Hauraki District Council

Interim Speed Management Plan

Volume 1 – Speed Management Principles

August 2022

Table of contents

Table index

Figure index

1. Purpose of this document

Hauraki District Council are committed to reducing deaths and serious injury on the District roads and reducing its carbon footprint. To support this, a range of initiatives are required to be implemented to ensure that vehicle speeds are appropriate for the areas where we live, work and go to school. Council is developing a 10-year speed management plan for the district, as is required by the government. The plan includes short-term and long-term road safety goals; speed limit changes for the whole network, and future improvements to roads to support changes in speed limits if and when required.

This document sets out the goals and objectives of Hauraki Districts speed management plan and the process that will be followed for this interim review.

2. What is speed management?

Vehicle speeds are a key variable in developing transport policy and strategies. Speed plays a dominant role in a number of transport related measurements such as mobility demand, fuel consumption and CO2 emissions, air pollution, noise, safety and congestion.

Speed management is about achieving safe and appropriate vehicle speeds on roads that reflect the roads function, design, safety and use. People and goods need to move efficiently around our transport network; however, aligned to the Road to Zero vision, we also need to see a reduction in deaths and serious injuries on our roading network. Additional benefits gained from the implementation of appropriate vehicle speeds is a reduction in noise and air pollution which results in healthier and safer communities.

The Global Road Safety Facility – World Bank released a report in 2020 titled Road Crash Trauma, Climate Change, Pollution and the Total Costs of Speed: Six graphs that tell the story. This report states that:

Reduced speeds of travel represent a major, yet under-appreciated, opportunity to improve safety, climate change impacts of travel, health, inclusion, the economy, and in some circumstances, congestion. Speed management can be achieved through a range of interventions including road infrastructure and vehicle technology, as well as enforcement and promotion.[1]

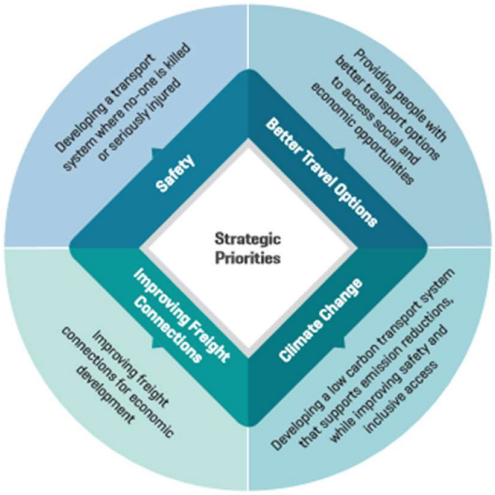
Speed management is more than just setting or adjusting speed limits. It requires input from policy makers, engineers, educators and the police to educate, encourage and influence road users to adopt safe and appropriate speeds.

2.1 Government Policy Statement on Land Transport

The Ministry of Transport has released the Government Policy Statement (GPS) on land transport 2021/22 – 2030/31[2]. The GPS provides direction and guidance to those who are planning, assessing and making decisions on Land Transport over the next 10 years. Safety and climate change are two of the four strategic priorities for investment in Land Transport which speed management can have an effect on.

[1] World Bank Document

[2] https://www.transport.govt.nz//assets/Uploads/Paper/GPS2021.pdf



2.2 Road to Zero

The NZ Government is committed to tackling unsafe speeds as part of their vision of a New Zealand where no one is killed or seriously injured in road crashes. The risk of a crash occurring and the resulting severity of injury resulting from the crash depends significantly on the speed of vehicles involved.

To underline the commitment to safety and speed management the following Intervention Indictors have been proposed in the NZ Governments Road to Zero Initial Action Plan 2020-2022:

- *Percentage of the highest risk roads addressed through speed management*
- *Percentage of urban schools with 30-40km/h speed limits (40 percent by 2024; 100 percent by 2030)*
- *Percentage of rural schools with 60km/h speed limits or lower (40 percent by 2024; 100 percent by 2030)*
- *Mobile speed camera deployment activity (hours) (increase to 80,000 in 19/20; 100,000 in 20/21)*
- *Number of police operations targeting speed*

2.3 Funding

The costs of implementing of speed management and road safety initiatives is a shared between Hauraki District and Waka Kotahi as the agent for the NZ Government. The guidelines for receiving this funding include the requirements for projects identified to support speed management and a reduction in death and serious injuries from road trauma. A number of high priority roads were identified as part of the Road to Zero programme, and funding was made available specifically for speed management on these roads.

2.4 Road Safety

Road safety goes beyond our obligation to prevent deaths and injuries to improving lives and lifestyles too. By ensuring that everyone feels safe to use our transport network we open up

opportunities for a more diverse use of modes and opportunities for improvement in health such as letting children walk, bike or scooter to school. This creation of road networks that allow for easy and multimodal transport use connect people and communities rather than dividing them. This in turn gives effect to the Council Outcome - Vibrant and safe communities | Te Oranga pai o te Hapori.

Influencing road user behaviour and improving our driving culture will continue to be critical to making significant gains in road safety. All users of our roads, streets and footpaths have a responsibility to make good choices and follow the rules, while central and local government has a responsibility to support and enforce that behaviour.

