects of PC58 (Peter Hexter and Warren and Sandra Davenport).

### Waikato Regional Council (WRC)

#### *Issues*

- 35 WRC generally supports PC58. WRC ask that opportunities to integrate land use and transport planning and reduce transport emissions be prioritised. WRC have specifically recommended that walking and cycling infrastructure locations be shown in the proposal. Minor changes are also sought to the provisions to require end of journey facilities and to enable EV charging facilities, including for freight vehicles.

#### *Response*

- 36 As previously discussed, walking and cycling requirements for the ADAP are addressed in Appendix 9.6.2 of the proposed PC58 provisions. The provisions require access for pedestrians and cyclists to Avenue Road North via public roads, investigation and provision (if required and feasible) of pedestrian crossing places on Avenue Road North and consideration of pedestrian and cyclist access opportunities to SH26. It is appropriate for these details to be considered in detail at the time of future subdivision.
- 37 In my experience, it is becoming commonplace for EV charging facilities and end of journey facilities to be provided as part of new industrial and commercial developments to meet practical requirements and expectations for a modern workplace. I support consideration of these facilities in new development proposals. Mr Inger addresses whether setting minimum standards for these matters in the MDP is necessary in his planning evidence.

### Waka Kotahi

#### *Issues*



- 38 Waka Kotahi supports PC58 in part and does not seek any specific changes. Waka Kotahi's strong preference is for all access to be via the lower hierarchy road (i.e. Avenue Road North and not SH26). Waka Kotahi notes that any future direct connection to SH26 could negatively impact the efficiency and safety of the State Highway.

*Response*

- 39 Access to the PC58 site is proposed to be via Magistrate Avenue off Avenue Road North. The provision for a future road connection to SH26 has been removed from the ADAP. This feature was originally included to reflect the Morrinsville Town Strategy and discussions with MPDC. However, MPDC staff have subsequently advised that they no longer wish to pursue this connection.

Andrew Barker (Late Submission)

*Issues*

- 40 Andrew Baker is in support of PC58 but is concerned about the potential vehicle connection directly to SH26 due to high traffic flows and safety concerns (high speeds and U-turns) on SH26.

*Response*

- 41 As discussed in paragraph 38 above, the future road connection to SH26 has been removed from the ADAP, addressing the concerns raised in this submission. Any residual concerns regarding traffic speeds and safety are matters for Waka Kotahi to consider.

Peter Hexter

- 42 Peter Hexter made initial and further submissions which raise a range of traffic concerns. Mr Hexter's issues and my responses are provided in the table below.

<b>Submission</b>	<b>Issue</b>		<b>Response</b>
Initial	1	Mr Hexter seeks amended provisions to address cycling and footpath usage and connections to existing paths in Morrinsville.	As advised for the WRC submission, this is appropriately addressed in Appendix 9.6.2 of the proposed provisions.

Submission	Issue	Response
	2 Provision of a paper road to ensure that adjacent land can be developed.	The ADAP includes provisions which will enable future roading connections to the north and southwest of the PC58 site.
Further	3 Request that accesses to the site be provided from SH26, to improve site resilience, combined with a reduction in the speed limit on SH26 in this area.	Waka Kotahi, as advised in their submission, do not support vehicle access to the PC58 site directly from SH26 due to efficiency and safety concerns for state highway traffic. Any speed limit change on SH26 is a matter for Waka Kotahi to consider.
	4 Cycling and pedestrian provisions require safe facilities to be provided. No recommended provision changes were proposed in support of this comment.	As advised for the WRC submission, this is appropriately addressed in Appendix 9.6.2 of the proposed provisions.
	5 Options for future growth to be considered.	As discussed above for Item 2 of the primary submission, the ADAP includes provisions which will enable future roading connections to the north and southwest of the PC58 site.

### Warren and Sandra Davenport

#### *Issues*

- 43 Warren and Sandra Davenport are concerned about the proposed future road corridor onto SH26 (Item 1 of the Davenport submission) and are concerned that the ITA has underestimated traffic impacts (Item 4 of the Davenport submission).

