Auckland Transport

Auckland Transport Speed Management Bylaw Independent Review

SAFE SYSTEM SOLUTIONS
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Executive Summary

Safe System Solutions Pty Ltd has been engaged by Auckland Transport to conduct an independent review of its program for implementing its Safe Speeds Programme and associated Bylaw. The aim of the independent review is to evaluate whether the method and evidence used by Auckland Transport adequately supports the proposed actions and priorities identified in the speed management changes for the proposed roads.

Speed plays a central role in the likelihood and severity of crashes. The relationships between speed and crash events have been comprehensively researched and are strongly evidenced. As a result, speed management is central to effective road safety strategies around the world.

This review was carried out as a desktop exercise using information provided by Auckland Transport. The review examined 32 roads or road segments as nominated by Auckland Transport. Strategic documents were reviewed for alignment with the Auckland Transport proposed actions and speed management guidance was examined to assess the methods applied in selecting roads and recommending speed limit changes.

From the evidence provided, the reviewers find that:

- Speed management via speed limit reduction is strongly and clearly supported by national and regional transport plans and aligns with the Safe System approach to road safety.
- Auckland Transport's Safe Speed Programme and specifically the proposed Speed Limits Bylaw 2019 is an appropriate response to the road safety issues faced by Auckland Transport.
- In identifying segments of the road network for speed limit reduction, Auckland Transport has consistently and appropriately applied the guidance and methodology set out by NZTA in the Speed Management Guide.
- The overall approach is aligned with government policy and particularly its Safe System approach to road trauma reduction.
- The NZTA Speed Management Guide criteria and the Safe Speeds Program additional criteria have been consistently applied to the road network in selecting road segments for speed management.
- The data used in selecting streets for speed limit reduction are current and relevant data for this purpose.
- From the review of road segments nominated by Auckland Transport, the interpretation and application of the NZTA Speed Management Guide used in the Safe Speed Programme is appropriate and has considered the range of local circumstances impacting speed limit setting.
- In so far as they comply with the information provided in Megamaps, the speed limits proposed for the sample 32 road segments reviewed can be considered safe and appropriate speeds.
- If implemented as proposed the Speed Limits bylaw 2019 will positively impact road safety.

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Appendices

1. Introduction

Safe System Solutions Pty Ltd has been engaged by Auckland Transport to conduct an independent review of its program for implementing its Safe Speeds Programme and associated Bylaw.

The aim of the independent review is to evaluate whether the method and evidence used by Auckland Transport adequately supports the proposed actions and priorities identified in the speed management changes for the proposed roads.

To achieve the above aim the review has tested the strategic alignment of Auckland Transport's intended actions to reduce speed limits, assessed the methodology used for consistency with that proposed by the New Zealand Transport Agency (NZTA) and reviewed the application of the methodology using local evidence to identify specific road segments for inclusion in the Speed Limits Bylaw 2019.

This report contains the review's observations and findings.

2. Context

2.1. Auckland's road safety performance

In the past three years, deaths on Auckland roads due to crashes have increased at more than three times the rate of the rest of NZ and more than five times the growth of travel.

In 2017, 64 people were killed in road crashes in the Auckland region (44% of which were speed related deaths) and 749 people were seriously injured. This represents a 78% increase in road deaths since 2014.

Auckland Transport has safety obligations in its Statement of Intent and the Draft Auckland Plan which it is currently not meeting.

- The Statement of Intent includes a target of 5.0 local road deaths and serious injuries (DSI) per 100 million vehicle kilometres travelled (VKT). In 2016 Auckland had 7.0 DSI per 100M VKT
- Funding applications to New Zealand Transport Agency (NZTA) include a target of reducing DSI by 2.6% per year however in the last five years the trend has increased at more than 15% on average annually.

2.2. Safe System and the role of speed

The guiding principles of the Safe System approach include a recognition that people make mistakes, humans are physically frail and that a 'forgiving' road system should lead to road use without death or injury. Road designers and managers have unique responsibilities in providing this 'forgiving' road system.