2.5 Crash probability

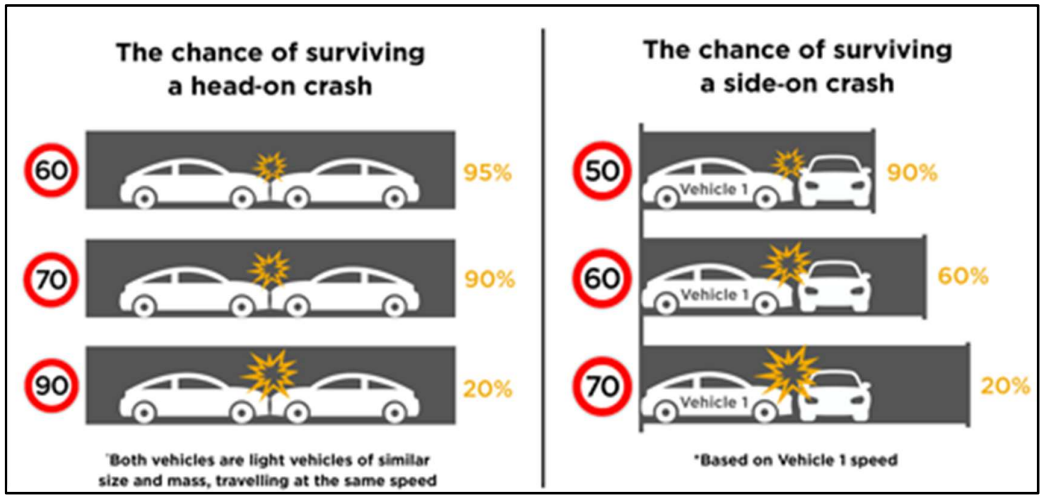
The role and impact of speed in crashes is often underestimated with the most common argument used against any reduction in speed limits being that "*vehicle speeds don't cause crashes poor drivers do*". This is correct in part.

The speed that a vehicle is traveling at does not cause the crash, however it has a direct effect on the severity of the crash and higher vehicle speeds increase the probability of a crash in several ways:

- by reducing the capacity of a driver/vehicle to stop in time;
- by reducing manoeuvrability in evading a problem;
- by making it impossible to negotiate curves and corners at speeds which are too high for the friction available;
- by reducing the driver's field of vision; and
- by causing others to misjudge gaps.

Therefore, speed plays a significant role in the both the outcome of the crash as well as the potential for a crash to occur. The speed of the vehicle is the difference between a correctable mistake and a fatal error as illustrated in Figure 1.

Figure 1 Crash survivability[3]

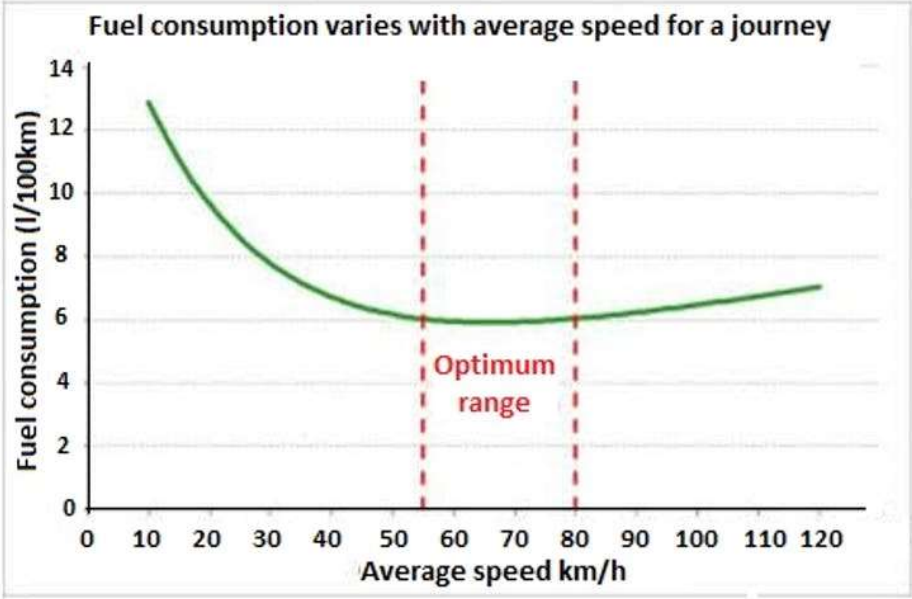


[3] Source - Centre for Road Safety – NSW Government

2.6 Climate change

Climate change can be impacted by not only the types of vehicles being driven on the network but also the speed at which vehicles are travelling. Every car has an optimal speed range that results in minimum fuel consumption and therefore emissions. The typical correlation between vehicle speed and fuel consumption is shown in Figure 2.

Figure 2 Correlation between vehicle speed and fuel consumption[4]



Fuel consumption increases at lower speeds due to the typical start/stop nature of driving in these lower speed environments.