*Response*

- 44 The future road corridor onto SH26 has been removed in the ADAP. This aligns with the Waka Kotahi submission and MPDC's advice following notification that they no longer consider a road connection at this location to be required.
- 45 I address the Davenport's concern that traffic flows have been underestimated in detail in Appendix A to my evidence. I am satisfied that the assessment of traffic flows and capacity has been robustly undertaken and can be relied on. The 3% growth rate used for the future year assessment is appropriate, resulting in a Level of Service A at the Magistrate Avenue/Avenue Road North intersection and Level of Service C at the Avenue Road North/SH26 intersection. The capacity assessment has been peer reviewed and accepted by Council's traffic consultant.

**Response to Matters Raised in S42A Report**

- 46 The Section 42A Hearing Report concludes that there are no transportation issues that would prevent approval of PC58 but advises that there are several transportation matters which have not been resolved. These matters are detailed in the Transportation Review by Naomi McMinn of Gray Matter, provided in Appendix 3 to the Section 42A report. The outstanding transportation matters relate to the Magistrate Avenue/Avenue Road North intersection layout, walking and cycling provisions and road cross sections. I address these matters below, as well as comments and amendments which have been suggested in the Transportation Review to provisions relating to the north-south road status, the loop road at the north end of the site and existing road pavement loss of life.

Magistrate Avenue/Avenue Road North Intersection Layout

- 47 The Transportation Review recommends that the right turn bay on Avenue Road North into Magistrate Avenue should be widened to 3m (currently 2.1m), the pedestrian refuge be widened to 2m (currently 1.6m) and appropriate vehicle swept paths be provided. I agree with these recommendations and with amending provision 9.6.1 a) to require these upgrades which should occur prior to commencement of industrial activities on the PC58 site.

Walking and Cycling Provisions

- 48 The Transportation Review recommends that the north-south road should have a 3m wide shared path on one side and 1.8m on the other, that the PC58 extension of Magistrate Avenue should have a 3m wide shared path on one side of the road, and that the existing 1.5m footpath on Magistrate Avenue be widened to a 3m wide shared path.

- 49 The proposed layout of one 1.5m wide footpath complies with the Matamata-Piako Development Manual and matches the footpath width provided on Magistrate Avenue and Avenue Road North, as accepted by MPDC through the recent subdivision consent for the Stage 1 development. It is acknowledged that the Regional Infrastructure Technical Specifications requires two 1.8m wide footpaths in industrial areas. While NZTA's Pedestrian Network Guidance also recommends a 1.8m footpath width in industrial areas it does allow an absolute minimum of 1.5m. This guidance is based on NZS 4404:2010 Table 3.2 which requires 1.5m wide footpaths on either side of the road in industrial areas.
- 50 The footpath provisions for the PC58 site were proposed to tie in with existing footpath widths along Magistrate Avenue and Avenue Road North. It is noted that the PC58 area will have traffic volumes limited by the no exit roads, with speeds controlled by the relatively short road lengths and friction from on-street parking, improving safety for pedestrians and cyclists. I suggest that the minimum footpath width on new roads in the PC58 site is increased to 1.8m to be consistent with the recommended width in the Regional Infrastructure Technical Specifications and NZTA's Pedestrian Network Guidance. I do not consider the existing 1.5m wide footpath on Magistrate Avenue needs to be widened, as the Transportation Review has suggested, as the benefits of retrofitting this would be minimal, and it meets the requirements of the Matamata-Piako Development Manual.
- 51 The Transportation Review recommends that the requirement for a pedestrian crossing facility on Avenue Road North be specified in the provisions. The current provisions state that a crossing facility shall be "investigated and provided if required and feasible". To specify that a crossing facility is required is not possible as any crossing facility will need to consider swept paths from adjacent accesses at the time of design to check that it is feasible. It is noted that the proposed Avenue Road North/State Highway 26 roundabout design includes pedestrian facilities and will improve pedestrian access to the site following construction.

#### Road Cross Sections

- 52 The Transportation Review recommends the inclusion of a cross section showing the road design parameters for the north-south road. Provision 9.6.1 c) contains text describing the minimum standards for all public roads within the ADAP, including 20m road reserve width, 10m wide carriageway and 1.5m wide footpath on one side. I accept that increasing the footpath width to 1.8m on one side of new internal roads would provide consistency with RITS guidelines. I do not consider there to be a need for a

cross section to be included. How these minimum requirements are accommodated should be left to the future design and consenting stage.

