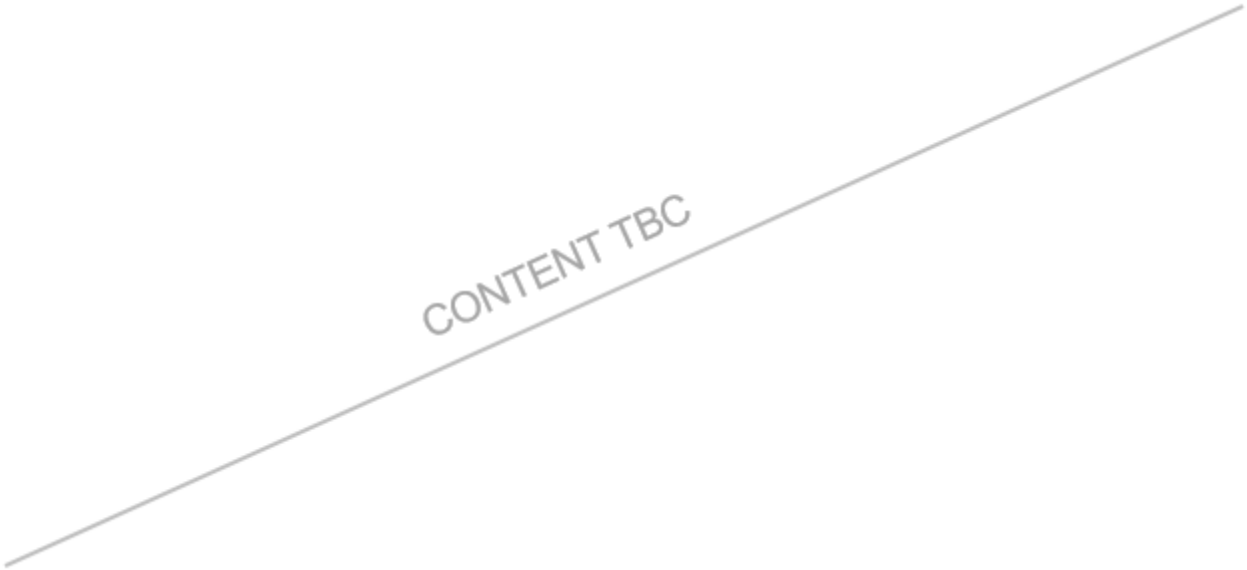
Regional Transport Committee

Horizons
1 September 2020

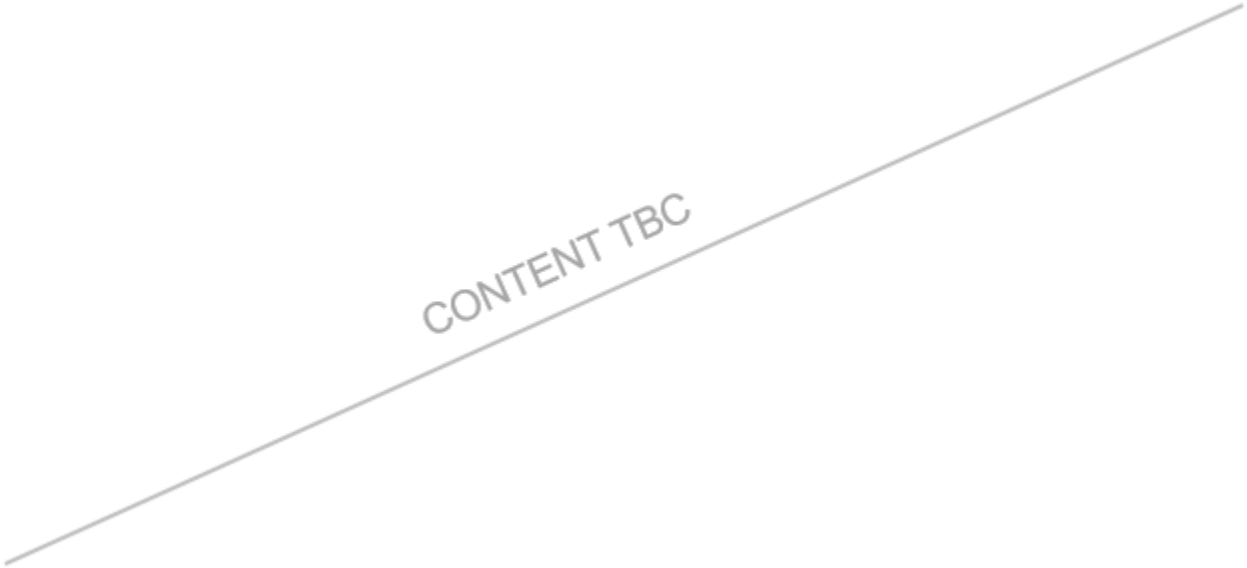
WAKA KOTAHI
NZ TRANSPORT AGENCY

New Zealand Government

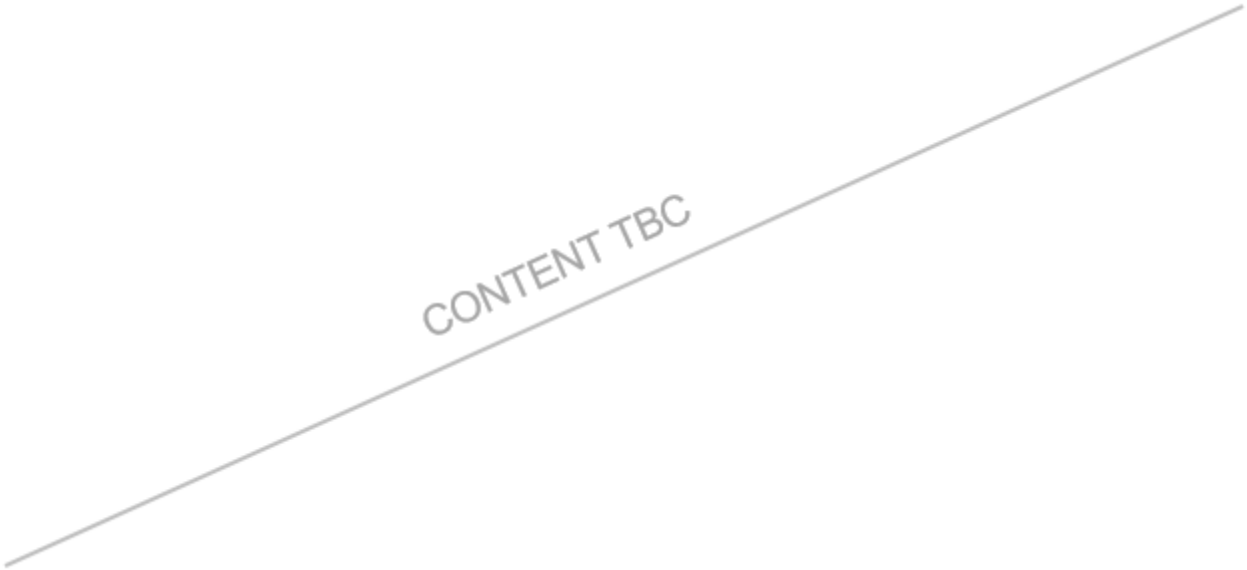
Waka Kotahi Investment Proposal (WKIP)



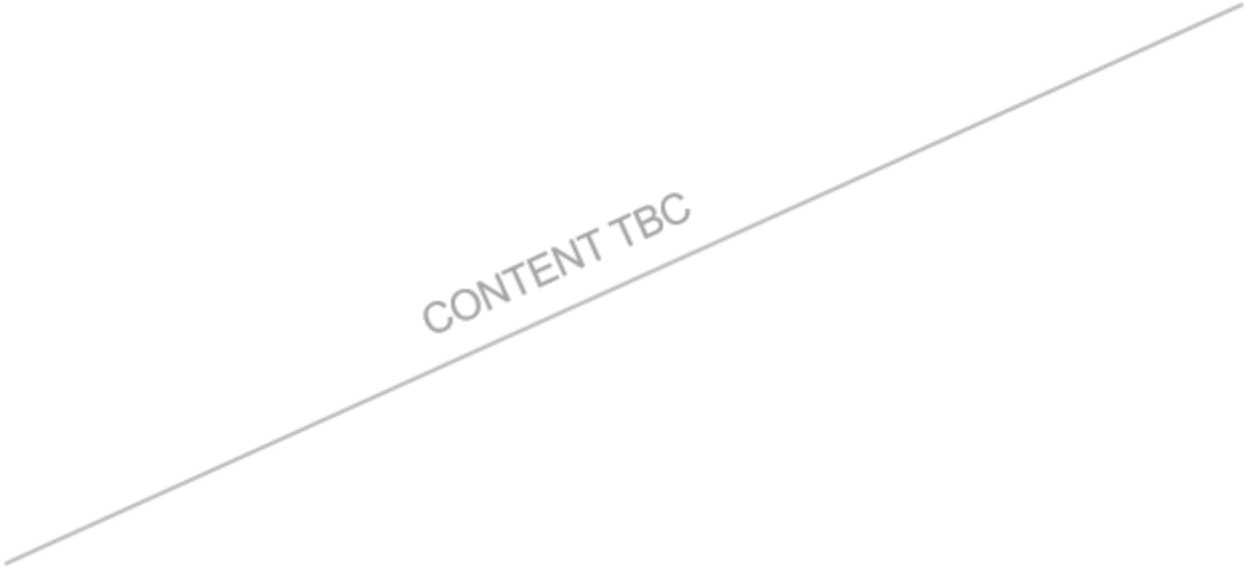
Regional Land Transport Plan (RLTP)



Investment Decision-Making Framework (IDMF)

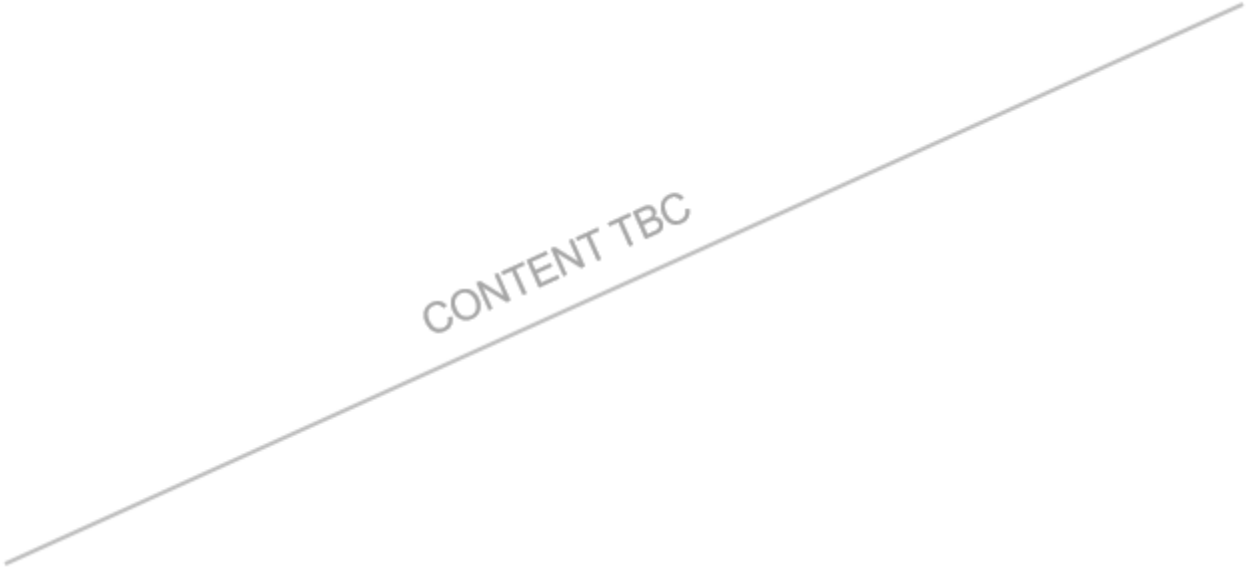


Arataki



Innovating Streets pilot fund

Creating people-friendly spaces through tactical urbanism



Asset Management Data Standard (AMDS)

- In late July, we released the first version of the AMDS to improve how we manage land transport assets.
- Five workshops were held in early August, giving attendees the opportunity to learn and provide essential feedback.
- We’re seeking feedback from anyone with an interest in the development and implementation of the standard.
- There will be four releases leading up to the AMDS being implemented in mid-2021.

