

Achieving Vision Zero and the Safe System gap

Vision Zero and the Safe System Approach

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ROAD TO ZERO

National Road Safety Strategy (2020-30)
led by Ministry of Transport



Every day, people die
on our roads.
We don't have
to accept it.

ROAD
TO ZERO

New Zealand Government

Road to Zero

We plan for people's mistakes

We design for human vulnerability

We strengthen all parts of the road transport system

We have a shared responsibility for improving road safety

Our actions are grounded in evidence and evaluated

Our road safety actions support people's wellbeing and liveable places

We make safety a critical decision-making priority

2030 target

A 40% reduction in deaths and serious injuries (on 2018 levels)

Infrastructure and speed

Workplace

Road user choices

Vehicles

System management





Road to Zero

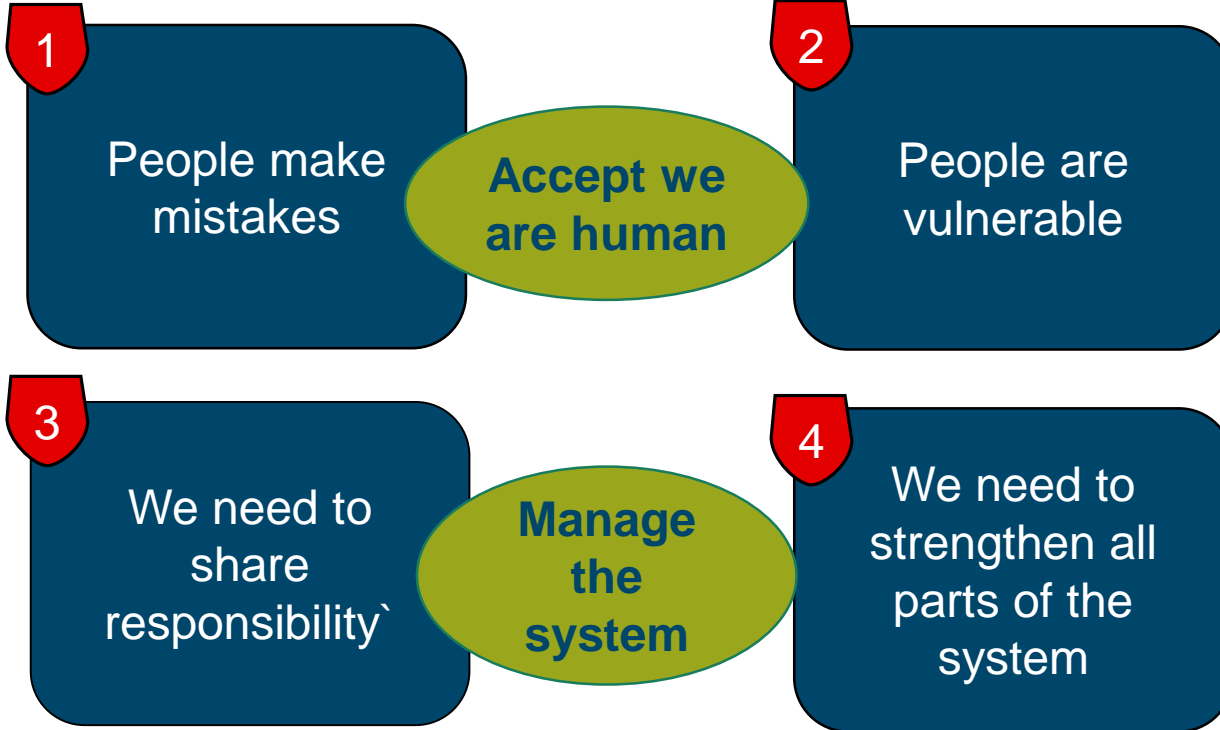
In November 2019, the Government agreed to publish the Road to Zero strategy for 2020–2030 and the initial 3-year action plan.

Ministry of Transport published the strategy and plan in December 2019.

The strategy outlines a plan to stop people being killed or injured on our roads. It includes our vision, 7 principles, 5 focus areas and targets — including the target of a 40% reduction in death and serious injuries (from 2018 levels) by 2030.



If we are to achieve Vision Zero we will need to create a Safe System



What does eliminating death and serious look like?

Our Challenge ...

