SAFE SPEEDS

MONITORING AND EVALUATION PLAN

Updated to include Tranche 2A

23 February 2022 - Version Final

Change History and Approval

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Revision Status

REVISION NUMBER:	IMPLEMENTATION DATE:	SUMMARY OF REVISION
1.0	11 October 2019	ELT Review
1.1	14 October 2019	Final
1.2	16 March 2021	Minor updates to include 26 Roads package
1.3	23 February 2022	Minor updates to include Tranche 2A

Contents

Introduction

1. Following mandates given by the Auckland Transport (AT) Board after the approval of the Road Safety Business Improvement report, the Auckland Council Planning Committee's endorsement, directions from the Government Policy Statement on Land Transport 2018/19 – 2027/28 and the Auckland Transport Alignment Project, AT developed a Safe Speeds Programme – part of a broader suite of initiatives including investment in safer roads and roadsides investment in education, increased enforcement and advocating for safer vehicles – focussed on addressing Auckland's road trauma.
2. The Safe Speed Programme includes a proposal to review speeds on Auckland's roads to consider whether they are safe and appropriate, consider targeted interventions such as engineering changes and/or reducing speeds, consult the broader community on those changes and then finally taking account of the feedback received from the community then make a decision on what speeds are safe and appropriate for Auckland's roads. The Safe Speeds Programme is proposed to include three tranches of either changes to speed limits and/or changes to roading environments to make the speeds on Auckland's roads safe and appropriate for all road users.
3. The AT Board approved the draft proposal to reduce speeds on approximately 11% of Auckland's local road network for consultation in December 2018 and agreed to make the Speed Limit Bylaw 2019 that implements, on a staged basis speed limit changes in October 2019. The roads selected in tranche one are a mixture of high-risk roads and those that were already operating at lower speeds than the existing speed limit. Roads from rural Auckland, the City Centre, a number of town centres, residential areas and urban roads were selected in the draft proposal.
4. The AT Board approved a proposal to reduce speeds on a further 26 roads within tranche one by way of amendment to the Speed Limit Bylaw 2019 in March 2021 (the 26 Roads package). In June 2021, the AT Board approved a draft proposal to reduce speeds on a further 8% of Auckland's local road network which was consulted between September and November 2021 as the first phase of Tranche 2 (Tranche 2A).
5. Ongoing monitoring and evaluation of the performance of the roads identified in tranche one against the safe and appropriate test set out in the *Land Transport Rule: Setting of Speed Limits 2017* and *Waka Kotahi's Speed Management Guide* is required.
6. This report provides a proposed monitoring and evaluation plan for the speed limit changes in the Speed Limit Bylaw 2019, the Speed Limits Amendment Bylaw 2020 and the proposed draft Speed Limits Amendment Bylaw 2022.

Background and context

7. The Waka Kotahi Speed Management Guide was published in November 2016 as part of the Safer Journeys Safer Speeds Programme and in advance of the Land Transport Rule: Setting of Speed Limits 2017. It provides guidance on how Road Controlling Authorities (RCAs) can approach speed management which is evidence based, nationally consistent, prioritises improvements to safety and economic productivity, achieves value for money and contributes to the credibility of the speed management programme. The guide contains a framework to assist RCAs with the evaluation of speed management activities

using the key indicator categories of speed, traffic efficiency, perceptions and behaviour, and crashes, deaths and injuries. Under each category there are several recommended indicators, on which the monitoring and evaluation plan is based.

8. The Speed Limits Bylaw 2019, Speed Limit Amendment Bylaw 2021 and proposed Speed Limits Amendment Bylaw 2022 together reduce speeds on approximately 19% of Auckland's roads. In addition, they confirm all of the existing speed limits which are not proposed to change must be retained.
9. The monitoring and evaluation of the affected roads under consideration ensures that information is captured to measure the effectiveness of these changes and the benefits achieved. This will demonstrate how the performance of these roads are contributing to the 'safe and appropriate' requirements, Auckland's Vision Zero strategy to eliminate all deaths and serious injuries from the network by 2050, and allow AT to communicate progress and effectiveness of the changes to key stakeholders and the wider public, and exhibit accountability for the investment made.
10. The evaluation will also inform better decision making and allow improved external consultation on future speed limits reviews. It will provide local data which will enhance our ability to predict the outcome of future speed limit changes in Auckland and target any proposed changes to maximise the reduction in death and serious injury crashes.

Monitoring and evaluation

11. The methodology proposed is based on Waka Kotahi's Speed Management Guide. Key outcomes indicators to be evaluated are separated into four categories; speed, traffic efficiency (multimodal), perceptions and behaviour; and crashes, deaths and serious injuries.
12. The guide also splits the monitoring and evaluation of speed management activities into two parts, evaluating the implementation (Appendix 1) and evaluating of the outcomes (Appendix 2). The appendices details the indicators and how they should be measured.