Speed plays a central role in the likelihood and severity of crashes. The relationships between speed and crash events have been comprehensively researched and are strongly evidenced.

Referred to as the Safe System Speeds, safe aspirational operating speeds are as follows (ECMT, 2006)[1]:

- 30 km/h - Where there is possibility of a collision between a vulnerable road user and a passenger vehicle
- 50 km/h - Where there is possibility of a right angle collision between passenger vehicles
- 70 km/h - Where there is possibility of a head on collision between passenger vehicles
- ≥100 km/h – where there is no possible side or frontal impact between vehicles or impacts with vulnerable road user impacts.

As a result, speed management is central to effective road safety strategies around the world.

[1] Speed Management – ISBN 92-821-0377-3 - ECMT, 2006

2.3. Implementing speed management

Many misconceptions surround the management of speed in road use. These are due in part to the sometimes counterintuitive relationship between speed limit setting and journey time and in part to the frequent confirmation drivers receive when inappropriate speed does not result in crashes.

A three part approach to implementing safe speeds is being adopted increasingly in New Zealand. Part 1 is infrastructure upgrade ('Engineer Up') where affordable and functionally warranted. Part 2 is to reduce speeds where the logic is strong and community is supportive. Part 3 is to engage the public to understand costs and benefits where there is a mismatch between operating speed and safe speed yet costly upgrades are unaffordable. The NZTA Speed Management Guide sets out a framework for implementing this approach.

3. Conduct of the review

This review was carried out as a desktop exercise using information provided by Auckland Transport. Source documents for the review are listed in Appendix A.

The review examined 32 roads or road segments as nominated by Auckland Transport and listed in Appendix B. A rigorous examination of decision-making was conducted for these nominated roads.

Strategic documents were reviewed for alignment with the Auckland Transport proposed actions and speed management guidance was examined to assess the methods applied in selecting roads and recommending speed limit changes.

The reviewers' backgrounds and qualifications are provided in Appendix C.

3.1. Review tasks

The review team conducted the review as three tasks:

Strategic alignment	Review Auckland Transport's speed management program against the nominated reference documents including the Government Policy Statement and Auckland Plan to determine alignment with ambition to achieve 'Vision Zero' or a 'transport network free from harm'
Methodology	Review Auckland Transport's process and methodology used in identifying and selecting roads for lower speed limits for compliance with Auckland Transport's Safe Speed Plan, and the NZTA National Speed Management Guide
Application	Review Auckland Transport's application of the Safe Speed methodology and available evidence in assessing the specific roads identified in the draft Bylaw represented by 32 road nominated by Auckland Transport

This review did not consider New Zealand's Speed Limit Rules for the setting of Speed Limits nor did it investigate the local implementation detail such as the precise location for a change in speed limit.

4. Review observations

4.1. Strategic alignment

Network wide interventions such as speed management rely for their success on broad based support and clear program logic. The review notes the following observations in this context:

- The New Zealand Government's National Land Transport Policy Statement clearly supports speed management. The Policy Statement also commits to a strong focus on addressing the safety of Auckland's roads.
- NZTA has provided comprehensive guidance combining the best available evidence and a staged approach to speed review which considers a broad range of relevant policy issues.
- The draft Auckland Road Safety Programme Business Case notes that "there are a significant number of roads in Auckland where vehicle speed is higher than safe or appropriate"
- 71% is Auckland's local roads operate at speeds higher than the Safe and Appropriate Speed (SAAS).
- The Board of Auckland Transport has endorsed speed management for >10% of Auckland local roads.
- Auckland Transport's Safe Speed Plan invokes the 'Vision Zero approach'. While this is considered appropriate for ambitious road safety targets, it is unclear to what extent Auckland has adopted Vision Zero. Further, the current work on developing of a new national road safety strategy and action plan was requested by Government to consider whether a "Vision Zero" framework should be applied in New Zealand.