Accessible Streets Consultation

- Accessible Streets is a package of national rule changes to support a move away from private vehicle use in urban centres to more energy efficient, low-cost and healthier transport options like walking, cycling and public transport.

- A national framework with local adaptions to fit local conditions.

- There are nine proposals in total.

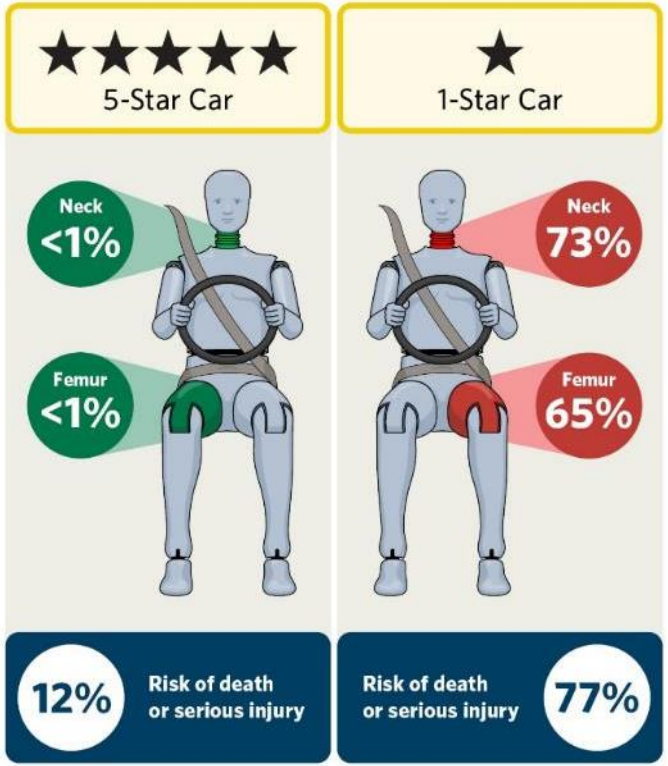
Driver distraction partnership

- We’re collaborating with 2Degrees, Vodafone, Spark, Auckland Transport and NZ Police to raise awareness around the issue of mobile phone driver distraction.

- The partnership aims to develop a series of thought-provoking campaigns and initiatives over the coming year to spread the word to ‘drive undistracted’.

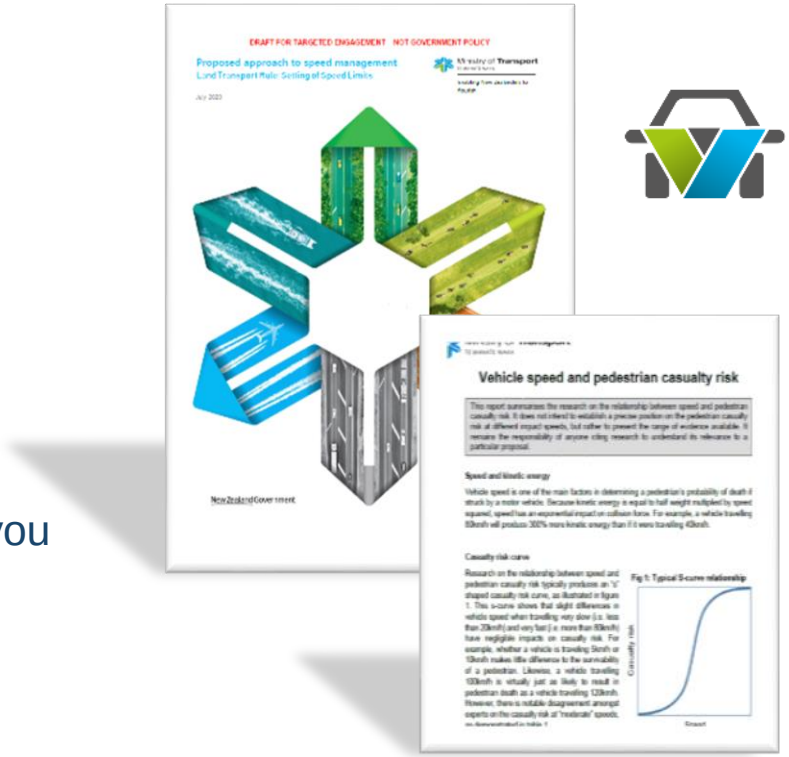
Star ratings save lives in crashes

- We've released new crash test footage demonstrating that the choice you make when buying your next used car could be a life and death decision.
- The footage shows the results of a controlled head-to-head crash test between a 1-star and a 5-star safety rated vehicle.
- The outcome for the crash test dummies in each car showed a 77% chance of serious injury for the driver of the 1-star rated vehicle, compared to just a 12% chance of serious injury for the driver of the 5-star car.



Proposed approach to speed management

- In July the Ministry of Transport, through Local Government NZ, distributed two documents to RCA Forum members, Chief Executives and TSIG members.
- The explanatory document provides visibility of the direction of the proposed changes to the setting of speed limits rule.
- The proposal is at an early engagement stage and the Ministry of Transport welcomes any feedback you may have.
- Please send any feedback or questions to: speed@transport.govt.nz



Manawatū-Whanganui Updates

September 2020

NZ Upgrade Programme Ō2NL

Progressing plans for the Ōtaki to north of Levin $817 million new highway project.

- We are currently holding meetings with all affected property owners to discuss our proposals and public and stakeholder engagement began on 25 August.
- Draft plans being presented to the community for:
  - The new highway **alignment**
  - **Interchange** locations and types
  - **Local road** connections
- Options assessed against:
  - **Fit with project objectives**
  - **Environmental and social factors** - including HDC district development, iwi cultural values, productive land values and more.
  - **Implementability impacts** - including fit with local road system.

Project Objectives

- Contribute to enhanced movement of people and freight on the state highway network.
- Enhance safety of travel on the state highway network.
- Enhance resilience of the state highway network.
- Provide appropriate connections that integrate the state highway and local road network to serve urban areas.

Draft preferred alignment

Ō2NL Update

Community engagement this winter on safety improvements and the new highway.

Safety improvements (NLTF)

- Three portions of work:
  - Stretches of edge barrier and wide centre lines on SH57, plus SH57 / Queen St roundabout
  - Stretches of median barrier on SH1 south of Levin, plus SH1 / SH57 roundabout
  - Investigation into possible safety improvements north of Levin
- We sought community feedback on the SH57 portion of this work in July and this is being incorporated into our designs. We will continue to engage as designs are developed for the rest of the safety improvements.

New highway and shared path (NZ Upgrade Programme)

- Investigations and design work progressed the 300m wide preferred corridor to the draft preferred alignment, which represents the technically preferred option as accessed across various fields.
- Visible investigations included geotechnical testing on the corridor from late May and an aerial survey of the area.
- Property owner conversations about the draft preferred alignment began in mid-August.
- Engagement with the community for an update on investigations and the announcement of the draft preferred alignment began 25 August and will continue through September.

Improving **safety and resilience** of the **Ōtaki to north of Levin** transport corridor in the medium term, while progressing a new four-lane highway to **support growth** in Levin and **increase transport choice** for the growing population by the end of the decade.

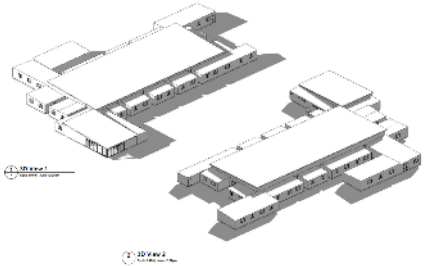
Manawatū-Whanganui Regional Update

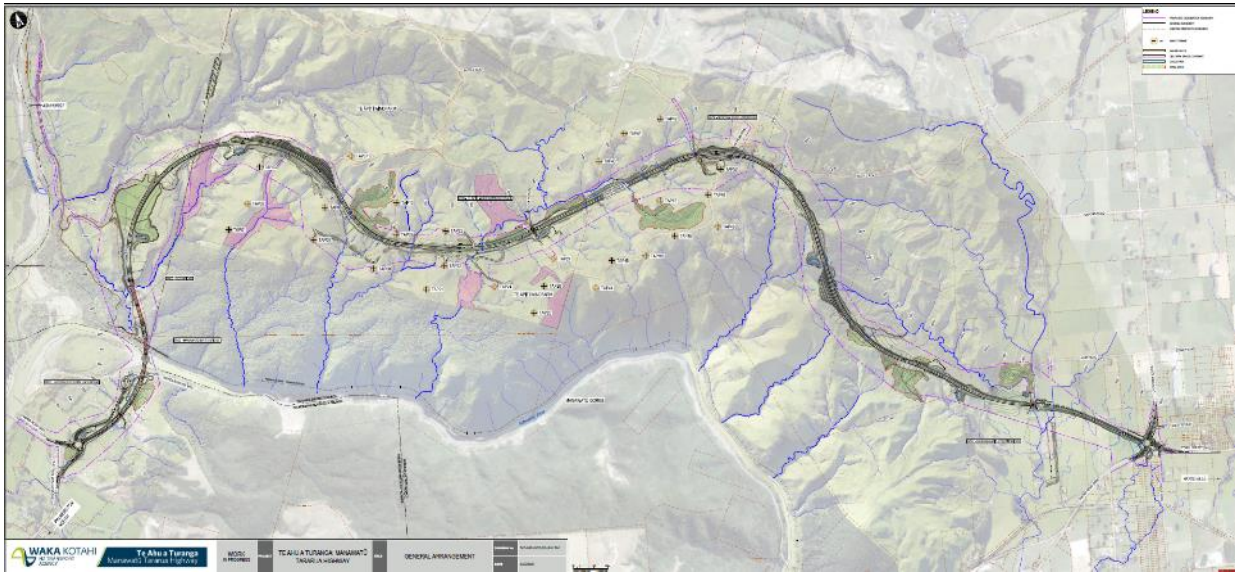
Activity	2018 – 21 NLTP	Key date(s)	Progress	Commentary
State highway maintenance, operations and renewals	$15.84M	Ongoing	Green	Waka Kotahi has put together another big programme for our maintenance and operations with a plan to deliver over 90 lane km of renewals works, as well as a large heavy maintenance programme. • 44 centreline km reseals • 1.5 centreline km rehabilitation • 415 centreline metres Asphaltic Concrete
Low Cost / Low Risk	$0.8M	Ongoing	Green	Resilience – 7 projects carried over from 2019-20 with no new projects yet approved. Safety – 3 projects carried over from 2019-20 with no new projects yet approved.
SH3 Manawatu Gorge Alternative Routes	$3.3M	Ongoing	Green	This is the first full approved annual plan for the Manawatu Gorge alternate routes. This investment will see an improved programme of maintenance and renewals works for these roads.

