

**TO:** Asset Management Committee

**FROM:** Transport Engineer

**DATE:** 21 March 2016

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**3.16 ROAD SAFETY INITIATIVE - 40 KM/H SPEED LIMIT BENEFIT AND IMPLEMENTATION (B2114)**

**Brief**

This report responds to a Council decision to receive a discussion paper about the benefits and impacts of a 40km/h speed limit and how a lower speed limit could be applied to all low trafficked local streets within the City. This report presents the discussion paper and includes recommendations for continued implementation of 40km/h precinct speed limits as provided under delegation by the Minister for Transport.

**Recommendation**

1. That Council, being delegated responsibilities by the Minister for Transport as a Road Authority providing safe local streets, consider options available to it to most effectively deliver the best road safety outcomes for the community.
2. That due to the cost of construction, Council notes that traffic calming devices (often referred to as traffic control devices) are best used in higher traffic volume streets where the greatest road safety benefits and traffic flow improvements can be realised.
3. That Council receive the report titled 'Evaluation of 40 km/h Speed Limit for Local Streets in the City of Charles Sturt' being Appendix B.
4. That Council support the Option 1 recommendation of the report (being Appendix B) to continue with the current precinct by precinct 40 km/h investigation in accordance with the DPTI guideline to complete 65% of all local streets over the next 2 years.
5. That Council endorse officers to work with the Motor Accident Commission (MAC), the Centre for Automotive Safety Research (CASR), and the Department of Planning, Transport and Infrastructure (DPTI) to develop educational resources and campaign for the South Australian community about the road safety benefits of a 40km/h speed limit on local streets.
6. That the speed limit on Distributor Roads (between 3,000 and 9,000vpd) remains at 50km/h.

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7. That the speed limit on Collector Roads (between 1,000 and 3,000vpd) generally remains at 50km/h, but the decision about the final speed limit on these Collectors will be dependent upon individual road characteristics and community feedback.
  8. That when 65% of all Council local streets have 40 km/h speed limits implemented, Council officers investigate the remaining local streets and prepare a report considering whether to implement the 40km/h speed limit in all the remaining local streets.
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**Status**

This report relates to or impacts upon the following Community Plan Outcomes:

**Community Wellbeing**

- Create a safe, healthy and supportive community which encourages participation, creativity and diversity
  - Provide welcoming and accessible community facilities that offer diverse opportunities for community members to engage in cultural, recreational, sporting and lifelong opportunities
  - Encourage and support a healthy, safe and welcoming community
  - Create opportunities for all ages to participate in community life

**Liveability and Place**

- Build healthy, functional and attractive neighbourhoods
  - Create and maintain an integrated, attractive and safe transport network that emphasises and focuses on pedestrians and cyclists

**Leadership**

- Demonstrate effective leadership with strong community collaboration
  - Build a strong team between Elected Members and staff working together on behalf of the community
  - Make decisions based on evidence, broad views and the aspirations of our diverse communities
  - Communicate what we are doing, how we will measure success and how we will report this to the community
  - Strive for business excellence through continuous improvement and creativity
  - Ensure finances and asset are managed to support changing community needs in a sustainable cost effective way

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**Background**

A Motion of Notice by Cr Sykes (Item 7.10) was endorsed at the Council meeting of 14 September, 2015. The Motion stated:

- “1. That Council staff investigate the appropriateness of seeking approval from the Minister for Transport to implement a 40 km/h speed limit in the residential streets of Seaton and Findon bounded by Trimmer Parade, Tapleys Hill Road, Grange Road and Findon Road and provide a report on the matter to a future meeting of the Asset Management Committee.*
- 2. That Council staff conduct a wider review of residential speed limits across the City of Charles Sturt and provide a discussion paper for consideration at a future meeting of the Asset Management Committee.”*

A Council workshop about 40km/h speed limits was held on 21 September, 2015. That workshop presented the lower speed limit as an alternative way to deliver improved road safety across the entire local street network. As a result of that workshop, the discussion paper was prepared and discussed at another workshop held on 22 February, 2016. The discussion paper has now been finalised and is presented in this report for consideration and decision.

**Report**

The Minister for Transport has delegated under Section 33 of the Road Traffic Act, 1961 powers and responsibilities to Councils for local street networks as Local Road Authorities. The delegation includes a number of road safety measures such as traffic calming devices, many types of signs and other controls. The code that supports the Minister’s delegation includes measures requiring the Minister’s specific approval. The installation of 40km/h precinct speed limits is one such measure.

As the Local Road Authority the Council is working within the national and state government framework for improving road safety. This framework is articulated by various road safety strategies with the South Australian strategy called *Towards Zero Together – South Australia’s Road Safety Strategy 2020’*.

A key outcome of the strategy is to reduce crashes on roads within South Australia by 30% by 2020. The discussion paper has found that in Charles Sturt, a decision to implement a 40km/h speed limit on local streets by 2020 would significantly address this objective.