A recent publication from the Global Road Safety Facility – World Bank[5] stated that the benefits of managing vehicles speeds were:

- *Saves lives and debilitating injuries*
- *Reduces GHG emissions and thus assists in the battle against climate change (in recent meeting in Geneva, Sweden reported that the most effective tool they had for reducing GHGs was the speed camera program)*
- *Reduces other air pollutants which harm health, including road traffic noise*
- *Increases efficiency, by vehicle maintenance costs and reducing fuel costs*

Economic analyses of higher speeds often only consider travel time savings, omitting critical economic impacts through crash costs, emissions, fuel costs and vehicle maintenance. The total costs of speed are often overlooked because lobbying by transport companies and other road users is focused on their travel time, while the main costs of crashes, GHGs, and health effects of omissions are born by the society and government.

In response to feedback received during the development of the 2021-31 Long Term Plan with respect to climate change Hauraki District has made a commitment to proactively plan for the effects of climate change. The Zero Carbon Promise sets out the pathway for Hauraki District to achieve its goal of being a zero carbon district.

[4] Climate explained: does your driving speed make any difference to your car's emissions? (theconversation.com)
[5] World Bank Document

Reductions in vehicle speeds and the associated reductions in CO2 will assist HDC in achieving its desired move to being a zero carbon district and support the desired community outcome - Healthy environment | Te Mauri o te Taiao.

3. Crash Data

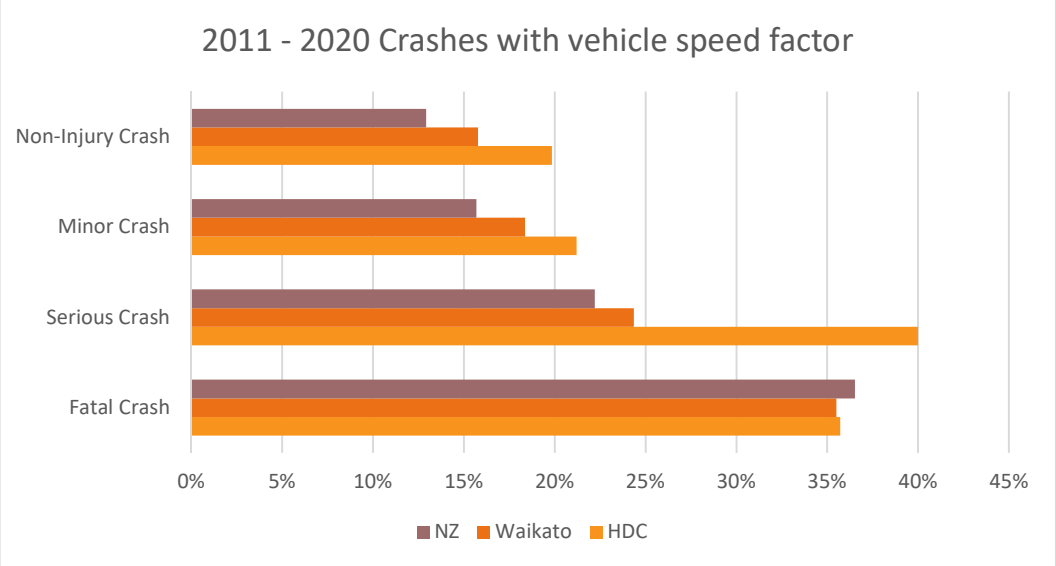
The Waka Kotahi crash database (CAS) holds information on all crashes that have been reported to the Police. This data can be broken down into the various local authority regions and separated into local roads and state highways. Contributing factors and crash types are some of the features that are analysed to develop a picture of the crash history within Hauraki District.

3.1 Travel speed

Travel speed was indicated as being a contributing factor in 39% of all fatal and serious crashes on the Hauraki local road network between 2011 and 2020. This indicates that inappropriate speed (not necessarily above the speed limit) plays a significant part in the number of crashes in this district.

Comparison between the regional and national data, for local roads only, is shown in Figure 3 and shows that speed is overrepresented in all crashes on the Hauraki local road network.

Figure 3 Crashes with vehicle speed factor 2011 - 2020



3.2 Crash types

A review of the crash data for the ten year period 2011 – 2020, shows that there has been fourteen fatal and fifty serious crashes on local roads within the Hauraki District. The types of the crashes are shown in Table 1.

Table 1 Crash type: 2011 - 2020

Crash Type	Fatal	Serious	Minor	Non-injury	Total
Lost Control - Bend	5	20	59	133	217
Lost Control - Straight Road	1	10	38	82	131
Manoeuvring	1	1	8	50	60
Obstruction		1	8	33	42
Crossing not turning		3	9	25	37
Rear end crash	1	1	5	18	25
Same direction turning		4	8	12	24
Head on crash	2	1	7	11	21
Crossing one turning		3	8	9	20
Pedestrian crossing road	1	3	4	1	9
Merging			3	6	9
Overtaking			1	8	9
One turns right		2	3	3	8
Other pedestrian	3	1	2		6
Miscellaneous			2	2	4
Total	14	50	165	393	622

A review of the crash data for the Waikato region and nationally on local roads for the same period shows that the top crash factors are the same indicating that the issues in Hauraki District are not dissimilar to those elsewhere in the country.