Manawatū-Whanganui Large Capital Project Updates

Activity	2018 – 21 NLTP	Key date(s)	Progress	Commentary
Te Ahu a Turanga: Manawatū Tararua highway	$123m	Regional Consenting Sept 2020 Enabling Work construction commence Oct 2020 Design Completion Jan 2021 Main works construction commence Jan 2021 Project completion Dec 2024	Green	Environment Court hearing to be held 24th August 2020. All issues resolved prior to attending the hearing, therefore hearing is likely to only be 1 or 2 days. Site Office works have commenced with a number of other enabling works packages ready to commence or still working through consenting process (refer to photos upper right next page). Project Alliance Agreement, Governance Plan and Sub-Alliance Agreement all signed at Te Ahu a Turanga Marae (refer to photo bottom right next page). Currently working with DOC and Horizons to develop an implementation plan for the Pest Control within the Manawatū scenic reserve. Property acquisition is almost complete with only 1 property in final negotiation stage. Mahi toi (cultural design) is progressing well with our iwi partners. Mātanga mahi toi have been brought into the project as part of the project team. Jobs and training day postponed due to COVID restrictions, will be re-scheduled

Te Ahu a Turanga: Manawatū Tararua Highway





Manawatū-Whanganui Large Capital Project Updates

Activity	2018 – 21 NLTP	Key date(s)	Progress	Commentary
Whirokino Trestle and Manawatū River Bridge	$70m	Late 2020	Green	Demolition of the old Whirokino Trestle is underway and likely to take around three months to complete, while demolition works on the Manawatū River Bridge have commenced and will work around seasonal river restrictions around fish spawning. Work is continuing on the tie-ins to the existing SH at each end and the local road network at Whirokino/Matakarapa Roads. Once the new alignment of Whirokino Road opens, the old Manawatu River Bridge, currently used as a detour, will be closed. As per HRC advertising, the river will also be closed for August, September and October. The closure extends 200m upstream and downstream of the original bridge for the safety of river users while the bridge is demolished.

SH4 Update – Te Oreore slip site

August 2020

- The dewatering wells are operating at Te Oreore with a further well to be installed later this month.
- Although we are in Covid-19 Alert Level 2, our drilling programme continues (with appropriate health and safety measures in place)
- The consenting process for the permanent road is well underway. We expect to lodge the consents over the following months.
- Detailed design for the permanent road is underway with a target construction start in summer 2021.
- Landowner discussions for the new road are progressing well.

The crew at Te Oreore site drilling boreholes and installing groundwater monitoring devices, deep within the landslip area

SH4 Update – Resilience sites

August 2020

2. Raukawa

- We're currently awaiting approvals to start work on this site. We're in the final stages of the design review.

3. Hapokopoko Curve Rock

- Work on this site is progressing well with the team completing a large section of the scour protection/rip rap placement. The plan is to complete construction on this site by late 2020.

4 Whiskey's Corner

- The main physical work on Whiskey's Corner has been completed with concrete barriers repositioned to their final location.
- This section of road is now open to two-way traffic and returning to normal operating speeds.

5. South Raupiu Retreat

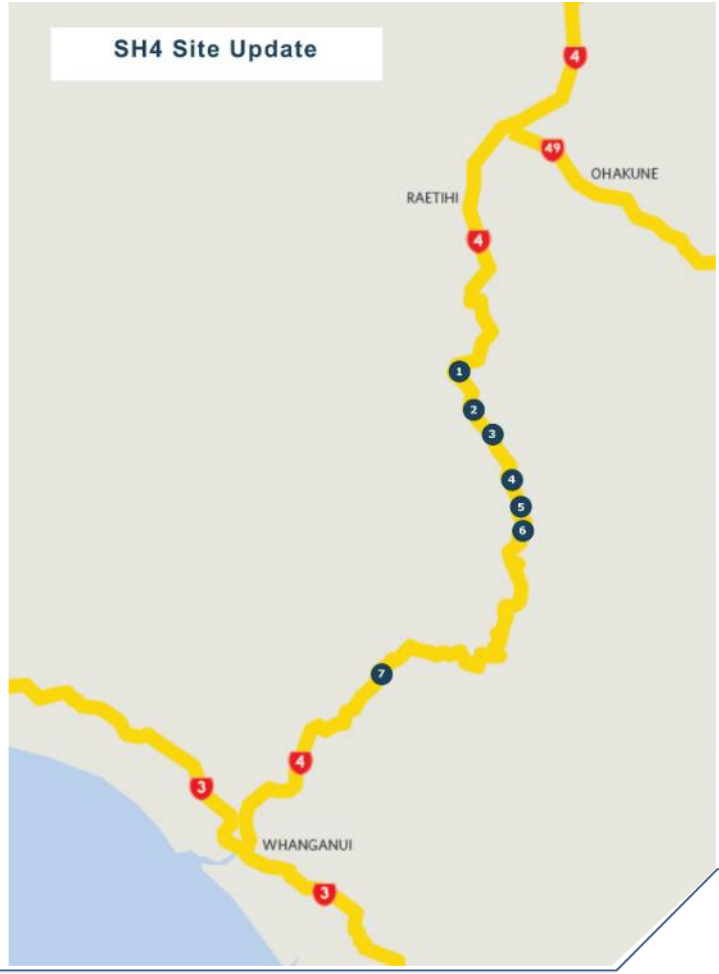
- Work on this site has been put on hold due to an unstable slope face. During the initial cut work two areas became unstable and slipped. Work was stopped until the design and geotech team can investigate and find a suitable solution.
- We're aiming for a completion date of August/September 2020.

6. Otoko Pā

- All work on this site has been completed. The two slips that occurred on the site in July are currently being investigated and monitored.

7. Kukuta Underslip

- The design work on this site is in its final stages. There are two historical sites outside the work area but close to the north end of this site. As there's the potential for further sites to be within the work area, an archaeologist has been engaged to undertake a more thorough assessment.



Manawatū-Whanganui Project Updates – ACNZ & PNITI

Activity	2018 – 21 NLTP	Key date(s)	Progress	Commentary
ACNZ	$1.2M	Last quarter 2020	Green	**Accessing Central NZ (ACNZ) Programme Business Case** • Draft Programme Business Case (PBC) completed • PBC going through Investment Quality Assurance (IQA) review
PNITI			Green	**PNITI Business Case** • Draft Network Options Report (NOR) completed • NOR being updated to reflect feedback from key partners • Investment Quality Assurance review underway • Project partners developing Joint Working Group and Steering Group structures for future project phases • Expecting to have business cases finalised and endorsed in around 6 weeks.

Manawatū-Whanganui Project Updates – other

Activity	2018 – 21 NLTP	Key date(s)	Progress	Commentary
Ashhurst Mitigation	$6M	Late-2021	Green	**Completed Works** • Salisbury Street footpath widened, • Bamfield & Lincoln & Worcester; median islands, give ways and traffic calming, • Stanford Street calming; priority on Stanford St with side roads having to yield. **Currently under construction** Village Centre Improvements • Raised platforms, kerbside islands and planting to create traffic calming / lower speed environment. **Construction starting this month** Mulgrave and Hillary • Altered priority to reduce traffic volume, traffic speed, noise and improve safety for Spelman Ct traffic / people. Hillary & Cambridge & Custom • Intersection re alignment to lower speed, reduce traffic / encourage them to use the preferred route, improve visibility and improve footpath connections. **Design** Cambridge and York • Traffic calming including one-way treatment on York and change of priority at Short St York and SH3/Napier (In Final Design) • Traffic calming, improved signs and markings (includes removal of Give Way for left turn into Cambridge)
Ashhurst Bridge Shared Path	$200K (SSBC phase)	27/08	Green	Community engagement to take place in Ashhurst on 27 August. Presenting clip-on shared path option in conjunction with PNCC

Manawatū-Whanganui Project Updates – Speed & Safety

Activity	2018 – 21 NLTP	Key date(s)	Progress	Commentary
SH 3 Whanganui to Westmere Speed Review	$2.4M for Manawatu – Whanganui region over multiple corridors	Late June – seek approval for implementation phase	Green	Speed design complete – starting implementation discussion once approved by programme manager – gazetting paperwork being prepared in advance and waiting approval
SH1 Bulls to Sanson Speed Review		Engagement post covid-19 restrictions	Amber	Seeking approval to proceed with speed engagement – infrastructure works likely to be 2 or more years away before implementation- speed can proceed in the meantime Engagement planned post covid-19 restrictions
SH3 Palmerston North to Whakarongo Speed Review		Engagement and consultation post covid-19 restrictions	Amber	We are liaising with infrastructure teams to ensure any speed and infrastructure plans are aligned to deliver a complete solution Planning stakeholder engagement and consultation post covid-19 restrictions

Manawatū-Whanganui Project Updates – Stock Effluent

Activity	Key date(s)	Progress	Commentary
Site Investigation	Late 2020	Green	• Woodville site moving to Woodlands Road. Discussions underway with the property owner. If land purchase possible for the SEDF we can move to the next phase. • A private developer has brought the old AFCO building in Taumarunui. Owner may want to make AFCO SEDF a public facility. Waka Kotahi funding is being investigated. We're working with the Ruapehu District Council and our planners about consenting challenges.