Is it possible to have a head-on crash at a speed greater than 70 km/h?

Is it possible to have an intersection (right-angle) crash at a speed greater than 50 km/h?

Is it possible to have a run-off-road (side impact with a rigid object) crash at a speed greater than 40 km/h?

Is it possible to have a vulnerable people (e.g. pedestrian, cyclist and motorcyclist) crash at a speed greater than 30 km/h?

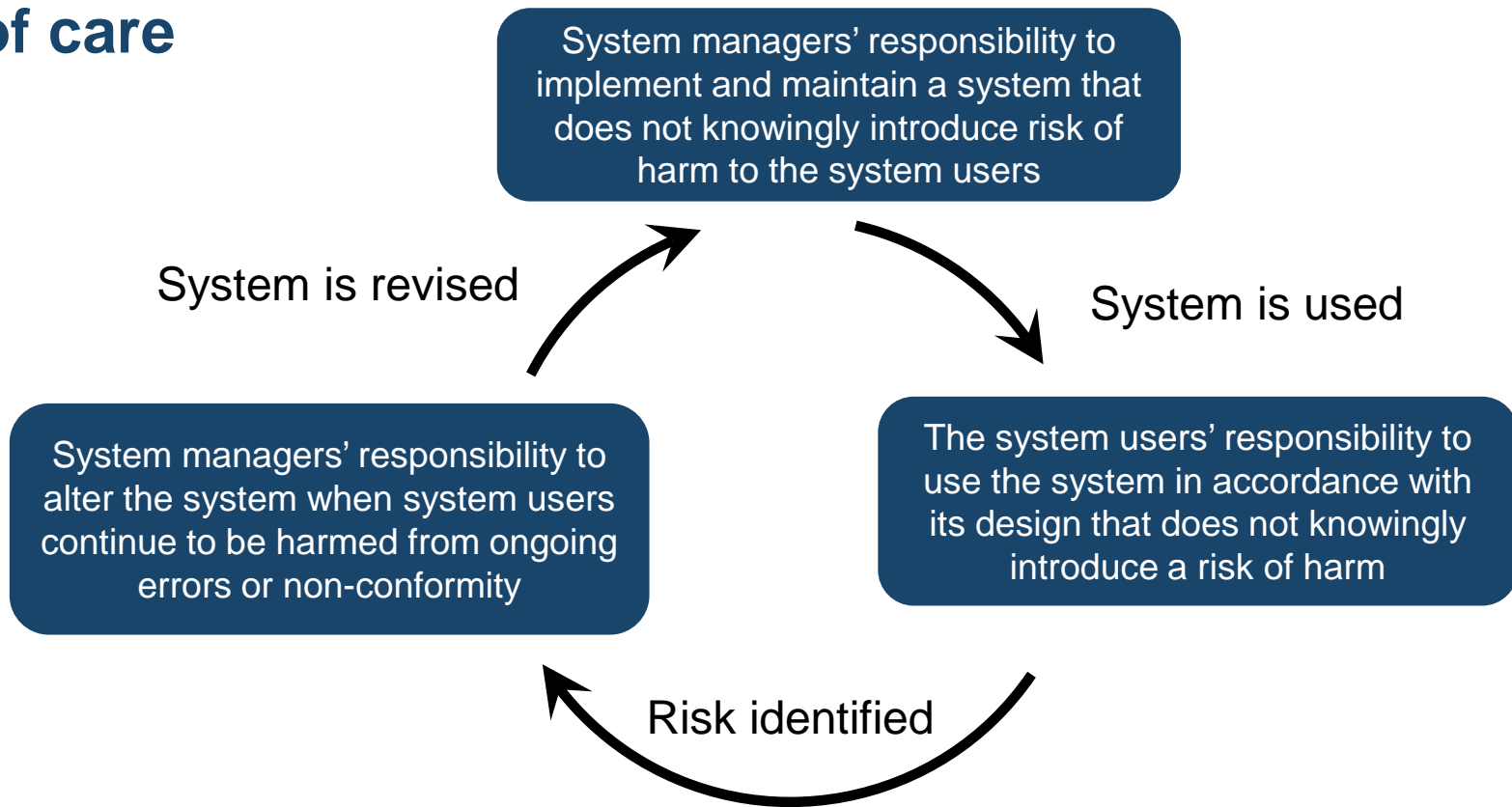
System response

- Safe road users act within prescribed limits
- Safe road guide and protect users
- Safe Speeds reduce energy in a crash
- Safe Vehicle protect occupants in a crash



Shared responsibility of delivering Vision Zero

Duty of care



The ethical imperative of Vision Zero

Is it acceptable for the few to pay the price for the many?