#### Collector Road Provisions

- 53 The Transportation Review recommends some amendments to provisions discussing the possible collector road status of the north-south road. As the potential future road connection to State Highway 26 has been removed from the ADAP it is now apparent that the north-south road will connect to Avenue Road North via Magistrate Avenue only, which is a local road. As such, it is now intended to remove provisions that relate to the north-south road potentially having a collector road status in the future.

#### Loop Road Provision

- 54 The Transportation Review recommends a new provision (9.6.1 f)) to outline the minimum standards for the loop road which is shown on the ADAP at the north end of the site. The roading layout in this area is indicative and has not been confirmed. It may change due to final lot sizes or access to lots in this area might end up being via right of ways if issues arise with achieving grades and swept paths for public roads. Flexibility is required to enable these matters to be considered at the future consenting stage. It is therefore recommended that this new provision not be included.

#### Stage 1 Pavement Provision

- 55 The Transportation Review recommends amended wording for the current pavement provision (9.6.1 d))<sup>2</sup> to allow any pavement loss of life be covered by a financial contribution. I generally agree with this amendment, although the suggested wording in the Transportation Review appears to pre-determine the outcome of the future pavement assessment by assuming that a financial contribution will be required. I consider the wording should be changed to reflect that a financial contribution may be required depending on the findings of the pavement assessment.

#### **Conclusion**

- 56 I consider that the PC58 site is well suited for rezoning to General Industrial Zone from a transportation perspective. It is adjacent to an existing industrial area with good connections to Morrinsville and SH26. The plan change will provide industrial land to further support Morrinsville's development, capturing trips that would otherwise most likely be trips to/from Hamilton. The Magistrate Avenue/Avenue Road North intersection will be upgraded to better provide for heavy vehicles and pedestrians accessing the site.

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<sup>2</sup> It also recommends this be separated out into a new provision 9.6.X. This is a plan drafting matter rather than a traffic matter, so I have no comment to make on this.

The wider road network, including the soon to be upgraded Avenue Road North/SH26 roundabout, will be able to safely and efficiently accommodate the increased traffic flows.

- 57 The proposed PC58 provisions include specific requirements for access to the PC58 site, for the design and location of the new road network and for pedestrians and cycling. The provisions will ensure that appropriate regard will be had to traffic and transportation matters at subdivision consent stage.

Dated 14 February 2024

A handwritten signature in blue ink, appearing to read "Tara Hills", is written above a horizontal line.

Tara Hills

## Appendix A

### Warren and Sandra Davenport Submission – Traffic Engineering Considerations

Issue		Response
1	Concern that future Lockerbie traffic effects have not been included in the traffic assessment.	<p>A robust growth rate of 3% was used for Avenue Road North in the Magistrate Avenue/Avenue Road North intersection capacity assessment in the ITA. It is noted that growth on SH26 to the west of Avenue Road North has increased just 2.3% in the last 5 and 10 years.</p> <p>To check the sensitivity of the traffic flows used at this intersection the 10-year SIDRA assessment has been rerun to return a Level of Service of F (average delays of 50 second). The higher trip generation flows of 1.48 trips/100 m<sup>2</sup> from the ITA were used for the critical AM assessment for this sensitivity test. To achieve a Level of Service F required a growth rate of 23% for through flows (an increase from 303 vehicles per hour to 2402 vehicles per hour). Lockerbie Estate will create 1200 new dwellings, potentially generating approximately 1440 vehicles per hour, to be spread across the network. Growth from Lockerbie Estate will therefore not result in unacceptable delays or loss of capacity at the Magistrate Avenue/Avenue Road North intersection.</p> <p>The SIDRA output for this sensitivity assessment is provided in Appendix B.</p>
2	Snell Street assumed to not carry heavy vehicles.	<p>Snell Street carries significantly fewer heavy vehicles than Avenue Road North. A traffic count on the 5<sup>th</sup> of December 2023 indicates hourly flows of 56 trucks per hour on Avenue Road North near SH26, with 18 trucks per hour on Snell Street near Studholme Street. Mobile Road gives daily truck volume on Avenue Road North near SH26 of 385 trucks, with 155 trucks on Snell Street near Studholme Street.</p> <p>It is noted that Avenue Road North and Snell Street are listed as arterial roads in the District Plan.</p>
3	Impacts of increasing traffic into and through Morrinsville have not been considered. Concern that increasing Kurunui Road/Avenue Road South traffic will affect Avenue Road/State	<p>Traffic effects on the wider network surrounding a proposed development site are generally considered until those effects are “no more than minor”. This is typically until the first major intersection. In this case it is appropriate that the Avenue Road North/SH26 intersection also be considered, as it has been. As the new roundabout has been designed for future traffic flows no capacity or safety issues are expected to occur as a result of PC58 traffic flows. The existing</p>