3.3 Road types

The type of road and its urban or rural locality was reviewed to determine which type featured predominantly in the crash data. Fatal and serious crashes occurred primarily on rural roads as shown in Table 2.

Table 2 Road type: 2011 - 2020

Road Type	Fatal	Serious	Minor	Non-injury	Total
Rural - Arterial	2	11	29	51	93
Rural - Medium	7	17	67	139	230
Rural - Minor	2	10	16	39	67
Rural - Access			1		1

Road Type	Fatal	Serious	Minor	Non-injury	Total
Urban - Arterial			3	7	10
Urban - Major				1	1
Urban - Medium		9	31	99	139
Urban - Minor	2	3	15	55	75
Urban - Access				2	2
Not identified	1		3		4

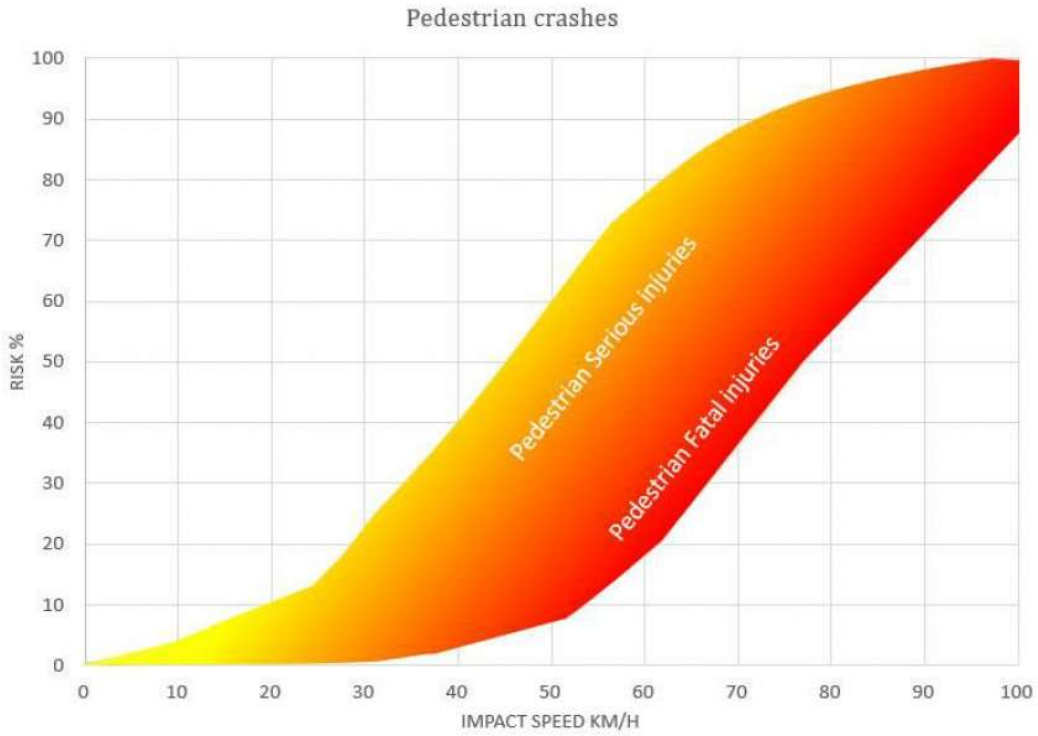
3.4 Pedestrians and Cyclists

Safer speed limits within town centres, around schools and other high pedestrian generating areas will help to support more liveable and thriving communities by improving safety and accessibility and encouraging more active modes of transport.

Pedestrian crashes can occur anywhere on the roading network, however there are opportunities to improve safety and accessibility, in particular around schools. Current speed limits within town centres and outside many schools do not make walking and cycling an appealing mode of transport and therefore increase the reliance on vehicles. Increased rates of children walking and cycling to school will reduce the level of congestion in the vicinity of schools, lowering the risk of crashes and stress to other road users. It may also have a range of co-benefits, including health and accessibility by helping people to feel safer to walk or bike to school which has benefits for the community as a whole.