Mobility versus safety

=

We accept the safety we achieve to gain the mobility we desire

Safe Mobility

Mobility becomes a function of safety

=

We accept the mobility we achieve to gain the safety we desire

~~Trading off between Safety and Mobility~~

Safety is a non-negotiable (Mobility is a function of safety)

Focus on eliminating harm

Design to tolerate errors

Management of kinetic energy

Systems perspective

Achieving Zero Harm

We must start by asking:

*“What treatments are capable
of virtually eliminating death
and serious injury?”*

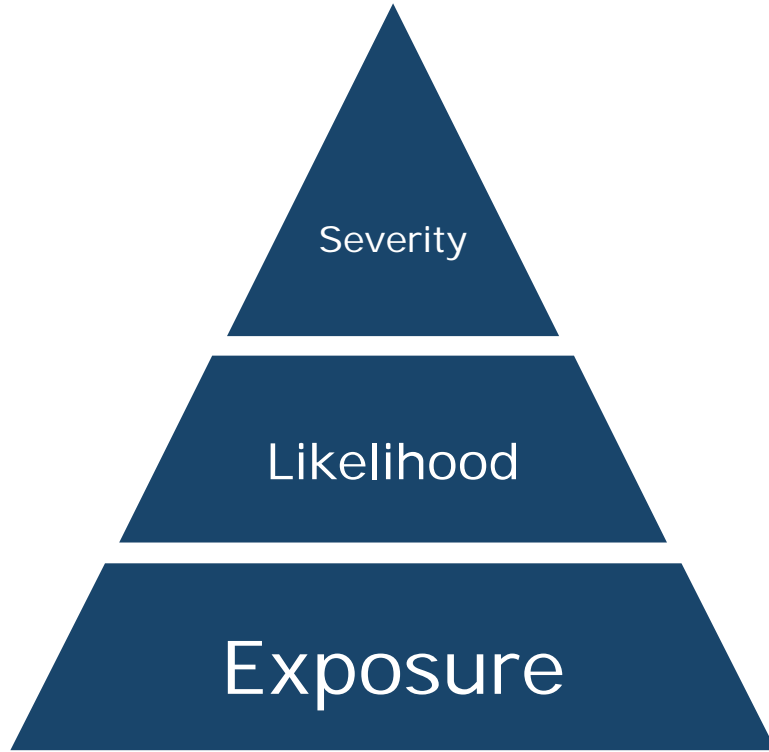
Designs that support harm elimination

The alignment of measures with Safe System principles is based on the extent to which individual measures affect:

- injury **severity**, given a crash
- crash **likelihood**
- **exposure** to crash risk.



Elements of harm elimination



Remove risk of fatal and serious injury outcomes

- eg Install flexible median and roadside barriers
- eg Reduce speed limits near intersections

Reduce crash likelihood

- eg Sealed shoulders on rural roads
- eg Mandate vehicle stability control systems