4.2. Methodology

The NZTA Speed Management Guide proposes two criteria to assist in selecting roads where speed management should be investigated: High Crash Risk – roads with a high number of crashes and current operating speeds much higher than the safe speed and 'Self-Explaining Roads' - where the operating speed is lower than the posted speed limit. In addition, Auckland Transport's Safe Speeds Program considers including roads which undergo engineering works which shape the speed that drivers travel on a road, or shape what is the safe and appropriate speed for that road, roads which undergo significant changes to the surrounding land use, and roads which are side-roads off other roads selected for speed management. These criteria are consistent with NZTA guidance and align with the long term aims of reducing DSI on Auckland's roads.

Auckland Transport is consolidating speed limits from a range including 70 and 90km/h to 30, 40, 50, 60, 80 and 100. Close consideration should be given to ensuring drivers do not experience frequent speed limit changes along major routes. Where this occurs in conjunction with high levels of speed enforcement, drivers can become frustrated by high vigilance to policing activity.

Some roads identified for speed reduction fall into the NZTA's category of 'Engineer Up'. This category refers to economically important roads where the safety performance is poor and there is a strong case for investment to bring the corridor up to the required standard to support existing or higher travel speeds. If engineering up is not going ahead, and this is an isolated instance of such, then road reclassification may be warranted. If this is a broader pattern then Auckland Transport may need to work with NZTA to reconsider the affordability of the 'Engineer Up' aspect of the strategy.

The timing of speed limit reductions on 'Engineer Up' category roads would benefit from being aligned with the intended infrastructure works. Where this is not possible, the sequencing of speed interventions and engineering works will need to be carefully communicated to ensure community understanding and support.

NZTA presumably have a strong interest in speed management for regionally and nationally important roads. There appears to be collaboration between agencies on speed limits for these roads. It would be appropriate to ensure that the Implementation Plan reflects this at the road segment level.

The Safe Speed Plan of December 2018 states that the '2019 programme of speed management will deliver safety improvements to approximately 760km of roads in total'. Within this total there are significant numbers of local urban streets that already have low operating speeds ('self-explaining' roads). For many of these streets current average operating speeds are below the proposed new speed limit. The mechanism by which these speed limit reductions will deliver safety improvements should be made clear. Where average operating speeds are already below the posted speed limit, further speed limit reductions aim to reduce the amount of infractions in the upper level of speed exceedance (reduce the average maximum speed). Hence safety benefits will accrue where these speed limit reductions have the effect of lowering the frequency and/or extent of excessive speed (above the Safe and Appropriate Speed). This will have little impact on the travel speed of the average motorist.

The work done by Auckland Transport to implement the NZTA Speed Management Guide has shown up some anomalies between MegaMaps Safe and Appropriate Speed ratings and the proposed Safe System speed limit. Examples include Vera Rd (Henderson – Massey), Flanshaw Rd (Henderson – Massey) and Rosehill Dr (Papakura). The proposed speed limit in each case is 30km/h while the SAAS in MegaMaps are 40, 50 and 40km/h respectively. Identification of these anomalies is consistent with the need for a 'Technical Check' as required under Section 3.1 of the Speed Management Guide. Auckland Transport's proposal reflects best practice for safe urban streets with pedestrians and cyclists.

4.3. Application

The review was limited to the information provided by Auckland Transport. This information did not include all information on which Auckland Transport based its proposal decisions. Reviewer discussions with Auckland Transport clarified the extent of the work carried out on which the proposal for speed limit changes has been based.

Locally relevant considerations used in making decisions on speed limits have included:

- Whether a length of road is too short to support a speed limit change
- Variations in operating speed along the road segment
- Proximity to high activity destinations such as a school, church or shopping area.
- Locally significant functions of the road such as 'operates as a driveway'
- How open or closed the road environment feels to a driver
- Consistency with adjacent road network
- The likelihood presence of unfamiliar drivers on a seasonal basis

Deciding which 'operating speed' to use for speed limit setting can be complex and difficult to explain to the community. Discussions with the Auckland Transport team revealed considerable thinking has gone into understanding variations in operating speed data. Consistency and credibility are key to securing continued public support in speed management. A clear and agreed interpretation for each road segment should be available to support public engagement.