Provincial Growth Fund – Manawatū-Whanganui Transport Investment

Note: no PGF investment administered by Waka Kotahi in the region

Council	Description	Cost ($)	Start
Horowhenua	Queen St/Tirotiro Rd intersection	700,000	2 weeks
	Queen St improvements (Oxford-Salisbury)	950,000	4 weeks
Ruapehu	Cycle trail construction/maintenance (Depot Road/Fisher Road)	100,000	Immediate
	Maintain/fell exotic trees on road margins	500,000	Immediate
	Road team additional crews	300,000	Immediate
	Te Ara Mangawhero Cycle Trail (missing links)	250,000	Immediate
Tararua	Route 52 tree removal	500,000	Immediate
Whanganui	Fitzherbert Ave extension to Mosston Rd Industrial Link	1,800,000	2 months
	Rapanui Rd stock underpass	40,000	Immediate
	Whanganui River Road guard rail upgrades (10 sites)	200,000	Immediate

Hei konā mai

Proposed approach to speed management

Land Transport Rule: Setting of Speed Limits

Ministry of Transport
TE MANATŪ WAKA

Enabling New Zealanders to flourish

July 2020

New Zealand Government

Contents

Purpose of this document

The Government is developing the Setting of Speed Limits rule (the draft rule) as part of its *Tackling Unsafe Speeds* programme. This is intended to give effect to a new regulatory framework for speed management and the requirements for safer speed limits outside schools, and would replace the Land Transport Rule: Setting of Speed Limits 2017 (the 2017 rule).

This document is intended to provide local government and key stakeholders with visibility of the direction of the proposed changes to the 2017 rule. It is intended to allow key stakeholders to provide additional input into the drafting of the new Setting of Speed Limits Rule ahead of formal consultation on the draft rule. Formal consultation is expected to be carried out shortly after the 2020 General Election.

This document may also be used by local government to begin planning for implementation of the new speed management framework. However, while the overall approach has been agreed to by Cabinet, this document sets out proposed changes only. **It is not confirmed Government policy.** Some details outlined in this document may change subject to feedback from stakeholders, formal consultation, and during finalisation of the rule.

The Ministry welcomes any feedback you may have on the proposals in this document. While the overall policy has been agreed by Cabinet, we are interested to know whether the proposals outlined in this document are likely to create practical challenges when being implemented as there will be an opportunity to address these before the draft rule is finalised. Please send any feedback or questions to: speed@transport.govt.nz.

How to navigate this document

This document consists of four parts.

Part 1 sets out the background and what has been done to date.

Part 2 sets out the key components of the new regulatory framework.

Key component	For more information, refer to:
Speed management plans - The separate requirements for Waka Kotahi NZ Transport Agency (Waka Kotahi) (as an RCA) and territorial authority RCAs[1] in conjunction with regional transport committees to develop, consult on, and finalise speed management plans. Regional speed management plans would be certified by Waka Kotahi (as regulator).	**Section 2.2**
Speed Management Committee - The establishment of a speed management committee to certify Waka Kotahi's State highway speed management plans and to provide oversight of the information and guidance on speed management that Waka Kotahi (as regulator) provides to RCAs.	**Section 2.3**
Register of Land Transport Records - The requirement for all permanent, variable and seasonal speed limits to be entered into a national publicly searchable register. This register would be a single source of truth, and would give legal effect to all permanent, variable and seasonal speed limits in the country. Existing speed limits in bylaws would be transferred to the register.	**Section 2.4**
Safer speed limits around schools - The requirement for RCAs to reduce speed limits around: • urban schools to 30 km/h (variable or permanent speed limits), with the option of implementing 40 km/h speed limits if appropriate • rural schools to a maximum of 60 km/h (variable or permanent speed limits).	**Section 2.5**

[1] When the term "RCAs" is used in this document, we are referring to territorial authority RCAs. RCAs who are not territorial authorities are referred to as "non-territorial authority RCAs".

Part 3 provides information on elements of the 2017 rule that would be replaced, as well as those that would remain unchanged.

Key component	For more information, refer to:
Components of the 2017 rule that would be replaced: • 70 km/h and 90 km/h speed limits • variable speed limits • mean operating speed • urban traffic areas • Waka Kotahi's role as regulator.	**Section 3.2**
Components of the draft rule that would remain largely unchanged: • default speed limits • temporary and emergency speed limits • signs and road markings • speed limits in designated locations[2]	**Section 3.3**

Part 4 contains information on transitioning to the new regulatory framework.

[2] While the types of designated locations would remain the same, speed limits in these areas must be entered into the Register of Land Transport Records, and RCAs have the option of using speed management plans to consult on speed limits in these locations.

1. Background

Faster travel speeds increase the risk of a crash and, when a crash happens, increase the trauma involved. We know that speed is a major contributing factor to deaths and serious injuries on New Zealand roads.

We want a consistent, transparent and coordinated approach taken to speed management across our road network where decisions about engineering upgrades, speed limit changes and the roll out of safety cameras are made together.

We'd like to see our speed management decisions support safe and accessible environments for walking, cycling and travelling with children.

We have heard from local government that:

- Road controlling authorities (RCAs) find the current process for setting speed limits (which requires RCAs to make bylaws) resource intensive, time consuming and complex. This leads to confusion, delays and some RCAs putting off making speed management decisions that are sorely needed on our highest risk roads. The current process does not encourage regional collaboration among RCAs and speed management can often be done on a road-by-road basis. This leads to communities having little visibility about speed management changes across their region.

- There are opportunities to improve safety and accessibility around schools. Current speed limits outside many schools do not make walking and cycling an appealing mode of transport. Increased rates of children walking and cycling to school may also have a range of co-benefits, including health and accessibility benefits.

In response to this feedback, on 11 November 2019, the Government agreed to the *Tackling Unsafe Speeds* programme. The programme includes three components. These are:

1. Introducing a new regulatory framework for speed management to improve how RCAs plan for, consult on and implement speed management changes.

2. Transitioning to lower speed limits around schools to improve safety and encourage more children to use active modes of transport.

3. Adopting a new approach to safety cameras to reduce excessive speeds on our highest risk roads.

As part of the new regulatory framework, the speed management process would be aligned with the land transport planning process and bring together decisions about infrastructure investment and speed management. This would help ensure a more transparent process to speed management infrastructure, planning and implementation around the country.

Where are we at in the process?

We are developing the draft rule, which would give effect to the new regulatory framework for speed management and the requirements for safer speed limits outside schools. This would replace the 2017 rule. Waka Kotahi is also progressing the delivery of its safety

camera and infringement processing operating model, which would see these safety camera functions transfer from the New Zealand Police to Waka Kotahi.

The Ministry had previously indicated that we would be formally consulting on a draft rule in mid-2020. However, drafting of the Land Transport (NZTA) Legislation Amendment Bill (NZTA Bill) (which impacts how some provisions in the rule would be drafted) and the rule, have been delayed due to redeployment of resources to respond to COVID-19. Public consultation on the draft rule is now anticipated to occur after the 2020 General Election (subject to Cabinet agreement).

Further information on the NZTA Bill can be found here.

2. Key components of the new framework

2.1 Summary

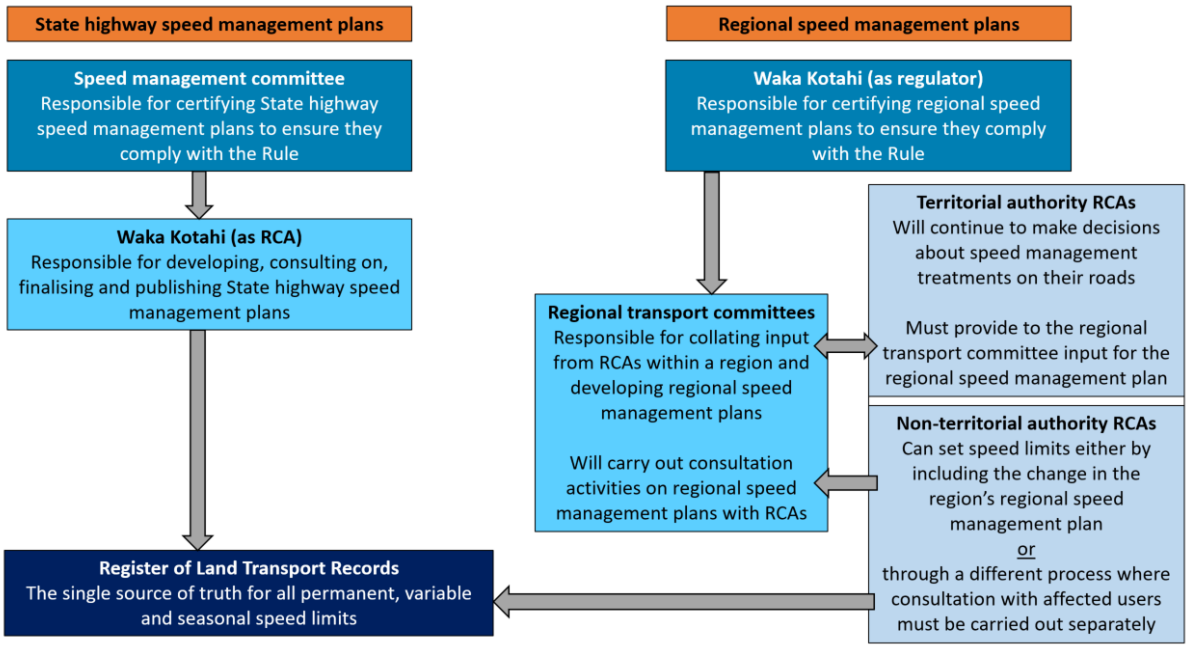
The draft rule proposes to introduce a new speed management framework to improve the way RCAs plan and implement speed management changes. Once introduced, Waka Kotahi would be required to produce a State highway speed management plan. This plan would se out proposed speed management reviews and safety infrastructure changes on the State highway network over a 10 year period. Plans would be developed every six years, with allowance for variation every three years (plans would provide more specific details about proposals for the first three years of the plan). An independent speed management committee would be established to certify this plan.

RCAs would be required to work collaboratively with their regional transport committee and Waka Kotahi to produce regional speed management plans, setting out speed management treatments in the region over a 10 year period. These plans would be developed every six years and would be updated every three years to align with the land transport planning process. Waka Kotahi (as regulator) would be responsible for certifying regional speed management plans. All speed management plans would be made publicly available on the Waka Kotahi website.

This approach would remove the current bylaw-making requirements. All speed limits would formally come into force through inclusion on a national register.

This framework would allow for a more coordinated and transparent approach to speed management. Through this planning process, RCAs would be required to reduce speed limits around urban schools to 30 km/h (or 40 km/h where appropriate) and around rural schools to a maximum of 60 km/h. These could be variable speed limits where appropriate, with the lower speed applying during school travel times.

The diagram and table below illustrate the key components of the new regulatory framework, and the new functions and responsibilities we are proposing to introduce. Under the new framework, there would be greater clarity of Waka Kotahi's role as a regulator and as an RCA, as there would be a clear distinction between Waka Kotahi's regulatory functions and RCA functions.