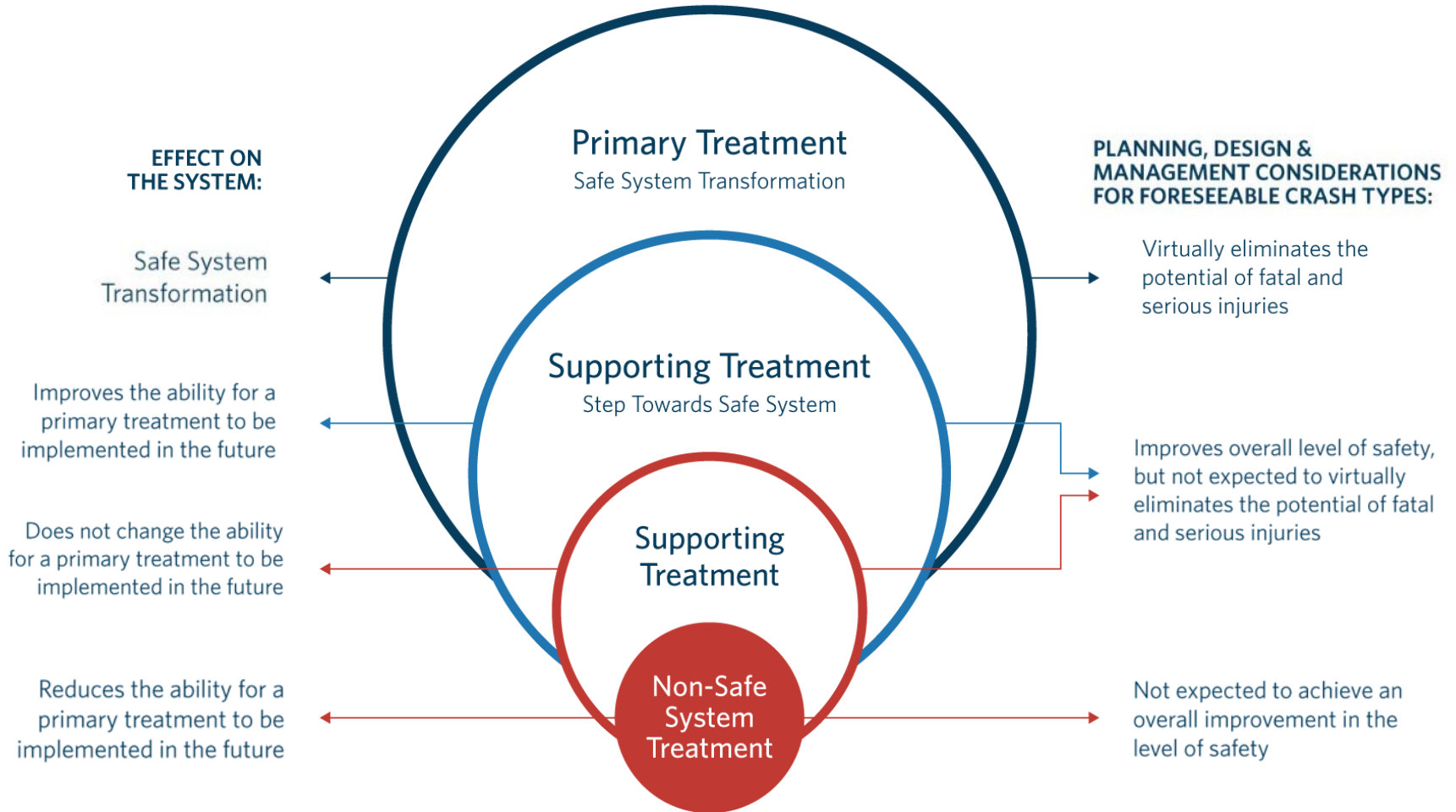
Complete elimination of likelihood unlikely – need to consider severity

Remove exposure to crash potential

- eg Reduce traffic volumes along a higher risk route
- eg Remove or grade-separate an intersection

Shift exposure to a safer alternative

Safe System treatment hierarchy



Primary Treatment

Safe System Transformation

Supporting Treatment

Step Towards Safe System

Supporting Treatment

Non-Safe System Treatment

Primary treatment example: A wide centre line with rumble strips, may be installed with adequate width to allow for future installation of a central median barrier (add photos)

Whereas, long continuous lengths of roadside barrier, **(a supporting treatment)** installed in the short-term may need to be removed in the longer term in order to allow for a median barrier and/or additional widening.(add photos)

Safe System Intersection Treatments



Safe System Intersection Treatments

| Hierarchy (Treatment Philosophy) | Treatment |
|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Treatments (Safe System Transformation) | <ul style="list-style-type: none">• Close intersection• Grade separation• Low speed environment/speed limit• Roundabout• Raised safety platform |
| Supporting Treatments - Towards Primary Treatments (Safer Corridors) | <ul style="list-style-type: none">• Left-in/left-out, with protected acceleration and deceleration lanes where required• Ban selected movements• Reduce speed environment/speed limit. |
| Supporting Treatments (Safer Corridors) | <ul style="list-style-type: none">• Redirect traffic to higher quality intersection• Turning lanes• Vehicle activated signs• Improved intersection conspicuity• Advanced direction signage and warning• Improved sight distance• Traffic signals with fully controlled right turns• Skid resistance improvement• Improved street lighting. |