Issue	Response
<p>Highway 26 roundabout efficiency, and that a left turn lane may be required for SH26 traffic turning left into Avenue Road North.</p>	<p>temporary roundabout is also suitable for the additional PC58 flows. The consideration of site traffic flows beyond this roundabout is not required, as traffic effects are expected to be no more than minor beyond this intersection. The 2023 and 2033 (10-year) roundabout assessments are attached in Appendix C for completeness. These assessments use 2023 traffic flows and 3% growth for the 10-year assessment. The 10-year assessment operates at a Level of Service C, with peak hour average delays of 21 seconds for the right turn out of Avenue Road North in the AM peak period.</p>
<p>4 Concern that the proposed connection to SH26 and pedestrian/cyclist facilities have not been adequately considered and discussed with NZTA.</p>	<p>Waka Kotahi have been fully consulted with regarding the potential SH26 connection and relevant pedestrian/cyclist facilities and are a submitter on PC58. Waka Kotahi is not supportive of a vehicle connection onto SH26, and this has been removed from the ADAP.</p>
<p>5 The likely traffic impact on Avenue Road North is understated.</p> <p>Concern that Friday HCV flows are lower than Monday HCV flows.</p> <p>Concern that traffic volumes used were unrepresentative due to the influence of Covid lockdowns.</p> <p>No traffic count was undertaken during the day when HCV flows are higher.</p>	<p>The intersection and road capacity assessments undertaken in the ITA are in accordance with standard practice and have been peer reviewed and accepted by Council consultants.</p> <p>SH26 data has been checked for day of the week flows (attached in Appendix D). This found that the highest peak hour flows occur on a Friday in the PM peak hour, and on a Thursday in the AM peak hour. The day of the week counted is therefore considered to be appropriate. It is noted that any variation in HCV flow will have a less than minor impact on intersection capacity results, with the total flows being the more important factor to be considered.</p> <p>The traffic count flows in the ITA were undertaken in July 2022. All Covid travel restrictions ended in January 2022. No increase factor is therefore considered necessary to account for lockdown flows. As stated for issue 1 in this table, flows at the Magistrate Avenue/Avenue Road North intersection remain acceptable even with a significant sensitivity test.</p> <p>Intersection capacity assessments are always undertaken during peak periods to reflect the worst-case scenario. A capacity assessment for a typical midday flow using higher HCV flows will not provide a worst-case scenario.</p>



<b>Issue</b>		<b>Response</b>
6	The impact of queued traffic on Anderson Street.	<p>The Avenue Road North/Anderson Street intersection is not expected to be significantly affected by queuing at the SH26/Avenue Road North intersection as these intersections are 100m apart. When queues extend back past Anderson Street it is expected that queued traffic will let Anderson Street turning traffic through, as typically occurs in these situations.</p> <p>It is noted that the design of the SH26 roundabout is expected to include the usual Safe System Audit process.</p>

## Appendix B

### SIDRA Assessment of Avenue Road Business Park Intersection with 23% Growth

#### MOVEMENT SUMMARY

▽ Site: 101 [2032 AM 1.48 rate - 23% growth (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