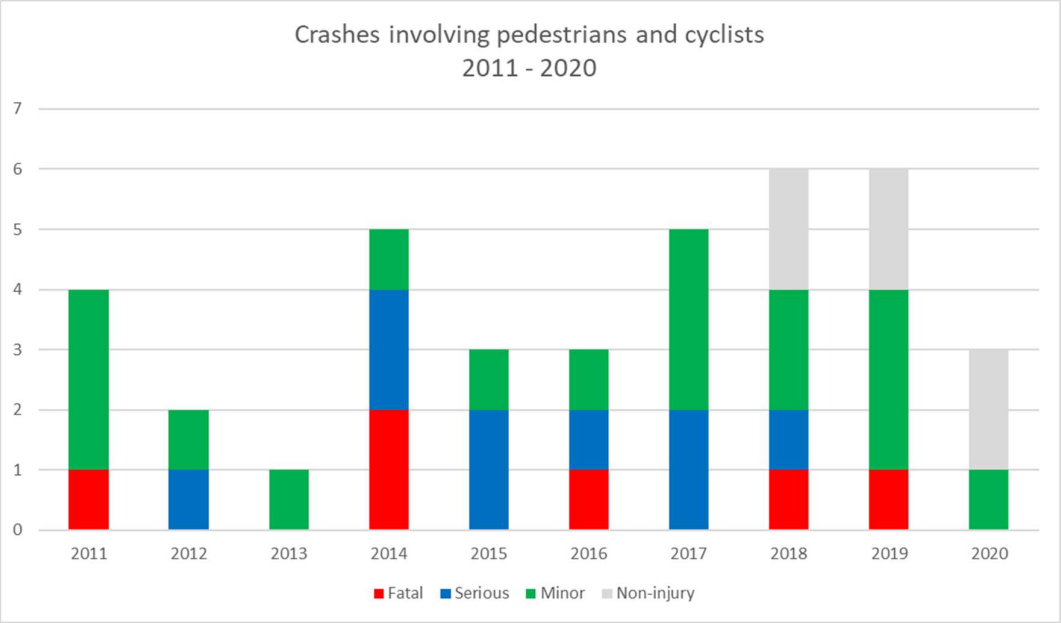
Pedestrians and cyclists are particularly vulnerable in crashes involving vehicles. A crash with an impact speed of 50km/h is 70% more likely to result in death or serious injury than one with an impact speed of 30km/h. Research conducted by Mackie Research Ltd for Waka Kotahi developed the chart shown in Figure 4 for pedestrians struck by light vehicles. They also demonstrated that the severity curve for cyclist and pedestrians is very similar. The width of the bands indicates that the severity of injury in a pedestrian or bicycle crash is not just a function of collision speed, but the age of the person and the type of vehicle striking them also have major influences.

Figure 4 Pedestrian injury risk[6]



In the 10-year period of 2011 to 2020 inclusive there have been thirty-eight crashes involving pedestrians or cyclists on local roads within the Hauraki district as shown in Figure 5. Of these, six have been fatal, with nine resulting in serious injuries. A further seventeen resulted in minor injuries and six have been reported as non-injury crashes. 21% of the crashes have involved school aged children with a another 21% involving persons over the age of 65.

Figure 5 Pedestrian and Cycle Crashes



[6] Source: Mackie Research Ltd

3.4.1 ONRC Performance Measures – Policy and Network Management

Of the fifty-four fatal and serious injury crashes that have been reported in the last 10 years, objects have been struck in thirty-seven (57%) of these crashes. This shows that unsafe roadsides is a major factor in a high percentage of DSI crashes on the network. Additional Performance Measures have been taken on in 2021 in order to track progress on the following:

- Reducing the number of permanent hazards that are not marked in accordance with national standards
- Reducing the number of locations where sight distance or signs are obstructed by vegetation, unauthorised signs or other items placed within the road reserve
- Reducing the number of locations where there are unauthorised items placed within the road reserve

4. Safer Journeys Risk Assessment Tool

Waka Kotahi have developed a Speed Management Guide and the Safer Journeys Risk Assessment Tool (known as MegaMaps) for use by Council Staff that provides a range of technical information on each road within the Hauraki District. These metrics are used as a starting point to help to identify roads that are considered high risk and are likely to achieve the greatest benefit from speed management and assess the safe and appropriate speed for them. Each of the roads identified by the tool are then reviewed for appropriateness based on local knowledge of the area.

As a result of changing the speed limit effects associated with a number of factors can be calculated these include:

- Estimated death and serious injury savings per annum
- Travel time change per vehicle traversing the section of road
- Vehicle Operating Cost (VOC) change per vehicle traversing the section of road
- The change in CO2 emissions per annum

It is important to note that these effects assume changing of the speed limit, however for those sections of road where the decision is to invest in infrastructure improvements to bring the design and safety of the road to a level where the existing speed limit can be retained, then the travel time, vehicle operating, and CO2 emission changes will be zero. Safety savings from infrastructure improvements are expected to be greater than those achieved from lowering the speed limit alone.

4.1.1 High benefit roads

Each road within the district has been reviewed by Waka Kotahi and an Infrastructure Risk Rating (IRR) developed for each based on the following eight key features that impact on road safety: Road Stereotype; Alignment; Carriageway width; Roadside hazards; Land use; Intersection density; Access density; and Traffic volume.

This IRR score is assessed by coding the eight influencing factors for each road and combining them to give an IRR score, which is then classified into five risk categories: low, low-medium, medium, medium-high and high.

To assist Council staff, High Benefit roads or sections of road have been identified that treatment with speed management is likely to result in the greatest benefits. These roads have been ranked to provide a list of First and Second 10% Intervention locations.

4.1.2 Safe and appropriate speed

Due to the range of speed limits available for implementation by Councils, Waka Kotahi developed a process to determine the safe and appropriate speed (SAAS) for each road. The SAAS for a road is derived from the combination of the Infrastructure Risk Rating score and the collective and personal risk for each road and has been performed for the complete network. The safe and appropriate speed is based on a speed being appropriate for the road Function, Design, Safety and Use (i.e. it takes both safety and efficiency into account).

The use of these speeds as a speed limit is not compulsory however they do assist with ensuring that speed limits are consistent across the country.