Safe System Corridor Treatments



Safe System Corridor Treatments

| Hierarchy (Treatment Philosophy) | Treatment |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Treatments (Safe System Transformation) | <ul style="list-style-type: none">• Continuous lengths of flexible roadside and median barriers• Very low speed environment/speed limit• One-way traffic |
| Supporting Treatments - Towards Primary Treatments (Safer Corridors) | <ul style="list-style-type: none">• Wide centreline• flexible roadside barriers at high risk locations• Sealed shoulders with audio-tactile edgeline• Lower speed limit |
| Supporting Treatments (Safer Corridors) | <ul style="list-style-type: none">• Other safety barriers types• Consistent design along the route (i.e. no out-of-context curves)• Consistent delineation for route• Skid resistance improvement• Improved super-elevation• Audio-tactile centreline• Audio-tactile edgeline• Vehicle activated signs |

Safe System Pedestrian Treatments



Safe System Pedestrian Treatments

| Hierarchy (Treatment Philosophy) | Treatment |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Treatments (Safe System Transformation) | <ul style="list-style-type: none">• Separation (footpath)• Separation (crossing point)• Very low speed environment, especially at intersections or crossing points |
| Supporting Treatments - Towards Primary Treatments (Safer Corridors) | <ul style="list-style-type: none">• Reduce speed environment/speed limit• Pedestrian refuge• Reduce traffic volume. |
| Supporting Treatments (Safer Corridors) | <ul style="list-style-type: none">• Pedestrian signals• Skid resistance improvement• Improved sight distance to pedestrians• Improved lighting• Rest-on-red signals. |

Safe System Cycling Treatments



Safe System Cycling Treatments

| Hierarchy (Treatment Philosophy) | Treatment |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Treatments (Safe System Transformation) | <ul style="list-style-type: none">• Separation (separate cyclist path)• Very low speed environment, especially at intersections. |
| Supporting Treatments - Towards Primary Treatments (Safer Corridors) | <ul style="list-style-type: none">• Shared pedestrian/cyclist path• Cyclist lane (<50 km/h)• Reduce traffic volumes |
| Supporting Treatments (Safer Corridors) | <ul style="list-style-type: none">• Separate cyclist signals at intersections• Cyclist box at intersections• Skid resistance improvement. |

Towards Safe Speed Implementation

- Speed management is at the core of a forgiving road transport system
- The risk of loss of control and injury increases with travelling speed
- Travelling speed also influences vehicle controllability and crash likelihood
- Impact speed is a primary determinant of injury outcome

**What do we
already know**

Towards Safe Speed Implementation

The effect of a
small **travelling
speed change**
into an injury
outcome

A small change in travel speed



A relatively **large** change in
stopping distance



A much **larger** change in
impact speed



A **very large** change in
probability of death and serious injury



“Mix traffic where speeds are low
Separate traffic where speeds are too high
And introduce targeted speed reduction where pedestrians and
cyclists meet motorised traffic flows”

- Dutch Advanced Sustainable Safety

To be successful we must

We need to acknowledge that:

- We need to continually build our understanding of **what a safe system actually means** and what is required to achieve it
- Knowledge and best practice in this area is **evolving rapidly**
- We must do things differently to the past, challenging the status quo and finding **innovation is essential!**
- The focus needs to be on **harm minimisation** – this must drive your decision making!



- Develop a good understanding about all road users, speed, vehicles, roads and roadsides
- Focus on reducing crash forces to survivable levels
- Challenge the 'default settings' that are inherently unsafe
- Help change the road safety conversation away from driver blame
- Be ambitious about eliminating unnecessary death and injury from our roads
- Deliver road safety outcomes within the context of liveable communities

Safe system challenge for road safety practitioners



2019 October Safe System Engineering Workshop

- Ask questions and interact
- Learn as much as you can
- Apply the Safe System principles
- Good luck and enjoy!