101 Avenue Road Intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [ Total HV ] veh/h %	Arrival Flows [ Total HV ] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [ Veh. Dist ] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Avenue Road - South													
1	L2	All MCs	401 14.0	401 14.0	0.755	5.4	LOS A	0.0 0.0	0.00	0.15	0.00	46.9	
2	T1	All MCs	977 5.0	977 5.0	0.755	0.8	LOS A	0.0 0.0	0.00	0.15	0.00	48.2	
Approach			1378 7.6	1378 7.6	0.755	2.1	NA	0.0 0.0	0.00	0.15	0.00	47.8	
North: Avenue Road - North													
8	T1	All MCs	1552 14.0	1552 14.0	0.868	1.7	LOS A	0.0 0.0	0.00	0.00	0.00	47.8	
9	R2	All MCs	129 5.0	129 5.0	0.685	41.9	LOS E	2.7 19.4	0.97	1.16	1.58	31.2	
Approach			1681 13.3	1681 13.3	0.868	4.8	NA	2.7 19.4	0.07	0.09	0.12	45.9	
West: Site access													
10	L2	All MCs	43 14.0	43 14.0	0.128	14.6	LOS B	0.4 3.0	0.78	0.90	0.78	40.7	
12	R2	All MCs	143 14.0	143 14.0	0.934	59.2	LOS F	3.7 28.8	0.99	1.42	2.71	27.1	
Approach			186 14.0	186 14.0	0.934	48.9	LOS E	3.7 28.8	0.94	1.29	2.26	29.4	
All Vehicles			3245 10.9	3245 10.9	0.934	6.2	NA	3.7 28.8	0.09	0.19	0.19	45.2	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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## Appendix C

### SIDRA Assessment of the SH26/Avenue Road Roundabout

#### MOVEMENT SUMMARY

Site: 101 [AM 2023 (Site Folder: SH26 Roundabout)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

SH26 Roundabout  
Site Category: (None)  
Roundabout

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [ Total HV ] veh/h %	Arrival Flows [ Total HV ] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [ Veh. Dist ] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Avenue Road South													
1	L2	All MCs	26 10.0	26 10.0	0.123	7.4	LOS A	0.7 5.2	0.65	0.68	0.65	43.9	
2	T1	All MCs	35 10.0	35 10.0	0.123	7.3	LOS A	0.7 5.2	0.65	0.68	0.65	44.2	
3	R2	All MCs	28 10.0	28 10.0	0.123	10.6	LOS B	0.7 5.2	0.65	0.68	0.65	43.7	
Approach			89 10.0	89 10.0	0.123	8.4	LOS A	0.7 5.2	0.65	0.68	0.65	44.0	
East: SH26 East													
4	L2	All MCs	28 10.0	28 10.0	0.317	6.7	LOS A	2.0 15.4	0.66	0.63	0.66	44.4	
5	T1	All MCs	188 10.0	188 10.0	0.317	6.7	LOS A	2.0 15.4	0.66	0.63	0.66	44.7	
6	R2	All MCs	43 10.0	43 10.0	0.317	9.9	LOS A	2.0 15.4	0.66	0.63	0.66	44.2	
Approach			260 10.0	260 10.0	0.317	7.2	LOS A	2.0 15.4	0.66	0.63	0.66	44.6	
North: Avenue Road North													
7	L2	All MCs	41 10.0	41 10.0	0.484	8.1	LOS A	3.5 26.9	0.74	0.74	0.79	42.8	
8	T1	All MCs	46 10.0	46 10.0	0.484	8.1	LOS A	3.5 26.9	0.74	0.74	0.79	43.1	
9	R2	All MCs	304 10.0	304 10.0	0.484	11.3	LOS B	3.5 26.9	0.74	0.74	0.79	42.6	
Approach			392 10.0	392 10.0	0.484	10.6	LOS B	3.5 26.9	0.74	0.74	0.79	42.7	
West: SH26 West													
10	L2	All MCs	161 10.0	161 10.0	0.462	4.6	LOS A	3.6 26.0	0.41	0.46	0.41	45.4	
11	T1	All MCs	385 0.0	385 0.0	0.462	4.4	LOS A	3.6 26.0	0.41	0.46	0.41	45.8	
12	R2	All MCs	37 10.0	37 10.0	0.462	7.9	LOS A	3.6 26.0	0.41	0.46	0.41	45.1	
Approach			583 3.4	583 3.4	0.462	4.7	LOS A	3.6 26.0	0.41	0.46	0.41	45.6	
All Vehicles			1324 7.1	1324 7.1	0.484	7.2	LOS A	3.6 26.9	0.57	0.59	0.59	44.4	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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## MOVEMENT SUMMARY

Site: 101 [AM 2033 (Site Folder: SH26 Roundabout)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