4.1.3 CO2 Changes

The basis for determining the change in CO2 emissions is dictated by the expected change in travel speed resulting from a change in the speed limit and is calculated as a function of vehicle operating costs.

The existing mean free-flow travel speeds for each road have been derived from a TomTom dataset purchased by Waka Kotahi specifically for Mega Maps. Future mean free-flow speeds have then been estimated differently for rural and urban environments. In rural areas, these are based on modelled relationships between existing travel speeds and future travel speeds on the Waikato roading network using the Austroads Operating Speed Model. In urban areas, the relationship between the change in speed limit and change in travel speed was developed collaboratively with Waka Kotahi and agreed to be a linear relationship.

The Waka Kotahi's EEM states that for road links CO2 emissions (in tonnes) can be estimated as 0.09% of VOC (in $) for light vehicles and 0.16% of VOC for heavy vehicles. Mega Maps uses a value of 0.0935% of VOC on the assumption that light vehicles typically comprise 95% of all traffic and the change in CO2 emissions expressed in tonnes per year.

5. District Speed Management

5.1 Speed Management Plan

Speed Management Plans are required to be developed by Road Controlling Authorities to show their proposed short-term and long-term changes to the whole network with respect to speed management and identify future improvements to roads to support changes in speed limits if required. Due to the requirement for funding to support any engineering treatments that need to be implemented the plans are proposed to have a 10-year horizon. The plans will be reviewed every 3 years to ensure that they are being delivered as expected, are adapting to any network changes and align with the Long -Term Planning process for funding.

The intention of the implementation of a speed management plan is not to undertake wholesale changes to speed limits within the district. The purpose of the plan is to provide a structured and methodological process for the review and change of speed limits and/or the implementation of speed management treatments as required to reduce the risk to road users. Where the road environment needs to be modified to support the desired speed limit then

physical works will need to be undertaken. The nature of these engineering treatments will depend on the road and the speed management goal to be achieved.

5.2 Speed Limits

Road controlling authorities currently have the ability to set speed limits in 10km/hr increments from 20km/hr to 100km/hr. This range of limits is significant, and guidance has been provided by Waka Kotahi on what speed limits should be used in which environments.

As a speed management tool, speed limits are used to align drivers' expectations with the reality of the road environment. Often lowering the speed limit will not significantly affect the travel time of vehicles but may stop a driver pushing the bounds on the speed that they think they can achieve on the road and hopefully reduce the risk of them losing control. This also works to provide better alignment of speeds between visitors (who are more cautious) and locals (who push the limits) by providing all drivers will a more accurate reflection of what speed they should be travelling at.

To ensure that there is better alignment between a driver's expectations and the road environment and being cognisant of the influence of movement and place on the use of a road the following categories have been broadly created to describe the type of road and the speed limit to be applied. The base speed limit for each is shown in Table 3 along with the criteria for the consideration of a reduction in speed limit and also what that speed limit may be.

Table 3 Speed limit options

One Network Framework	Base speed limit	Considerations for change	Alternative speed limit
Activity Streets	50 km/hr	Significant pedestrians and manoeuvring vehicle movements *and/or* History of manoeuvring or intersection crashes	30 km/hr
Urban Connectors and/or Local Streets	50 km/hr	Presence of a school Identification of shared use (pedestrian and/or cyclists)	30 km/hr
Local Streets	50 km/hr	Residential areas that are primarily for access and form a natural enclave of housing. Not on a through route.	40 km/hr
Peri-Urban Roads	100 km/hr	Rural areas with a higher density of residential dwellings on roads that are primarily for access and form a natural enclave of housing. Not on a through route.	60 km/hr
Rural Connectors and/or Rural Roads	100 km/hr	Presence of a school Topographical features constraining vehicle speeds	60 km/hr 80 km/hr

One Network Framework	Base speed limit	Considerations for change	Alternative speed limit
		and/or History of fatal or serious injury crashes Identification of shared use (pedestrian and/or cyclists)	

Use of 90km/hr and 70km/hr speed limits

Safe and appropriate speeds are considered to be 10, 20, 30, 40, 50, 60, 80, 100 and 110km/hr, with 90km/hr and 70km/hr speed limits considered to be interim interventions only.

These speed limits can only be implemented with support of Waka Kotahi and in situations where:

- The crash risk is sufficiently high to justify a temporary change in the speed limit until safety improvements or perceptual countermeasures can be made.
- Investment cannot be justified and if existing speeds are sufficiently high that a drop to 80km/hr (from 100km/hr) cannot be practically achieved in the short-term.

It is acknowledged that speed limits are an emotive topic and that the requirement for dramatic changes to speed limits from a risk management perspective is not fully understood by the community.

To this end Hauraki District may look to take a staged approach to lowering speed limits in the district. The majority of changes proposed will result in a maximum of a 20km/hr drop in speed limit being implemented on a road in a single year. Should a larger decrease in the speed limit be desired, from an engineering perspective, or where there is significant resistance from the community, this will be addressed on a case-by-case basis and may result in the speed limit being reduced in two stages. An initial 20km/hr drop in the speed limit with supporting engineering treatments would be implemented however if the risks continue to be present or the situation changes then a further reduction would be implemented as part of the next review or within 3 years whichever is the earlier.