Body	Responsibilities
Waka Kotahi (as an RCA)	• Works with regional transport committees to develop, consult on, finalise and publish State highway speed management plans. *Note: Each regional transport committee includes a Waka Kotahi representative.*
Regional transport committees	• Collate input from RCAs within a region and develop, consult on and finalise regional speed management plans. • Provide a forum to encourage consistency across the network, managing interactions and implementation timing across RCAs, and working through any boundary issues with bordering regions.
Waka Kotahi (as regulator)	• Certifies regional speed management plans prepared by regional transport committees to ensure they comply with requirements in the draft rule. • Approves speed limit changes that are done outside the speed management planning cycle. • Provides information and guidance on speed management to RCAs. • Provides support and advice to the speed management committee, as well as playing an administration role.
Speed management committee	• Certifies State highway speed management plans prepared by Waka Kotahi (as an RCA) to ensure they comply with the draft rule. • Provides oversight of the information and guidance on speed management that Waka Kotahi (as regulator) provides under the draft rule, to ensure that the information is up to date and is fit for purpose.

	Note: Appointments to the speed management committee would be made by the Minister of Transport.
Territorial authority RCAs	• Continues to make decisions about speed management treatments on their roads. • Provides input into the regional speed management plan to the regional transport committee.

Non-territorial authority RCAs	• Continues to make decisions about speed management treatments on their roads.
	• Can set speed limits either:
	  ○ through the process for setting speed limits in designated locations, or
	  ○ by including the change in the relevant regional speed management plan.

Registrar	• Certifies all permanent, variable and seasonal speed limits in the Register of Land Transport Records – the intent is that this would be the single source of truth for these speed limits.

More information on the proposed new requirements is set out in the sections below.

2.2 Speed management plans

What is being proposed?

Waka Kotahi (as an RCA) would prepare and consult on a State highway speed management plan for the State highway network.

Territorial authority RCAs would each contribute to a regional speed management plan coordinated by regional transport committees.

It is proposed that speed management plans would set out the objectives, policies and measures for speed management on relevant roads for at least 10 financial years from the start of the plan, and include changes to speed limits (other than temporary and emergency speed limits), safety cameras and infrastructure on the relevant roads. Plans would be updated and consulted on again every three years.

The timing of both the State highway and regional speed management planning and consultation processes would be aligned with regional land transport planning to bring together speed management and infrastructure investment decisions. Waka Kotahi would be responsible for determining specific deadlines for each planning cycle.

It is intended that speed management plans must also:

- indicate how the plan is consistent with the road safety aspects of the Government Policy Statement (GPS) on land transport and any Government road safety strategy
- include an explanation of the approach to deciding whether to propose speed limit changes or infrastructure investments (including safety camera proposals)

- include an implementation programme for at least 3 financial years from the start of the plan that sets out the timelines at which changes to speed limits, safety cameras and infrastructure on the relevant roads would be implemented

- include information about any speed limit area that an RCA has designated over relevant roads (see section 3.2.4 for more information on speed limit areas)

- include information about speed management treatments around schools, including a rationale for why any speed limits outside schools during school travel periods would be above 30 km/h, (see section 2.5 for more information on speed limits around schools)

- include a summary of changes to speed limits, safety cameras and infrastructure that have yet to fully take effect but have already been included in the implementation programme in a previous plan

- for any changes to speed limits that do not align with Waka Kotahi's view (as regulator) of what is the safe and appropriate speed for the road, include an explanation for why the change to the speed limit is being made.

Speed management plans would also describe the interactions where speed management proposals affect roads that interact across RCA responsibilities. This would include, for example, between local roads and State highways, and at the boundaries of regional speed management plans.

It is intended that when preparing a plan, each regional transport committee and Waka Kotahi (as an RCA) must have regard to the guidance and information developed and maintained by Waka Kotahi (as regulator).

Speed management plans would be consulted on to ensure local knowledge and community feedback is accounted for. All RCAs would be required to implement their proposals in final speed management plans. In order to give legal effect to new speed limits, RCAs would be required to lodge all speed limit changes for inclusion on the Register of Land Transport Records (see section 2.4 for more information on the Register of Land Transport Records).

How is this different from the existing process?

The development of speed management plans would replace and remove the current bylaw-making requirements when setting speed limits. It would also require RCAs and regional transport committees to consider speed management treatments across an entire region, rather than just on a road-by-road basis. Likewise, consultation would be done on the entire plan, rather than on a road-by-road basis.

Under the new framework, there would be greater emphasis on the expectation of RCAs to take a 'whole of network' approach to considering speed management changes. This includes consideration of infrastructure treatments (including safety cameras) in addition to, or instead of, speed limit changes to help achieve optimal road safety outcomes.

Regional transport committees would play a greater role in speed management under the new framework. They would be responsible for collating input from RCAs within a region and updating draft regional speed management plans every three years.

This new framework would create a more coordinated approach to speed management, and it would encourage collaboration between RCAs and regional transport committees. The development of speed management plans and the process for certifying them would ensure there is greater accountability for speed management across the country. This would be particularly beneficial to the public, who would have far greater transparency of proposed speed management changes in their regions and across the country.

2.2.1 Regional speed management plans

All territorial authority RCAs would continue to make decisions about speed management treatments on their roads.

Regional transport committees would be responsible for collating input from RCAs within a region and developing draft regional speed management plans.

It is intended that proposals must be included in a regional speed management plan, in accordance with the timelines set by the regulator. We expect the regulator would set timeframes to coincide with development of regional land transport plans, to allow for coordination of decisions about infrastructure investment and speed management. The contributions of RCAs would be coordinated by regional transport committees into regional speed management plans. These plans should be certified by the regulator.

Process for making regional speed management plans

Role of regional transport committees

Regional transport committees would provide a forum to:

- encourage consistency across the network
- manage interactions and implementation timing across RCAs, including interactions between local roads and the State highway network
- work through any boundary issues with bordering regions.

Regional transport committees would also:

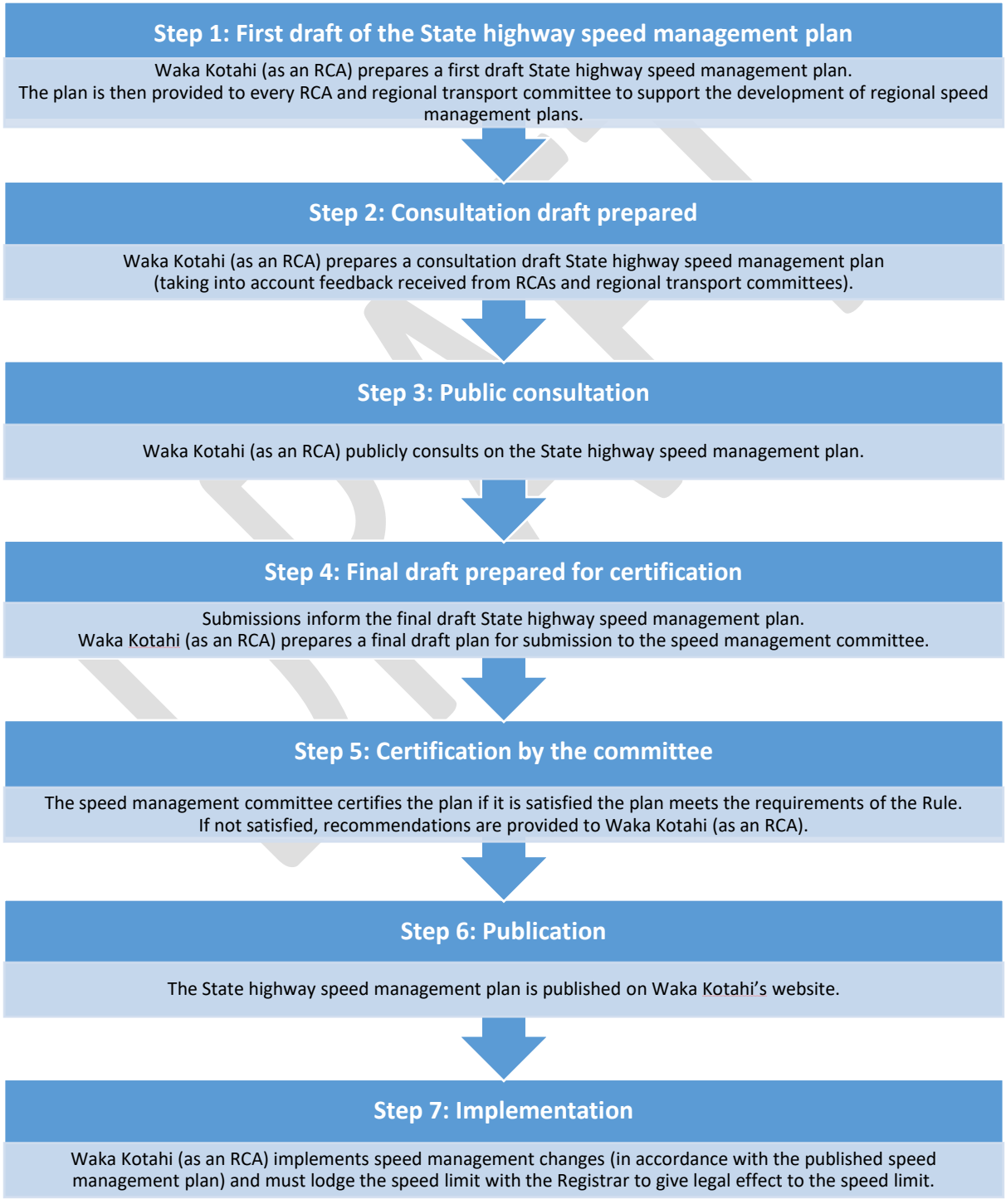
- carry out consultation activities on regional speed management plans with RCAs
- provide final draft regional speed management plans to Waka Kotahi (as regulator) for certification
- finalise regional speed management plans for publishing.

2.2.2 State highway speed management plans

Waka Kotahi (as an RCA) would continue to make decisions about speed management treatments on the State highway network.

It is intended that proposals must be included in a State highway speed management plan, in accordance with the timelines set by the regulator. These plans must be certified by an independent speed management committee (refer section 2.3).

Process for making State highway speed management plan



2.2.3 Consultation on plans

In general, the consultation process for speed management plans is expected to align with the consultation process for regional land transport plans.

The draft rule would provide flexibility for each region to determine the extent of the involvement of the regional transport committee, individual RCAs and Waka Kotahi (as regulator) in the consultation process. Consultation on regional and State highway speed management plans could be carried out in conjunction with one another and in conjunction with the relevant regional land transport plans, or the regional council's long-term plan or annual plan.

In order to fulfill the consultation requirements of the draft rule, regional transport committees and RCAs should meet similar requirements to those for regional land transport plans:

- consult in accordance with the consultation principles specified in section 82 of the Local Government Act 2002
- take reasonably practicable steps to consult Māori affected by any proposed change in a draft plan that affects or is likely to affect:
    - Māori land
    - land subject to any Māori claims settlement Act
    - Māori historical, cultural, or spiritual interests.
- establish and maintain processes to provide opportunities for Māori to contribute to the preparation of the plan.