SH26 Roundabout  
Site Category: (None)  
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Avenue Road South															
1	L2	All MCs	36	10.0	36	10.0	0.209	9.5	LOS A	1.3	9.7	0.79	0.75	0.79	42.9
2	T1	All MCs	46	10.0	46	10.0	0.209	9.4	LOS A	1.3	9.7	0.79	0.75	0.79	43.1
3	R2	All MCs	38	10.0	38	10.0	0.209	12.7	LOS B	1.3	9.7	0.79	0.75	0.79	42.6
Approach			120	10.0	120	10.0	0.209	10.5	LOS B	1.3	9.7	0.79	0.75	0.79	42.9
East: SH26 East															
4	L2	All MCs	38	10.0	38	10.0	0.512	9.5	LOS A	4.2	32.0	0.86	0.79	0.96	43.1
5	T1	All MCs	253	10.0	253	10.0	0.512	9.5	LOS A	4.2	32.0	0.86	0.79	0.96	43.4
6	R2	All MCs	58	10.0	58	10.0	0.512	12.8	LOS B	4.2	32.0	0.86	0.79	0.96	42.8
Approach			348	10.0	348	10.0	0.512	10.0	LOS B	4.2	32.0	0.86	0.79	0.96	43.2
North: Avenue Road North															
7	L2	All MCs	55	10.0	55	10.0	0.777	18.0	LOS B	10.3	78.3	1.00	1.09	1.57	38.4
8	T1	All MCs	62	10.0	62	10.0	0.777	18.0	LOS B	10.3	78.3	1.00	1.09	1.57	38.6
9	R2	All MCs	407	10.0	407	10.0	0.777	21.3	LOS C	10.3	78.3	1.00	1.09	1.57	38.2
Approach			524	10.0	524	10.0	0.777	20.5	LOS C	10.3	78.3	1.00	1.09	1.57	38.3
West: SH26 West															
10	L2	All MCs	216	10.0	216	10.0	0.644	5.3	LOS A	6.5	46.5	0.61	0.51	0.61	44.8
11	T1	All MCs	516	0.0	516	0.0	0.644	5.0	LOS A	6.5	46.5	0.61	0.51	0.61	45.2
12	R2	All MCs	49	10.0	49	10.0	0.644	8.6	LOS A	6.5	46.5	0.61	0.51	0.61	44.6
Approach			781	3.4	781	3.4	0.644	5.3	LOS A	6.5	46.5	0.61	0.51	0.61	45.1
All Vehicles			1774	7.1	1774	7.1	0.777	11.1	LOS B	10.3	78.3	0.78	0.75	0.97	42.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# Appendix D

## Day of Week Flows on State Highway 26

Hourly Count Export

Site Ref: 02600023 ( 150m East of Piako Rd )

Start Date ( dd-mon-yyyy ): 04-Dec-2021

End Date ( dd-mon-yyyy ): 04-Dec-2023

Direction: Both

Data Type: ALL Vehicles

Day	00:00 - 01	01:00 - 02	02:00 - 03	03:00 - 04	04:00 - 05	05:00 - 06	06:00 - 07	07:00 - 08	08:00 - 09	09:00 - 10	10:00 - 11	11:00 - 12	12:00 - 13	13:00 - 14	14:00 - 15	15:00 - 16	16:00 - 17	17:00 - 18	18:00 - 19	19:00 - 20	20:00 - 21	21:00 - 22	22:00 - 23	23:00 - 00	Total
03-NOV-2023 FRI	37	30	30	56	127	287	636	1005	977	836	749	791	797	909	1026	1091	1226	1144	678	407	279	208	131	114	13571
06-NOV-2023 MON	28	27	27	50	122	302	734	1091	1037	767	677	683	694	726	817	936	1133	1119	516	286	212	153	72	66	12275
07-NOV-2023 TUE	38	40	31	45	130	334	707	1117	1036	787	721	702	705	760	858	1016	1146	1096	587	299	244	156	84	64	12703
08-NOV-2023 WED	24	25	33	52	144	331	729	1107	1059	790	744	671	684	765	807	987	1185	1167	581	348	258	201	96	72	12860
09-NOV-2023 THU	39	40	42	57	146	345	674	1135	1075	792	778	663	753	798	922	1050	1175	1206	568	373	263	219	120	77	13310