Zones of influence

To ensure that the lower speed limits are applied where they will offer the greatest protection to vulnerable road users in the vicinity of schools a 'zone of influence' is proposed to be used. This is to ensure that the length of any speed restriction is reasonable, and the purpose of the restriction is obvious to a driver so that there is a greater level of compliance.

Based on stopping distance calculations[7] the distance of 110m for 50km/hr areas and 179m for 100km/hr areas will be used. This ensures that the signs/restrictions are placed sufficient distance from the likely area of conflict such that a driver can observe, react and stop prior to hitting the potential hazard.

Shared use

Pedestrians and cyclists are particularly vulnerable in crashes involving vehicles and as such are a key focus area for Hauraki District Council.

[7] Zone of influence calculated distances: Safe Intersection stopping distance @ 50km/hr = 97m (R=2sec) – 123m @ 60km/hr – Assumed a 55km/hr design speed to get the 110m distance.

In urban areas the ability to reduce the speed environment to 40km/hr is achievable and will be implemented where practical, however this is not possible in the rural environment due the competing requirements of users of these roads.

To reduce the risk to users and provide additional reaction and stopping time for drivers, should they come upon a cyclist unexpectedly an 80km/hr speed limit is proposed to be installed. This restriction would apply only on those roads where there are regular cyclists, and they cannot be accommodated safely within the existing shoulder or on an off-road path.

5.2.1 Schools

The current speed limit on roads in the vicinity of urban schools within the Hauraki District is 50km/hr and for rural schools either 70km/hr or 100km/hr depending on the location of the school. By 2030 Hauraki District Council will be required to have reduced the speed limits in the vicinity of all twenty-two schools within its District as shown in Figure 6 to either 30 km/hr for urban schools or 60km/hr for rural schools. These speed limits can be either variable or permanent. Where schools are located on a no exit road or within residential neighbourhoods then permanent speed limits would be installed. For locations that are on through roads with higher speed limits then a variable speed limit would be installed.

Figure 6 Schools within Hauraki District

The extension of speed management to address areas in the vicinity of daycare centres/kindergartens or aged care facilities will be considered in future reviews of the speed management plan.

5.2.2 Town centres and High-volume pedestrian areas

Currently the default speed limit for all urban areas is 50km/hr, for locations such as town centres and other areas with high volumes of pedestrians or manoeuvring vehicles such as tourist spots this speed is considered to be too high. Areas where pedestrians are likely to cross the road in multiple locations increase the risk of conflict, however often it is not practical to contain pedestrians to specific crossing points. Due to the high likelihood of pedestrians in these areas vehicles speeds should be in the order of 30km/hr to reduce the risk that a crash

involving a pedestrian would be fatal. Crashes involving manoeuvring vehicles are not typically fatal however they do result in considerable cost and inconvenience to the parties involved. By reducing the speed limit in areas where these factors occur it creates a more inclusive atmosphere which then encourages further pedestrian use which is desired by retailers.

The use of 'zones of influence' will be applied in these areas to ensure that the extents of the reduced speed limit is appropriate.

When considering the implementation of this speed limit the presence and effect on adjacent roads and the presence of an alternative route needs to be addressed. The provision of an alternative route can be positive in that it reduces the risk of conflict by redirecting/removing vehicles from the identified road that do not need to be there. However, it could result in issues being transferred from one road to another if the area included in the change is not large enough to encompass all those of a similar nature. Vehicles will simply shift to using the next available road rather than being redirected to the preferred alternative route.

5.2.3 Residential areas

The default speed limit for all urban residential areas is 50km/hr. Consideration is being given to the use of 40km/h speed limits in residential neighbourhoods or areas that have a high 'place' value within the Hauraki District. These areas are those that are well developed and provide destinations for all traffic. The neighbourhood roading layout will typically include cul-de-sacs or roads that are interconnected within but not beyond the neighbourhood. The use of 40km/hr provides a balance between lowering the risk to pedestrians and cyclists in the area while not noticeably impacting on travel speeds. These areas typically have lower vehicle speeds due to the short road lengths and multiple driveways and any reduction in speed limit is to align users' expectations of the area. The lower speed limit would not be applied to through-routes to ensure that a clear demarcation is maintained between the differing road hierarchy and uses.

The creation of 40km/hr residential areas would also assist the management of vehicle speeds in the vicinity of schools and/or daycare centres/kindergartens within these areas. As the speed limit would be consistent, no changes would be required reducing frustration regarding knowing what speed limit applies and when.

5.2.4 Peri-Urban areas

Peri-urban areas typically have an open road speed limit as they have resulted from previously rural areas on the edge of an urban area being intensified. Consideration is being given to the use of 60km/h speed limits in peri-urban areas within the Hauraki District. These areas are those that have a higher density of dwellings than typical rural areas and have little to no pedestrian facilities which result in users walking on the road. The use of 60km/hr provides a balance between lowering the risk to pedestrians and cyclists in the area and aligning users' expectations of the area while not noticeably impacting on travel speeds. The lower speed limit would not be applied to through-routes unless there are clearly noticeable differences in the level of development to ensure that a clear demarcation is maintained between the differing uses of the section of road.