Baseline data

13. When monitoring or evaluating a project, there needs to be sufficient information which can be used as the baseline data.
14. The evaluation plan includes gathering information from key stakeholders and the public on the perceptions of the performance of the roads under consideration from a safe and appropriate perspective. This can commence from six months post-implementation.
15. The key measures of success indicated by the guide are that:
    - Speed management as a whole becomes more consistent and prioritised to risk, and road users see the same types of risks consistently identified and targeted no matter who manages the road network
    - Travel speeds will align to the framework over time and become more appropriate for road function, design, safety and use, starting with the highest risk routes to build public understanding and support

- Mean speeds will moderate on lower classification or less safe roads. Deaths and serious injuries will reduce, while economic productivity is maintained or enhanced across the road system overall
- The road system as a whole will become more self-explaining and consistent over time and the speed management programme will be more credible to the public

16. Additional pre-implementation data collection may be required to ensure there is adequate baseline information to compare pre and post implementation conditions for all of the key evaluation indicators.

Targets

17. The overall target of the speed limit changes is to reduce the mean number of DSI crashes on the roads with speed limit changes by at least 30% within five years of implementing all the approved changes while balancing this with the effectiveness and efficiency of the roading network for all road users.
18. Performance will also be monitored against the following secondary targets
    A) Measured mean speeds should be no more than 5km/h above the posted speed limit and the 85th percentile speed should be within 10% of the speed limit.
    B) Public awareness of the speed limit changes and the perception of the effectiveness of the changes is on average, positive.
    C) There is a reduction in the number of injury crashes on the roads where speed limit have been changed.
    D) There is a reduction in the proportion of crashes where the police consider excessive speed or going too fast for the conditions as a contributory factor.

Data collection and analysis including expected limitations and challenges

19. DSI crashes are, in relative terms statistically rare events when considered on a road by road basis Therefore, to provide a clear and more accurate picture of performance roads of a similar typology will need to be grouped together into clusters for the purpose of the analysis. The proposed clusters are based on areas such as City Centre, town centres, residential areas, urban roads and rural roads. Other analysis can also be captured such as the outcome for local board areas.
20. Extensive data has already been captured relating to traffic speeds, volumes and road use as part of the Safe Speed programme, however additional data collection may be required and ongoing data collection will be required in order to facilitate evaluation.

21. Proposed speed limit changes are also expected to provide some secondary benefits around increased use of the road network by people walking and cycling, particularly in the City Centre and town centres. To fully evaluate this benefit, additional data may be required, both pre and post-implementation, to examine and quantify any changes in active mode road use in these locations.
22. To ensure up to date traffic survey data is being used as a baseline then existing surveys should be no more than two years old from the date of proposed speed limit change. Also additional information will be required for roads where no data current exists. Additional surveys will need to be undertaken to ensure that there is sufficient baseline data for the monitoring purposes.
23. Operating speeds from Waka Kotahi's Mega Maps (risk assessment database and tool) will be used to supplement the information gathered by traffic surveys.
24. Crash data used in the analysis will be gathered exclusively from Waka Kotahi's CAS system as this is the most comprehensive and consistent source of crash data available. There can be a time lag of several months between the time a crash occurs on the network and the time it is checked, verified and entered into the database by Waka Kotahi. Having 12 months' worth of data after implementation available for analysis is important to assess any improvements on the crash rates on the roads that have had the speed limit reduced.

Reporting and communicating evaluation outcomes to the AT Board, key stakeholders and public

25. It is proposed that an evaluation report will be prepared summarising the data collection and analysis for the first, second-year, and fifth -year periods following implementation of all changes. It will take some time to process and analyse all data collected in the period. Availability of a comprehensive crash history data from CAS for each period is expected to be a key constraint as this can take several months.
26. The reports for all periods will include information on speed, travel time (where monitored), traffic volume, and crash rate indictors. Only the first-year report will contain information on perceptions and behaviours as this is the only period in which it is proposed to collect this information.
27. The evaluation reports will be available to key stakeholders (including elected members, NZ Police, Mana Whenua, Waka Kotahi, business associations, and the Automobile Association).
28. A wide range of communications methods will be used to inform and engage with the public.

Next steps

29. The next stage is to undertake pre-implementation data collection, where required, on the roads where speed limits are proposed to be reduced. This data will allow comparison of pre and post implementation conditions for all of the key evaluation indicators.

30. In order to allow a like for like comparison between pre and post-implementation conditions it is important that complete and comprehensive data is gathered before any changes are made to the speed limits. While there is an extensive data set which was gathered when investigating the safe speeds programme it will be necessary to carry out future data collection to ensure completeness.