2019 March Safe System Engineering Workshop participants

Waka Kotahi GIS Tools

Web based network analyses

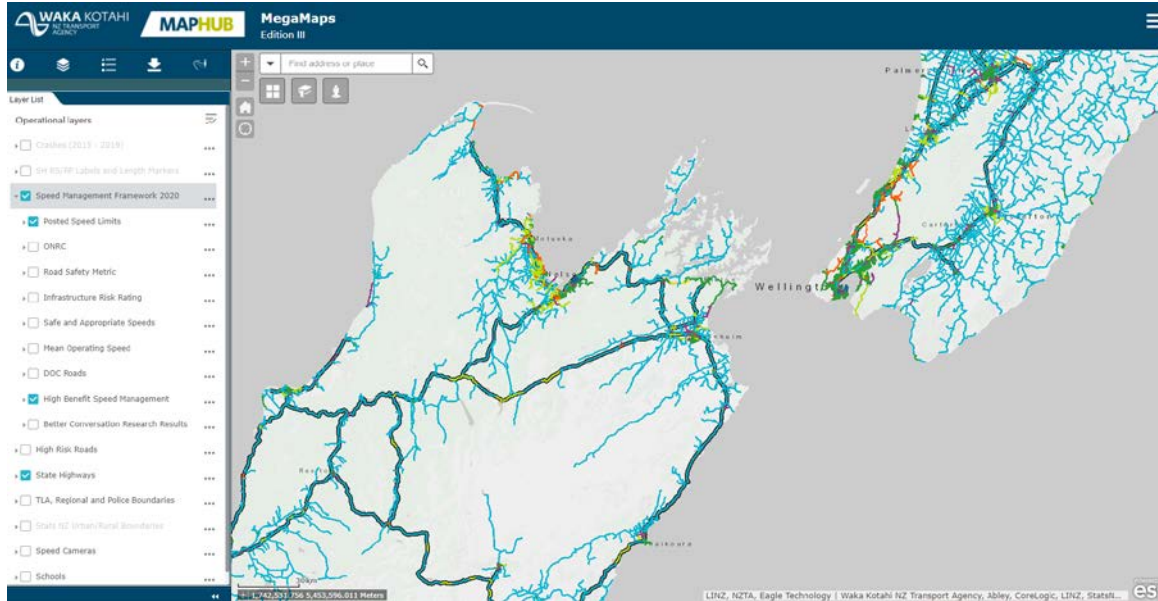
- <https://maphub.nzta.govt.nz/home/>

The screenshot displays the Waka Kotahi MAPHUB interface. At the top, there is a search bar with the text "Search for maps" and buttons for "Search" and "Filter maps". Below the search bar is a grid of map categories: "Featured Maps and Apps", "Context", "Environmental & Social", "Popular maps", "Freight", "Investment", "Network Access & Use", "Favourite maps", "Network Improvements", "Network Maintenance & Operations", "Network Performance", "All maps", "Planning", and "Safety". Below the categories are several map thumbnails with titles: "1. Et freig", "21. Collective risk (crash density)", "22. Crashes by severity", "23. Deaths and serious injuries", "24. Personal risk (crash rate)", "25. Road assessment rating - roads", and "26. Road assessment rating - State Highways".