2.2.4 Certification of plans

Waka Kotahi (as regulator) would formally certify regional speed management plans. Plans would be assessed against requirements set out in the draft rule.

An independent speed management committee would be established to certify Waka Kotahi's State highway speed management plan against the same requirements.

Certification would be a test to confirm that requirements in the rule had been met, rather than an opportunity to override decisions about individual speed management interventions. The regulator or the speed management committee would need to be satisfied that:

- the regional transport committee or Waka Kotahi (as an RCA), as the case may be, has confirmed that consultation has been carried out in accordance with the draft rule
- the plan complies with the content requirements as set out in the draft rule
- the plan takes a whole-of-network approach by including consideration of a range of speed management interventions
- the plan is consistent with the road safety aspects of the GPS on land transport and any Government road safety strategy

- the plan includes an implementation programme for at least 3 financial years from the start of the plan that sets out the times at which the changes (if any) being proposed to speed limits, safety cameras and infrastructure on the relevant roads are proposed to come into force

- where the plan includes changes to speed limits that do not align with the regulator's view of what is the safe and appropriate speed for the road, the plan also includes an explanation for why the change to the speed limit is being proposed.

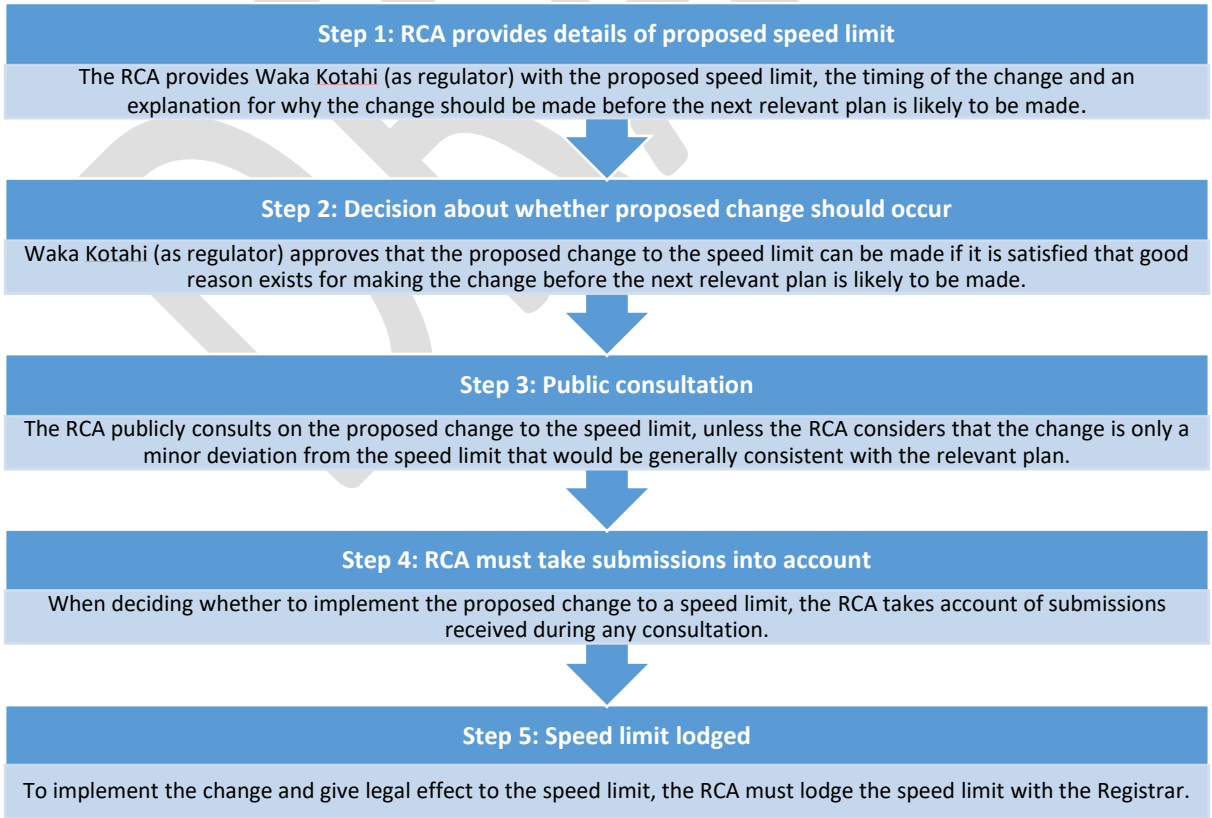
RCAs would need to provide a declaration that they have followed due process. If the regulator or the speed management committee is satisfied that the requirements in the rule have been met, it must certify the plan.

If the regulator or the speed management committee is not satisfied, it must refer the plan back to the regional transport committee or Waka Kotahi (as an RCA) with recommendations for how the plan should be varied to meet the requirements in the draft rule.

2.2.5 Out of cycle process for setting speed limits

We recognise that there could be situations where speed limits need to be set outside of the standard, three-yearly planning process. For example, if a new subdivision is built.

An RCA may change a speed limit, despite that change not being included in the relevant plan, by following the process below. Waka Kotahi must approve the speed limit.



2.3 Independent speed management committee

What is being proposed?

An independent speed management committee (the committee) would be established under the draft rule to:

- certify State highway speed management plans prepared by Waka Kotahi (as an RCA) to ensure they comply with the draft rule
- provide oversight of the information and guidance on speed management that the regulator provides under the draft rule, to ensure that the information is up to date and is fit for purpose.

The committee may request that Waka Kotahi (as regulator):

- provide comment about any information or guidance the regulator has provided
- procure an independent review of any information or guidance the regulator has provided.

The committee would be supported, advised and administered by Waka Kotahi. Appointments to the committee would be made by the Minister of Transport, on advice from the Ministry of Transport.

The NZTA Bill includes an enabling provisions to allow rules to require Waka Kotahi to establish a committee for the purposes of speed management. This legislation would allow the draft rule to require Waka Kotahi to establish a speed management committee.

How is this different from the existing process?

The establishment of the committee is a new component under the new framework. At the moment, Waka Kotahi is the regulator for the speed management functions carried out by Waka Kotahi (as an RCA). However, Waka Kotahi would remain the regulator for some functions carried out by Waka Kotahi (as an RCA), including in relation to temporary speed limits and 110 km/h speed limits.

2.4 Register of Land Transport Records

What is being proposed?

The principal way a speed limit would be set is by entering the speed limit into a national publicly-searchable register. This register would be a single source of truth, and would give legal effect to all permanent, variable and seasonal speed limits in the country.

The NZTA Bill establishes a Register of Land Transport Records (the Register). This is intended to be a source of truth for, and give legal effect to, categories of land transport decisions that are specified in regulations under the Land Transport Act 1998 (LTA). Waka Kotahi is the Registrar of the Register.

We intend for speed limits to be the first category of decisions that are required to be included in the Register.

RCAs would be responsible for providing Waka Kotahi, as Registrar, with the necessary details of a speed limit change. These could include:

- geospatial information about the speed limit
- the date on which the speed limit enters into force (which must not be earlier than the date the speed limit is entered in the register)
- the category of speed limit (ie permanent, variable or seasonal speed limit)
- for seasonal limits, the relevant dates and corresponding speed limits
- for variable speed limits, the relevant conditions and corresponding speed limits
- any other information required by the Registrar.

Upon receiving this information, the Registrar would be required to create a land transport record and include the record on the Register (assuming the lodgment meets any criteria the Registrar must check against). RCAs would be responsible for ensuring speed limit signage is changed at the time a new speed limit comes into effect. Signage requirements are intended to remain consistent with the 2017 rule.

A speed limit would have legal effect from the in-force date on the Register.

In the short to medium term, temporary and emergency speed limits would not be entered into the Register. The process to enable temporary and emergency speed limits to be legally enforceable would be the same as the process under the 2017 rule. In the long term, we expect the Register to be able to accommodate temporary and emergency speed limits.

2.4.1 Bylaws

The NZTA Bill enables regulations under the LTA to require the creation of a land transport record[3] for any bylaw and to manage conflicts and overlaps between land transport records and bylaws (including by requiring a bylaw, or part of a bylaw, to be amended, replaced or revoked).

[3] A 'land transport record' would give legal effect to approved land transport decisions (for example, permanent speed limits).

The intention is for bylaws to no longer form part of the speed limit setting process. RCAs would have a period of time to transfer all existing bylaws onto the Register. All future permanent, variable and seasonal speed limits would be given legal effect through inclusion on the register.

Once the draft rule is in place, if RCAs choose to set speed limits through a bylaw making power outside the rule, they would be required to immediately create a land transport record for the speed limit. In addition, the bylaw (or the speed limit component of the bylaw if the bylaw contains decisions on multiple things) would be required to be revoked once it is entered into the Register.

How is this different from the existing process?

The establishment of the Register is a new component under the new framework. As indicated above, the draft rule would no longer refer to the creation of bylaws.

The new framework would replace and remove the bylaw-making requirements under the 2017 rule when setting speed limits. Existing speed limits set out in bylaws and council resolutions would be required to be transferred to the Register. The draft rule would contain transitional provisions to enable this to happen (refer section 4).

This would ensure the Register is the single source of truth for all permanent, variable and seasonal speed limits and that bylaws are divorced from the speed limit setting process.

2.5 Mandatory speed limits around schools

What is being proposed?

In November 2019, Cabinet agreed that RCAs be required to transition to safer speed limits around schools over the 10 years of the *Road to Zero* strategy, which would include:

- reducing speed limits around urban schools to 30 km/h (variable or permanent speed limits), with the option of implementing 40 km/h speed limits if appropriate
- reducing speed limits around rural schools to a maximum of 60 km/h (variable or permanent speed limits).

2.5.1 Urban schools

It is intended that an RCA must set the speed limit outside an urban school as:

- a variable speed limit where 30 km/h is the speed limit in force during school travel periods
- a permanent speed limit of 30 km/h.

Under certain conditions, an RCA may set the speed limit outside an urban school as:

- a variable speed limit where 40 km/h is the speed limit in force during school travel periods
- a permanent speed limit of 40 km/h.

RCAs should include, in the relevant speed management plan, an explanation for setting the speed limit outside the school at 40 km/h instead of 30 km/h.

2.5.2 Rural schools

It is intended that RCA must designate a school as a rural school by indicating in the relevant speed management plan if:

- the school is not in a speed limit area of 50 km/h or lower
- the RCA has had regard to any guidance provided by the regulator about speed limits outside schools

An RCA must set the speed limit outside a rural school as:

- a variable speed limit where 60 km/h or less is the speed limit in force during school travel periods
- a maximum permanent speed limit of 60 km/h.

2.5.3 Additional information

RCAs would be required to achieve lower speed limits around all schools within their area of responsibility over the 10 years of the *Road to Zero* strategy.