31. In particular some of the previously gathered traffic tube survey data is now more than two years old and needs to be more current, gaps in the tube data in some locations need to be addressed, and pedestrian and cyclist behaviour surveys in the city and town/village centres need to be carried out.

Appendix 1

Evaluating the implementation of proposed speed management measures

z	Indicator	Description	How to measure / key considerations
1	Number and type of speed management activities, and rationale for their inclusion	Identify the frequency of implementation for different types of speed management. E.g. engineering, speed limit, enforcement	This review will take into consideration the factors when implementing the various themes, including any supporting safety engineering enhancements. The rationale as to why changes were proposed need to be recorded and include relevant enforcement and education/engagement activities, as well as any other supporting maintenance/engineering activities.
2	Consistency and quality of speed management activities	The quality of speed management activities and the alignment with the guide	An independent review to assess the consistency of roads chosen and their alignment with the speed management guide Another review will look at whether all planned / required changes to speed limit signage have been correctly implemented, whether any quality issues with the works are apparent, and whether the location of speed limit signage is both in accordance with the bylaw and good engineering practice.
3	Barriers to implementation	Provides data if speed management activities were not implemented as planned (e.g. public resistance, lack of resources). Can also be used to plan for risk ahead of activities.	Undertake a post implementation (lessons learnt) review of the following areas: A) The process pre-bylaw approval followed by AT identifying any improvements which could be made. B) The post-bylaw approval process. This will identify any locations where it was not possible to implement the speed limit changes as approved, for instance due to unexpected site constraints. It will also identify any locations where the speed limit changes provided to be unduly difficult to implement onsite. These reviews will be done once all implementation work is complete.
4	Percentage of network with safe and appropriate speed limits	Proportion of the network with limits which align with the national framework, after sense checking, and contributing towards AT's Road Safety Programme Business Case target of having 60% of	Measure the proportion of the network (by length of road) which is consistent with the national framework, after sense checking, before and after the changes are implemented.

z	Indicator	Description	How to measure / key considerations
		Auckland's roads being safe and appropriate in 10 years.	
5	Extent of engagement	The extent of engagement activities and the number of people reached through engagement	Refer communications plan.

Note: Indicators are based on Waka Kotahi Speed Management Guide

Appendix 2

Evaluating the outcome of speed management activities

Ref.	Indicator	Description	How to measure/key considerations
1	**Speed**		
1.1	Point speeds	Mean, 85th percentile, speed distribution	Point speeds will be gathered by seven-day traffic tube surveys on roads with changes to their speed limits. Data will be gathered at the following times • Pre-implementation (no earlier than 24 months before) • Between 6 and 24 months after implementation. For roads in the City Centre and town centre themes surveys will be undertaken on a proportion (minimum 60%) of roads over 350 metres in length. This also includes monitoring Hobson Street, Nelson Street and Fanshawe Street as mentioned in paragraph 25 of the Monitoring and Evaluation Plan. For roads in rural and non-town centre urban themes surveys will be undertaken on a proportion (minimum 50%) of roads over 1km in length that are classed as high risk and have recorded injury crashes. This also includes monitoring the 20 roads as mentioned in paragraph 26 of the Monitoring and Evaluation Plan. Point speed data will not be gathered where traffic tube surveys cannot be practically carried out. These locations include unsealed roads, roads with more than four lanes, roads where the survey equipment cannot be safely installed or recovered without an excessive level of traffic management, and locations where there has been more than one instance of theft or vandalism of the survey equipment. In these locations GPS derived speed data gathered under Item 1.2 will be used to assess the effectiveness of the speed limit changes.
1.2	Geospatial speeds	In car GPS derived speeds	Speed data from the national database (Waka Kotahi MegaMaps GIS information) will be gathered for all roads with new speed limits. This will be done when MegaMaps is updated by Waka Kotahi, which is typically annually.

Ref.	Indicator	Description	How to measure/key considerations
1.3	Difference between posted and means speeds	Compare point speed with the planned or changed speed limit. Mean speed should be within 5km of the posted speed and 85% speed should be within 10% of the posted speed.	Data collected in Item 1.1 will be analysed to find mean speeds. For each site survey data post-implementation will be compared against the pre-implementation and new speed limits to find the average speed reduction and differential between the speed limit and mean speeds. Data collected in Item 1.2 will be analysed to find mean speeds along the length of each road with a change in speed limit. These mean speeds will be compared against the pre-implementation data and new speed limits to find the average speed reduction and differential between the speed limit and mean speeds. Data for each survey will be aggregated into the following clusters: • City Centre • Town centres (one cluster per town centre) • Residential (Te Atatū and Papakura) • Other urban roads (one cluster per local board area which has at least one road in this theme) • Rural (one cluster per local board area which has at least one road in this theme) Data for roads in each cluster will be weighted by AADT.
1.4	Police enforcement activities	To understand the impact of enforcement on compliance with reduced speed limits by measuring the impact of both active speed enforcement (using cameras etc) and passive police enforcement (through presence of regular police patrols).	Has the requirement for enforcement activity changed following any speed limit changes? Data will need to be collected for enforcement activity on roads within the proposed bylaw prior to any changes being introduced. Enforcement activity following any speed limit changes will be reported every six months at the Tamaki Makaurau Road Safety Group meetings.
2	**Traffic Efficiency**		
2.1	Traffic volumes	The traffic volume should be measured as Annual Average Daily Traffic	Traffic volume data to be collected via traffic tube surveys as part of Item 1.1.