Creating lower speed areas within a network can change traffic flow at a broad level. Consideration should be given to reviewing traffic signal coordination to ensure traffic flow conditions are optimum through the network.

5. Review findings

From the evidence provided by Auckland Transport, the reviewers find that:

5.1. Strategic alignment

Speed management via speed limit reduction is strongly and clearly supported by national and regional transport plans and aligns with the Safe System approach to road safety.

Auckland Transport's Safe Speed Programme and specifically the proposed Speed Limits Bylaw 2019 is an appropriate response to the road safety issues faced by Auckland Transport.

5.2. Methodology

In identifying segments of the road network for speed limit reduction, Auckland Transport has consistently and appropriately applied the guidance and methodology set out by NZTA in the Speed Management Guide.

The overall approach is aligned with government policy and particularly its Safe System approach to road trauma reduction.

5.3. Application

The NZTA Speed Management Guide criteria (High Crash Risk – roads with a high number of crashes and current operating speeds much higher than the safe speed and 'Self-Explaining Roads' - where the operating speed is lower than the posted speed limit) and the Safe Speeds Program additional criteria (roads which undergo engineering works which shape the speed that drivers travel on a road, or shape what is the safe and appropriate speed for that road, roads which undergo significant changes to the surrounding land use, and roads which are side-roads off other roads selected for speed management) have been consistently applied to the road network in selecting road segments for speed management.

The data used in selecting streets for speed limit reduction are current and relevant data for this purpose.

From the review of road segments nominated by Auckland Transport, the interpretation and application of the NZTA Speed Management Guide used in the Safe Speed Programme is appropriate and has considered the range of local circumstances impacting speed limit setting.

The NZTA Speed Management Guidelines defines safe and appropriate speed as travel speeds that are appropriate for road function, design, safety and use. The Agency provides information on safe and appropriate travel speeds for each road controlling authority as required by the Land Transport Rules via its Megamaps platform. In so far as they comply with the information provided in Megamaps, the speed limits proposed for the sample 32 road segments reviewed can be considered safe and appropriate speeds. As with any set speed limit, to continue to be safe and appropriate these speed limits will need be monitored and reviewed with changes in road function, design, safety and use.

If implemented as proposed the Speed Limits bylaw 2019 will positively impact road safety.

Appendix A Source Documents

Source documents provided by Auckland Transport for the Review:

- Safe Speed Plan Final as presented to the AT Board in December 2018
  - Att 1 Safe Speed programme presentation
  - Att 2 Safe Speed programme communications strategy
  - Att 3 Statement of Proposal
  - Att 4 Proposed Speed Limits bylaw 2019
  - Att 5 Safe Speed Programme Frequently Asked Questions
- Project Plan Safe Speeds Programme 2018/19 to 2020/21
- Speed Management Implementation Plan – Site selection criteria May 31
- Speed Limits Bylaw 2019 (draft)
- Speed Management Master List Working Spreadsheet 10-7-2019
- Key Stakeholder Consultation – 18.10.201
- Estimated DSI Rural high risk roads by area – 2017
- Auckland Road Safety Programme Business Case (draft)
- Megamaps (Edition II dated September 2018)

Appendix B Nominated roads for review

The following roads or road segments were nominated by Auckland Transport for inclusion in the Review.