These neighbourhoods may also contain schools and/or daycare centres/kindergartens. The implementation of a 60km/hr speed limit in an area would assist with enabling the speed limit in the vicinity of these schools to be lowered further to the desired urban speed limit of 40km/hr. This would further reduce the risk to users of the school.

5.2.5 Unsealed Roads

Sections of the Hauraki District roading network is hilly to mountainous, windy, and unsealed with steep banks or drops and narrow carriageways. These roads cannot be safely driven at

the open road speed. Waka Kotahi have provided Hauraki District Council with data showing the current operating speeds and the calculated safe and appropriate speeds[8] for all roads within the district.

This data indicates that operating speeds on these types of roads are often well below the safe and appropriate speed for the route, which is significantly below the open road speed limit of 100km/hr. To facilitate a reduction in the risk associated with driving these roads at an inappropriate speed and to assist with achieving the required target of addressing the highest risk roads through speed management, those rural roads identified as being within the Top 10% of high risk roads will be considered for a reduction in speed limit to 80km/hr.

The reduction in speed limits on these roads is unlikely to have any effect on the current travel time, however it will reduce the risk associated with drivers attempting to drive faster than the alignment and surface allows for. These roads are referred to as self-explaining and as such a change in the speed limit is the most appropriate treatment of the area.

Sealing of these roads to remove the risk associated with the surface will not necessarily result in the open speed limit being maintained as other topographical constraints are likely to continue to pose a risk to users.

5.3 Engineering treatments

Supporting engineering treatments will be required regardless of where and what changes are made to speed limits in an area. Some treatments will be standard layouts such as the signs and markings used at threshold locations or in the vicinity of schools, while others will be more bespoke designs depending on the location and outcomes sought.

Large portions of the Hauraki District roading network are long straight sections of road which provide little topographical constraints to a driver's speed, however the presence of large side drains, power poles, trees and other hazards pose an increased risk to drivers should they leave the road. In these situations, there are a number of engineering works that can be implemented to manage the speed of vehicles. Features range from signs and roadmarking to vertical and horizontal displacement devices and their use will depend on the location and the safe and appropriate speed that is desired to be achieved.

Some features such as the installation of barriers are proposed to be implemented to support the existing speed limit by improving the safety of the route rather than lower the speed limit to match the existing environment.

5.4 Treatment lengths and adjacent roads

The Hauraki District roading network is interlinked and as a result speed limits and treatments that are applied to one section of a road should be consistent with the adjacent sections of road. Schedule 1 of the Setting of Speed Limits Rule sets the minimum length of road over which a speed limit must apply. Where roads are directly connected then consideration should be given to applying the same speed limit over both, especially where the adjacent road is a cul-de-sac. Isolated sections of speed limit are undesirable unless there is significant change in the environment excluding road surface to identify to drivers the purpose of the change. The lengths are between 500m for 50 and 60km/hr sections and 800m for an 80km/hr speed limit. There is no minimum length specified for 40km/hr speed limits.

Isolated sections of unsealed road will not be considered for a speed limit reduction unless there are other factors such as a school in the vicinity to support the change.

[8] Waka Kotahi Safer Journeys Risk Assessment Tool - https://MegaMaps.abley.com/Maps/

6. 2021 Speed Management Review

Those roads considered as part of the development of the interim speed management plan for Hauraki District have been identified from the following sources:

- High benefit roads – MegaMaps First and Second 10% Intervention locations
- High risk roads / DSI routes – Roads with 2 or more fatal or serious crashes in the previous 10 years including at least 1 fatal crash.
- Schools/daycares/kindy's/old age care locations
- Peri-urban locations
- Customer complaints/queries

Details on the technical assessment of each of the roads based on the above mentioned criteria are included in Hauraki District Council – Interim Speed Management Plan, Volume 2, Technical Assessments.

6.1 Implementation Plan

The roads that have currently been reviewed have been divided into those that are self-explaining and therefore can be implemented without the need for physical works and those that require works to be undertaken either to manage the existing speeds or to support a change in speed limit.

Due to funding limitations those locations that require physical works will need to be prioritised. Priority will be given in the following order:

1. Schools
2. High Risk / DSI routes

The initial 10 year plan for implementation will be developed following public consultation and details of the proposed implementation plan will be collated in the Hauraki District Council – Interim Speed Management Plan, Volume 3, Implementation Plan.

7. Future reviews

This interim plan provides guidance on why, how and when speed should be managed on each of the roads identified based on the initial criteria selected. It is anticipated that the criteria will alter in future reviews depending on the areas to be targeted such as the inclusion of popular cycling routes.

Changes to speed limits will be on going as development in the district continues and to achieve alignment with the NZ Governments Road to Zero Action Plan with respect to speed management.

The Land Transport Rule Setting of Speed Limits 2022 requires Council's to review their speed management plans every three years. This will enable the plan to adapt to changes in development in the district and be consistent with the Long Term Plan funding cycle and provide alignment with funding opportunities.

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