Ref.	Indicator	Description	How to measure/key considerations
		(AADT), the two-way daily traffic that passes a point	Pre and post-implementation data will be analysed to identify changes in traffic volumes. The analysis will look at both all vehicle AADT data and also heavy commercial vehicle (HCV) only traffic data.
2.2	Travel times	The time it takes to travel between locations	To compare the average change in travel times travel time data will be collected on a selection of roads pre implementation and post implementation of speed limit changes, across all modes. An assessment is to be undertaken on a selection of high risk rural, urban and City Centre roads to determine the impact to travel times and reliability as a result of any change to crashes along these routes following any speed limit changes.
3	**Perceptions and behaviour**		
3.1	Awareness of speed management activities	Awareness of speed limit change.	A survey of at least 1,000 randomly selected Auckland residents will be undertaken at least six months after implementation to gauge awareness and perceptions of the speed limit changes. Key stakeholders contacted to collect data on their awareness and perceptions of the speed limit changes at the same time as the public survey. Key stakeholders include and not limited to: • Elected members (local boards and councillors) • Iwi • NZ Police • Waka Kotahi • Heart of the City/Business associations (for city and town centres) • Automobile Association
3.2	Perceptions of speed management activities	Perceived effectiveness, compliance and likelihood of enforcement; level of support	Questions about perceptions of the effectiveness, compliance, level of enforcement, and level of support for the changes will be included in the surveys detailed in Item 3.1.
3.3	Other road user counts and latent demand	Numbers of cyclists or pedestrians using the road. Latent demand means more cyclists or pedestrians might	Applies to City Centre and town centre theme locations only. For town centre theme locations the number of pedestrians and cyclists movements will be surveyed at identified locations where the speed limit is to be changed and where there are planned infrastructure improvements.

Ref.	Indicator	Description	How to measure/key considerations
		use the road if conditions were different	The City Centre pedestrian and cyclist surveys will be undertaken at key locations spread throughout the centre. This data will be gathered at the following times: • Pre-implementation. • Similar time of year as pre-implementation survey and at the same locations. • Surveys to cover one weekday and one Saturday Data gathered for this item will be analysed to compare the change in the number of pedestrians and cyclists observed in pre and post-implementation periods.
3.4	Road user behaviour	Behaviour of other road users, such as pedestrians and cyclists	A behavioural scientist will be engaged to assist in the development of the data collection and analysis methods for this item.
4	**Crashes, deaths, and injuries**		
4.1	Speed-related crashes	Death and serious injury crashes where speeding or travelling too fast for the conditions has contributed	Crash history data will be sourced from Waka Kotahi's CAS database For each road the number of post-implementation DSI crashes where speeding or travelling too fast for the conditions is cited as a factor by NZ Police will be compared against the annual average rate for the 5-year period preceding the change in the speed limit This analysis will be undertaken for the first, second and fifth years post implementation. It is expected that this analysis will be carried out approximately six months after the end of each period, but this is dependent on all CAS database records for the period being available. There can be a lag of several months between the time a crash happens and its entry into CAS. Data for each road will be aggregated together with other roads in its cluster (using the same clusters as Item 1.3) in order to allow for statistical variations in individual roads. Post-implementation data will also be compared against the citywide number of injury crashes where speed or travelling too fast for the conditions is cited as a factor by NZ Police (separated into rural and urban areas) for the same period to control for trends unrelated to speed limit changes.

Ref.	Indicator	Description	How to measure/key considerations
4.2	Crash data	Analysis of all crashes on network by fatal, serious-injury, minor-injury and non-injury	Crash history data will be sourced from Waka Kotahi's CAS database. For each road the number of crashes, broken down by severity, will be compared against the annual average rate for the 5-year period preceding the change in the speed limit. This analysis will be done at the same time as the analysis for Item 4.1. Data for each road will be aggregated together with other roads in its cluster (using the same clusters as Item 1.3) in order to allow for statistical variations in individual roads. Post-implementation data will also be compared against the citywide number of injury crashes of each type (separated into rural and urban areas) for the same period to control for trends unrelated to the speed limit changes.

Note: Indicators are based on Waka Kotahi Speed Management Guide