An RCA may determine what sections of road are considered "outside a school" (and therefore must have the lower speed limit applied), having regard to typical or expected routes for pedestrians to access the school and the purpose of encouraging children to make greater use of active modes of transport to and from school. Infrastructure changes on some roads may be installed to support the introduction 30 km/h speed limits.

RCAs would be encouraged to consider speed management treatments in the broader area around a school to improve safety and access for children who may use active modes of transport to get to and from school. Consideration of appropriate speed management interventions in the wider vicinity of a school requires more planning than simply reducing the speed limit on the road outside a school entrance. This is why RCAs have 10 years to make necessary changes.

How is this different from the existing process?

Currently, there is no requirement for RCAs to set certain speed limits around schools.

The Speed Management Guide and Safer Journeys for Schools Guide encourage:

- 40 km/h permanent or variable speed limits outside urban schools
- 60 km/h variable speed limits where there is an identified turning traffic risk. This generally applies outside rural schools, where there is a permanent 80 km/h speed limit or where the mean operating speed is 80 km/h if the posted speed limit is 100 km/h.

3. Other differences between the 2017 rule and the draft rule

3.1 Summary

The 2017 rule established a new speed limit setting mechanism focused on assisting RCAs to set safe and appropriate speed limits, in particular in areas where there are high-benefit opportunities for the optimisation of safety and efficiency. The 2017 rule established a new obligation for Waka Kotahi to develop and maintain information about speed for all roads, and to supply the above information to RCAs.

Feedback from local government and key stakeholders suggests that these elements of the 2017 rule are working effectively. However, through monitoring of the 2017 rule, we have heard that some components of the 2017 rule are not working so well in practice.

The 2017 rule is also focused on reviewing, proposing and setting speed limits on a road-by-road basis. The current process for setting speed limits does not encourage regional collaboration among RCAs and speed limit changes are often carried out on an ad hoc, road-by-road basis. In addition to being resource intensive, this leads to communities having little visibility about speed management changes across their region, and in some cases a lack of accountability around speed management.

The new regulatory framework would create a more transparent and coordinated approach to speed management through encouraging collaboration between RCAs and regional transport committees. Waka Kotahi would also be more involved in the early engagement with RCAs and providing speed management guidance, including guidance relating to the issues described in this section. The development of speed management plans and the process for certifying them would ensure there is greater transparency and accountability for speed management across the country.

To deliver the intent of the proposed planning process for RCAs, some of the requirements in the 2017 rule would no longer need to be prescribed in the draft rule. Instead, RCAs would determine what speed management changes are appropriate on their networks, having regard to the guidance provided by Waka Kotahi (as regulator).

3.2 Components of the draft rule that we are proposing to change

There are number of components of the 2017 rule that we are proposing to change under the draft rule to help embed the new regulatory framework. This reflects feedback the Ministry has received from local government and key stakeholders. These components are outlined below.

3.2.1 70 km/h, 90 km/h and 110 km/h speed limits

What is being proposed?

We propose to allow RCAs to set 70 or 90 km/h speed limits without the requirement to obtain approval from Waka Kotahi.

It is intended that these changes must be signalled in speed management plans, or set using the appropriate process if they are done outside of the speed management planning process.

RCAs would continue to be required to seek approval from Waka Kotahi (as regulator) before setting a 110 km/h speed limit.

How is this different from the existing process?

Under the 2017 rule, RCAs must obtain approval from Waka Kotahi before they can set 70 or 90 km/h speed limits. RCAs would be able to set 70 and 90 km/h speed limits, having regard to guidance prepared by Waka Kotahi as regulator.

Why is this change being proposed?

The requirement for RCAs to obtain approval from Waka Kotahi before they can set 70 or 90 km/h speed limits was to phase out 70 and 90 km/h speed limits. The reasons for this include:

- at higher travel speeds, road users can have trouble differentiating speed differences of just 10 km/h

- when using 20 km/h increments for speed limits between 60 km/h and 100 km/h, there are fewer and more distinct speed limit categories for people to understand and recall.

However, we have heard from a number of RCAs that New Zealand roads do not necessarily fall into three distinct 60, 80 and 100 km/h self-explaining categories. On certain types of roads, 70 and 90 km/h speed limits may be suitable and some RCAs would like to have the ability to set these speed limits based on their knowledge of the local road network. RCAs may also find these speed limits are a useful 'interim' speed limit.

3.2.2 Variable speed limits

What is being proposed?

We propose to allow RCAs to set variable speed limits without the requirement to obtain approval from Waka Kotahi.

RCAs would be able to set variable speed limits in certain circumstances specified in the draft rule. Waka Kotahi would retain approval powers outside these circumstances for some variable speed limits (we expect these cases to be rare).

An RCA would be able to set a variable speed limit through the relevant speed management plan if it is satisfied that:

a) the speed limit needs to vary in order to be safe and appropriate
b) it is necessary to address or manage one or more of the following situations or environments:
    i. different numbers and types of road users or different traffic movements
    ii. the effects of changing traffic volumes, including to ease congestion
    iii. for emergency or temporary traffic management
    iv. a crash risk posed by turning or crossing traffic
    v. changing environmental conditions
    vi. the presence of a school (refer section 2.5).

If an RCA is not satisfied of the required matters above, it may only set a variable speed limit if it has Waka Kotahi's (as regulator) approval.

How is this different from the existing process?

The 2017 rule specifies the circumstances, when variable speed limits may apply, and requires RCAs to obtain approval from Waka Kotahi before they can set variable speed limits (Waka Kotahi has provided general approval for 40 km/h variable speed limits outside schools in the *New Zealand Gazette*). Under the draft rule, RCAs would be able to set variable speed limits, having regard to guidance prepared by Waka Kotahi (as regulator).

Why is this change being proposed?

A number of RCAs have indicated their desire to set variable speed limits without the requirement to obtain approval from Waka Kotahi. This change would provide greater flexibility for RCAs to be able to do this. The new framework would support this change through improved speed management transparency and accountability, and guidance from

Waka Kotahi (as regulator) on what variable speed limits are safe and appropriate in different situations.

3.2.3 Mean operating speed

What is being proposed?

Under the 2017 rule, when setting a setting a permanent, seasonal, or variable speed limit, an RCA must aim to achieve a mean operating speed less than 10 percent above that speed limit.

We propose to remove this clause.

The mean operating speed would remain a component of Waka Kotahi's guidance as an issue RCAs must have regard to when setting speed limits. However, it would not be a regulatory requirement for RCAs to aim to achieve mean operating speeds less than 10 percent above that speed limit.

How is this different from the existing process?

As noted above, currently RCAs must aim to achieve a mean operating speed less than 10 percent above any permanent, seasonal, or variable speed limit. If they cannot do this, the proposed speed limit may not be approved.

Why is this change being proposed?

The requirement for RCAs to demonstrate how they will achieve a mean operating speed less than 10 percent above a speed limit prevents some speed limits from being implemented. This requirement is particularly strict for lower speed limit areas. For example, some RCAs have been unable to implement 30 km/h variable speed limits around schools.

Under the draft rule, RCAs would be required to set 30 km/h speed limits outside urban schools. In some cases, an RCA might consider a variable 30 km/h speed limit to be more appropriate than a permanent speed limit. There are a range of considerations to balance in this situations, but the installation of permanent infrastructure to slow traffic down is not always appropriate, where an RCA would like to support higher travel speeds outside school hours. Mean operating speeds would remain a key consideration for RCAs but would not be a formal restriction in the draft rule.

Waka Kotahi (as regulator) would provide guidance to RCAs on how they can encourage vehicles to travel at lower speeds in these situations.

3.2.4 Urban traffic areas

What is being proposed?

We propose to replace 'urban traffic areas' with 'speed limit areas' to allow RCAs to have greater flexibility in setting speed limit zones.

The 2017 rule provides for an urban speed limit of 50 km/h, which is set by designating an area as an 'urban traffic area'. We are proposing to replace these with 'speed limit areas'

that would allow RCAs to set a speed limit across the area (and it would not have to be 50 km/h). RCAs are increasingly considering urban speed limit areas that are not 50 km/h, for example, low traffic volume, residential areas of 40 km/h.

It is intended that speed limit areas must be specified in speed management plans. A speed limit area would allow an RCA to define the boundaries of an area, propose a speed limit, consult on this proposal, and submit it to the Registrar.

How is this different from the existing process?

Under the 2017 rule, 50 km/h is the only blanket speed limit that can be set by defining the boundaries of an area. 'Speed limit areas' would allow a range of speed limits to be set in this way.

Why is this change being proposed?

As noted above, replacing 'urban traffic areas' with 'speed limit areas' would allow RCAs to have greater flexibility and ability to set widespread speed limits other than 50 km/h. This reflects feedback from a number of RCAs who have indicated their desire to do this.

3.2.5 Waka Kotahi's role as regulator

Waka Kotahi (as regulator) would continue in its role as regulator of speed management in New Zealand, although there would be some changes to its powers and functions as part of the new regulatory framework.

Waka Kotahi (as regulator) would continue in its regulatory stewardship role and provide guidance to support speed management throughout the country. However, as part of the new regulatory framework Waka Kotahi's (as regulator) role would change in the following ways:

- Removal of some of its approval powers (refer sections 3.2.1, 3.2.2 and 3.2.3)
- Providing additional guidance to the sector, including on speed limits around schools, setting 70 and 90 km/h speed limits and setting variable speed limits
- Certifying regional speed management plans (refer section 2.2.4)
- Establishing an independent speed management committee to perform some of its regulatory oversight of Waka Kotahi (as RCA) (refer section 2.3)
- Its existing role of ensuring compliance with the 2017 rule would be carried out in the context of the draft rule.

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3.3 Components of the draft rule that would remain unchanged

There are number of components of the 2017 rule that we are proposing to keep the same (or keep relatively similar) under the draft rule. These are outlined below.

3.3.1 Default speed limits

Under the 2017 rule, the default rural speed limit is 100 km/h. This applies on all roads that are motorways and all roads not within a designated urban traffic area. We propose to retain the default speed limit of 100 km/h. This would apply on all roads in which a speed limit has not otherwise been set.

Note: As outlined in the previous section, the 2017 rule also provides for an urban speed limit of 50 km/h, which is set by designating an area as an 'urban traffic area'. We are proposing to replace 'urban traffic areas' with 'speed limit areas' to enable RCAs to apply a speed limit other than 50 km/h to a defined area.

3.3.2 Temporary and emergency speed limits

The process for setting temporary and emergency speed limits would be the same as the process under the 2017 rule.

Temporary and emergency speed limits do not have to be included in speed management plans and in the short to medium term, would not be entered into the Register.

Temporary and emergency speed limits would continue to take precedence over a permanent, variable or seasonal speed limit in the Register.

3.3.3 Signs and road markings

All signs and road marking requirements would remain the same as the requirements in the 2017 rule.

3.3.4 Speed limits in designated locations

An RCA (other than a territorial authority or Waka Kotahi (as an RCA)) may set a speed limit for a road in a designated location.