Waka Kotahi GIS Tools

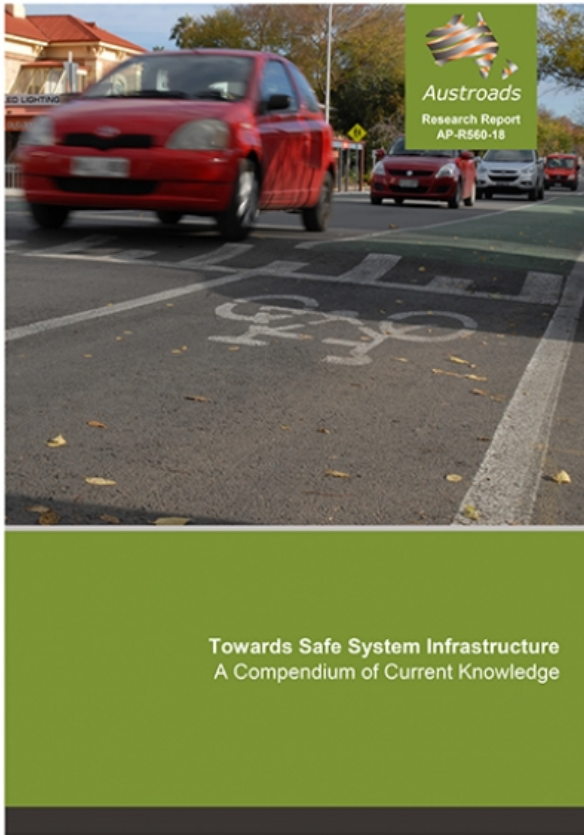
Web based network analyses

- ‘MegaMaps’ Edition III - <https://maphub.nzta.govt.nz/megamaps>



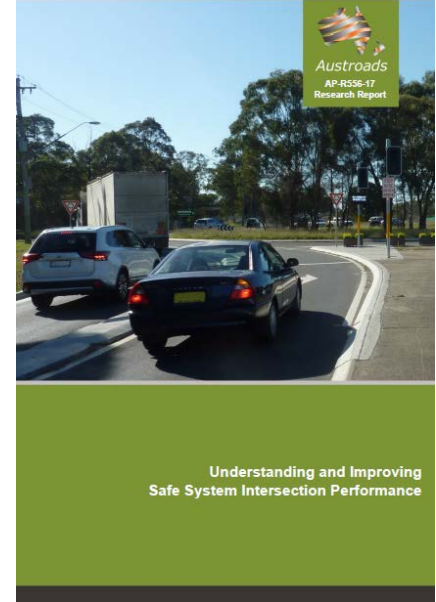
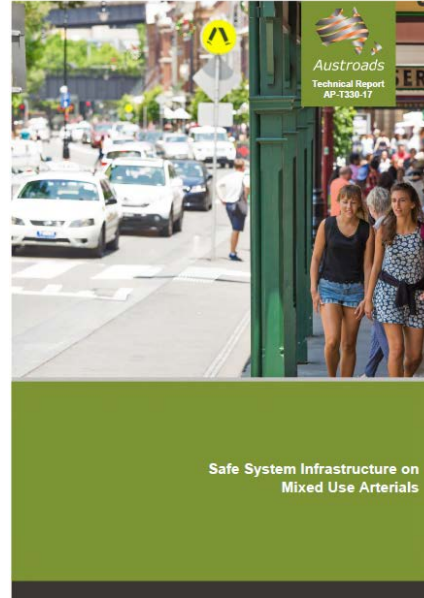
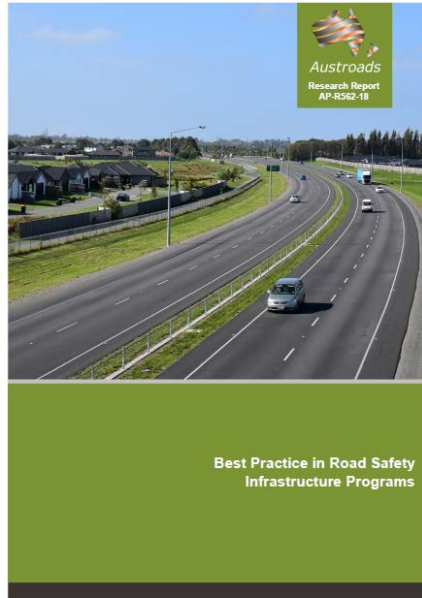
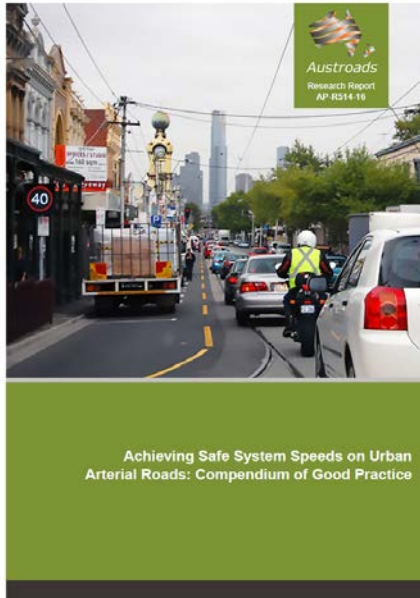
A MUST READ (OR WATCH)

Towards Safe System infrastructure A compendium of current knowledge



Some other sources of information

And watch this space...<https://austroads.com.au>



<https://austroads.com.au>

Contact Details

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