		High Crash Risk	Self-Explaining	Working in with other projects	Land use changes	Adjacent roads	Comments
1	Hobson Street, Waitemata	Y	Y			Safe Speed Limit for City	
2	Nelson Street, Waitemata	Y	Y			Safe Speed Limit for City	
3	Tamaki Drive, Orakei	Y	Y	Corridor Scheme			ONRC Regional Strategic
4	Waiuku Road, Franklin	Y					
5	Sandstone Road, Franklin		Y				
6	Sunnyside Road, Rodney	Y					
7	Highbrook Drive, Howick		Y				ONRC Regional Strategic
8	Symonds Street, Waitemata	Y	Y			Safe Speed Limit for City	ONRC Regional Strategic
9	Huia Road, Waitakere Ranges	Y					ONRC Regional Strategic
10	Elliott Street, Waitemata		Y			Safe Speed Limit for City	
11	Leigh Road, Rodney	Y					
12	Glenbrook Road, Franklin	Y	Y				
13	Oteha Valley Road, Upper Harbour		Y			Safe Speed Limit for City	
14	Hingaia Road, Papakura		Y				
15	Montrose Terrace, Hibiscus and Bays		Y				
16	Tenetahi Road, Rodney	Y					
17	Taylor Road, Franklin	Y	Y				
18	High Street, Waitemata		Y		Commercial strip shopping	Safe Speed Limit for City	

		High Crash Risk	Self-Explaining	Working in with other projects	Land use changes	Adjacent roads	Comments
19	Linwood Road, Franklin	Y					Proposed to install chevron signs as a part of RRDS route improvements
20	Flanshaw Road, Henderson-Massey		Y				
21	North Road, Franklin	Y		Minor improvements planned for Sept 2019			Proposed limit of 80km/h is higher than the SAAS of 60km/h
22	Kahikatea Flat Road	Y	Y				
23	Taupaki Road, Rodney	Y					
24	Sandspit Road, Rodney	Y		Road improvements proposed			
25	Vera Road, Henderson-Massey		Y				
26	Federal Street		Y				
27	Kingseat Road, Franklin	Y	Y				
28	Batty Road, Franklin	Y	Y				
29	Maraetai Coast Road, Franklin		Y				
30	O'Brien Road, Rodney		Y				
31	Rosehill Drive, Papakura		Y				
32	Ormiston Road, Franklin		Y				

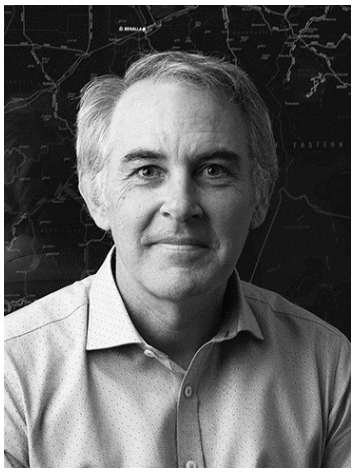
Appendix C Review Team and Statement of Independence

I am independent of the development or implementation of the subject of this review, and I have undertaken this review in accordance with the conduct set out in Section 3 of this report.

---------- **28.07.2019**

David Shelton (*BEng*, *MEnvSt*, *GAICD*)

Safe System Solutions Pty Ltd



David is one of Australia's key road safety leaders having held senior executive positions at VicRoads, including Executive Director Road Safety and Network Access, Executive Director Strategy and Planning, Executive Director Registration and Licensing, Regional Director and Acting Chief Executive. Also, between 2010 and 2013, Dave was the Chair of Australia's National Road Safety Executive Group.

David was Victoria's Road Safety Coordinator when, in 2013, Victoria recorded the second lowest number of fatalities on record. This role involved mobilising and directing all road safety partners (including local governments) to progress road safety in a coordinated effort. His leadership and management across all elements of the Safe System, through all levels of government, is exceptional.

I am independent of the development or implementation of the subject of this review, and I have undertaken this review in accordance with the conduct set out in Section 3 of this report.

---------- **28.07.2019**

Dr. Tana Tan *(BEng MEng Ph.D)*

Safe System Solutions Pty Ltd

Dr Tana Tan completed a Bachelor of Mechanical Engineering, Masters of Biomedical Engineering and a PhD at UNSW. He is the lead author of a number of peer-reviewed journal papers on vehicle safety and has presented at international transport and road safety conferences. Professionally he has more than ten years of experience as an engineering and senior engineering consultant.

As an applied research engineer, he blends road safety research and application together and sees them as complimentary to each other rather than mutually exclusive.