Examples of designated locations include a car park, airport or beach.

Before setting a speed limit on road in a designated location, an RCA must consult with Waka Kotahi (as regulator), the Commissioner of Police and any other persons or groups who the RCA considers to be affected by the proposed speed limit.

In general, this section of the draft rule remains largely unchanged from the 2017 rule. However, under the draft rule a speed limit set in a designated location must be entered on the Register for it to be a legally enforceable[4] speed limit.

A speed limit for a road in a designated location can also be set if the RCA makes a submission to the relevant regional transport committee for inclusion in the relevant regional speed management plan. In this case, consultation on the proposed speed limit(s) would be done as part of the consultation on the regional speed management plan.

[4] By legally enforceable, we mean that infringement notices could be issued and prosecution action could be taken against drivers. The owner of a private car park can still, for example, trespass a person who breaches its conditions of use by not adhering to speed limit signs, even if these speed limits are not entered on the register.

4. Transition

The draft rule introduces a new regulatory framework for speed management and there are three key elements to the transition. These include:

1) Migrating existing bylaws into the Register
2) Preparing transitional speed management plans
3) Introducing safer speed limits outside schools

4.1 Migrating bylaws

The Register is being developed by Waka Kotahi to allow RCAs to submit their existing permanent, variable and seasonal speed limits set through bylaws to the Registrar. This would include urban traffic areas. Roads without a bylaw that sets the speed limit are deemed to have the default speed limit of 100 km/h.

Subject to the Register being fully operational, RCAs would be expected to work with Waka Kotahi to migrate all the speed limits on their road network into the Register over the 12 months from the draft rule coming into force.

4.2 Transitional speed management plans

The draft rule is expected to be signed in early 2021. We appreciate this does not provide enough time to coordinate a full speed management planning process alongside the GPS 2021 and Regional Land Transport Plan 2021 processes. However, RCAs would be encouraged to begin incorporating the new framework into their thinking during these 2021 planning processes.

Over the course of 2021 and 2022, RCAs and regional transport committees would work with Waka Kotahi to prepare transitional speed management plans. Over this time, RCAs and regional transport committees could choose to consult on and finalise these transitional plans. Transitional plans would provide the flexibility for RCAs to progress speed management changes while the new processes are implemented. Alternatively, RCAs individually could consult on and set speed limits.

From 2023, the new speed management framework would be in place. RCAs and regional transport committees would be required to prepare, consult on and finalise speed management plans alongside the GPS 2024 and RLTP 2024 processes.

4.3 Safer speed limits outside schools

As discussed above, the Government has agreed that RCAs would be required to ensure lower speed limits outside all schools by 2030 (ie over the life of the *Road to Zero* strategy).

Ministry of Transport
TE MANATŪ WAKA

Vehicle speed and pedestrian casualty risk

This report summarises the research on the relationship between speed and pedestrian casualty risk. It does not intend to establish a precise position on the pedestrian casualty risk at different impact speeds, but rather to present the range of evidence available. It remains the responsibility of anyone citing research to understand its relevance to a particular proposal.

Speed and kinetic energy

Vehicle speed is one of the main factors in determining a pedestrian's probability of death if struck by a motor vehicle. Because kinetic energy is equal to half weight multiplied by speed squared, speed has an exponential impact on collision force. For example, a vehicle travelling 80km/h will produce 300% more kinetic energy than if it were travelling 40km/h.

Casualty risk curve

Research on the relationship between speed and pedestrian casualty risk typically produces an "s" shaped casualty risk curve, as illustrated in figure 1. This s-curve shows that slight differences in vehicle speed when travelling very slow (i.e. less than 20km/h) and very fast (i.e. more than 80km/h) have negligible impacts on casualty risk. For example, whether a vehicle is traveling 5km/h or 10km/h makes little difference to the survivability of a pedestrian. Likewise, a vehicle travelling 100km/h is virtually just as likely to result in pedestrian death as a vehicle travelling 120km/h. However, there is notable disagreement amongst experts on the casualty risk at "moderate" speeds, as demonstrated in table 1.

Fig 1: Typical S-curve relationship

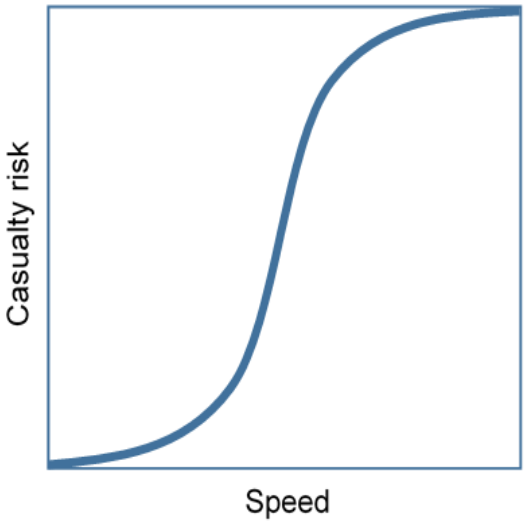


Table 1: Prominent casualty risk studies				
Study author(s) and year of publication	**Fatality risk (%) for different impact speeds[1]** 30 km/h	50 km/h	70 km/h	**Adjusted for bias**
Yaksich (1964)	22	65	100	No
Ashton (1982)	5	50	90	No
Anderson et al. (1997)	10	84	100	No
Davis (2001)	1	10	50	Yes
Hannawald & Kauer (2004)	4	14	39	No
Cuerden et al. (2007)	2	12	33	No
Oh et al. (2008)	7	34	77	No
Rosen & Sander (2009)	2	8	38	Yes
Richards (2010)	1	8	45	Yes
Kong & Yang (2010)	3	26	82	Yes
Tefft (2011)	6	22	55	Yes

Why do the results differ so much?

Table 1 reveals significant variation in casualty risk both within and between the three reported speeds. The primary cause of this variation is due to bias introduced by outcome-based sampling. Outcome-based sampling bias occurs because many non-fatal vehicle-pedestrian incidents go unreported. Therefore, studies that do not adjust for this bias will generally produce higher risk probabilities.

There are many other differences between the studies, although in the event of a crash, regardless of its cause, the speed of impact is the most important determinant of the severity of injuries sustained and the probability of death and serious injury. Some studies exclude certain vehicle types, such as SUVs. Some studies exclude certain segments of the population, such as children. Sample sizes vary from study to study, and the population characteristics, such as age and physical resiliency, differ depending on the nation studied. Moreover, vehicle fleets differ between the studies, with size, shape, and weight of the vehicles all being important contributors to the casualty risk.

This should be considered when comparing the results of the studies. Regardless of whether they have been adjusted for bias, research that yields comparatively larger fatality risk percentages account for the most extreme situations in relation to vehicle size and pedestrian vulnerability.

This is an important consideration when applying the vision and principles of Road to Zero: New Zealand's road safety strategy. Under this approach, speed limits should be set considering the potential risk to the most vulnerable members of the population.

Medical treatment is another important consideration in estimating pedestrian casualty risk. As emergency response technology and capacity improve over time, pedestrians would be more likely to survive serious accidents with vehicles. Medical treatment also differs between countries. Kong and Yang (2010) specifically mention this as a likely reason why the risk they

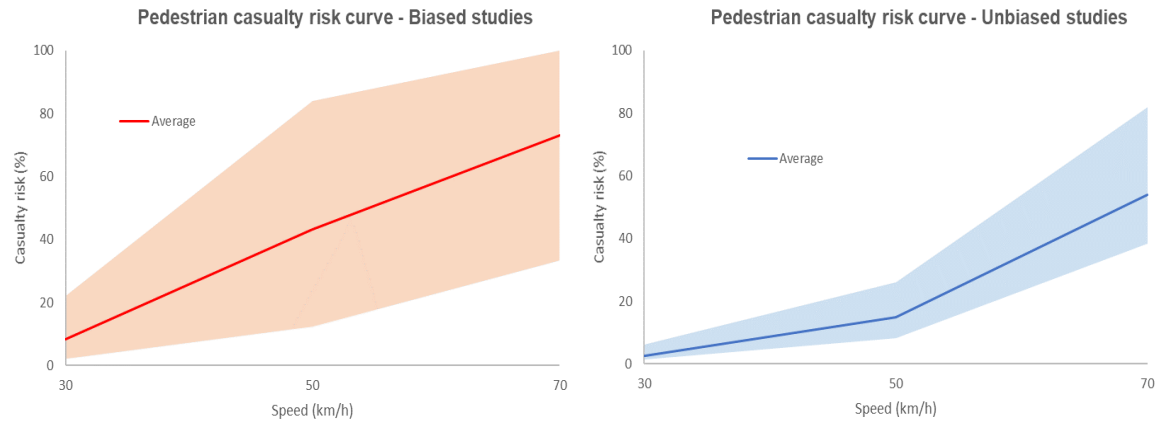
[1] All results have been rounded to the nearest whole number and have, where necessary, been interpolated from miles per hour.

calculated for Chinese pedestrians struck at 70km/h is so much higher than the risk estimated by many of the other contemporary studies.

Estimating impact speed is another inherent complication in researching the relationship between vehicle speed and pedestrian casualty risk. Various methods have been used to identify impact speed, including: relying on driver-reported speeds, using witness/police estimates, assuming the vehicles were travelling the posted speed limit, and some have even used the length of tyre skid marks to determine vehicle speed.

Given the aforementioned issues, it is not surprising that pedestrian casualty risk estimates vary so much between studies. However, there is a noticeable difference between the earlier, biased, research, and the later work that has been adjusted for bias, as illustrated in figure 2.

Figure 2: Biased vs Unbiased casualty risk curves



Interpreting the results

Based on the average of unbiased estimates, illustrated in figure 2, the risk of pedestrian death when struck by a vehicle travelling 30km/h is 2.6%, at 50km/h is 14.8%, and at 70km/h is 54%. This is significantly different to the average of biased estimates of 8.3%, 43.2%, and 73.2% respectively.

However, all of the risk estimates reported thus far are absolute risk rates. When it comes to decision making it is more informative to consider changes in relative risk, i.e. the increase or decrease in likelihood of pedestrian death if the speed was increased or decreased by a certain amount.

Although the difference in casualty risk between a pedestrian being struck by a vehicle travelling 30km/h, and one travelling 50km/h, is only 12.2 percentage points in absolute terms, the relative risk varies substantially depending on which direction the speed changes.[2] For example, if the speed limit in a particular area was originally 30km/h, and this increased to 50km/h, the relative risk of pedestrian death if struck by a vehicle would rise by 470%.[3] On the other hand, if the speed limit was originally 50km/h, and this decreased to 30km/h, the relative risk of pedestrian death if struck by a vehicle would reduce by 82%.[4]

[2] The relative risk percent simply varies depending on what speed is selected as the base, or reference, speed when computing the percentage change formula.
[3] (12.2 ÷ 2.6) x 100
[4] (12.2 ÷ 14.8) x 100

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