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The discussion paper prepared for the Council forms **Appendix B** and is titled 'Evaluation of 40 km/h Speed Limit for Local Streets in the City of Charles Sturt'. The key findings in the discussion paper are:

- In Charles Sturt approximately 500 people were killed or seriously injured on local streets between 2010 and 2015 costing the community an estimated \$47.93M, almost \$10M per year.
- SA experience found that 40 km/h speed limits has reduced crashes in Unley by 17%
- Since the installation of the 40km/h speed limits in Woodville West annual injury crashes have reduced from 29 to 6 (being a 79% reduction) and serious injury crashes recorded from 5 to 1.
- Since the installation of the 40km/h speed limits in Bowden/Brompton annual injury crashes have reduced from 49 to 35 (being a 29% reduction) and serious injury crashes recorded from 7 to 2.
- Speed data from Unley and Woodville West shows that reduced speed limits are generally self-regulating with an average reduction of 6km/h in travel speeds when 40km/h speed limits were installed.
- Both crash reduction rates and speed data indicate that by reducing speed limits, significant modifications to driver behaviour occurs, and that speed reduction provides a viable alternative to traffic calming devices that is significantly less intrusive, equitable and cost effective.
- Lower speed limits have little impact on travel times within the local street network. Generally the greatest delays occur at intersections with other local streets, giving way to oncoming vehicles because of parked cars, or waiting at intersections to enter into arterial roads.
- The installation of 40km/h speed limits in the low trafficked local streets address road safety concerns without impacting on the amenity or liveability for people living in properties with frontage to these streets.
- For immediate widespread road safety benefit the return on investment makes this economically viable and reflects the wider community demand for improved road safety.
- There is a poor level of understanding, or recognition of the road safety benefits of a 40km/h speed limit.

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The discussion paper looks at two options for implementing the 40 km/h proposal:

Option 1 – Continue consulting precinct by precinct as per our current strategy. When 65% of all Council local streets have 40 km/h speed limits implemented, Council officers review the outcomes and undertake statistical sampling about community views prior to considering the application of 40km/h speed limit in all the remaining local streets.

Option 2 – Undertake a Council wide survey, either by statistical sampling or by a whole of Council survey, to identify community support levels for a whole of Council 40 km/h installation on all local access streets.

**Financial and Resource Implications****Traffic calming devices**

Since the mid-1980s councils have been addressing requests from residents to reduce speed and improve road safety in local streets primarily by installing traffic calming devices. In the City of Charles Sturt we have now installed over 900 traffic calming devices on approximately 300 streets with a total estimated replacement cost of \$41M.

If this response is extrapolated for the remainder of the 1,844 local streets in the City of Charles Sturt it will take a further 150 years to address requests from residents to improve road safety and have an estimated total cost of \$200M. These devices require regular maintenance and repair due to damage and need to be fully replaced every 20-30 years, being an annual cost of over \$10M [Note: the cost of each device varies between \$10,000-\$150,000 and due to their individual components have different maintenance and renewal requirements (eg. kerb, paving, signs and landscaping)].

**Reduced Speed Limit**

The current guideline issued to councils by the DPTI for 40km/h speed limits requires installation of signs. There would be 3,700 signs (many less signs than are associated with individual traffic calming devices) for all of the low trafficked local streets costing \$950,000. These would require maintenance and repair due to damage and would be programmed for replacement every 15 years, being an annual cost of over \$60,000.

A budget bid (PBB-00000054) of \$250,000 for 2016/17 has been submitted to commence this process in the suburbs around the Torrens to Torrens South Road Corridor project. Subsequent funding requirements will be determined once Council has made a decision and we receive a revised guideline from the DPTI.

A budget bid (PBB-00000063) of \$30,000 has also been submitted for 2016/17 to develop educational materials about the benefits of a 40km/h speed limit on low trafficked local streets and continue community engagement.

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**Customer Service and Community Implications**Traffic calming devices

With the continued sole use of traffic calming devices to address requests to reduce vehicle speed in local streets the levels of customer satisfaction is low. Council officers receive (on average) about 5 requests each week to do something about vehicle speeds and how unsafe people feel in their streets and homes. Council is unable to meet the current demand to reduce vehicle speeds in local streets by installing traffic calming devices.

There is often opposition to their installation by people directly affected by them. When consultation is undertaken about traffic calming devices, the following comments are typically received:

- I don't like traffic controls because I have to give way to other drivers (at single vehicle slow points), I don't know what to do (as I don't know the road rules about it), I have to slow down to drive through them, or I always have to speed up in between them.
- Don't put traffic controls outside my place because they are noisy, make it difficult to get in/out of my driveway and my family and friends can't park outside our house; they devalue my property; they will also stop me from future land division.

Individual traffic calming devices can have outcomes that are not always satisfactory. Examples are when drivers use another local street instead to avoid them, or 'hoon' drivers use them for easier 'burn outs'.

Reduced Speed Limit

A 40km/h speed limit on all low trafficked local streets applies the principle of equity to all residents. When local streets are used for their intended purpose of getting people to/from homes and local facilities to the surrounding arterial road network the time taken for the journey increases by a few seconds. Much more time is lost by slowing down at intersections within the local street network.

There will be a continued need to install traffic calming devices on higher trafficked local streets such as Distributors and Collectors and where road conditions are not safe. Their installation should only be considered when the benefit/cost ratio demonstrates a need.

The levels of response and support/objection to lower speed limits are very similar to those that we receive during community engagement for traffic calming devices. The only difference being the number of people we are seeking responses from due to the larger area of impact.

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Where we have installed 40km/h speed limits in Charles Sturt, we do not receive requests from residents to increase the speed limit in these areas. From time to time we do receive complaints from drivers to raise speed limits on higher traffic streets such as Hawker Street and Chief Street; usually because they have been caught speeding. This has been taken into account in this proposal by excluding the busier local streets from it.

It is estimated that in 2-3 years council could address demand for slower traffic in local streets and improved road safety with better overall outcomes than traffic calming devices.

**Environmental Implications**

Based on evidence based research, the proposed speed reduction will have very small to no impact on fuel consumption and vehicle emissions above those already occurring in 50 km/h speed limit areas.

**Community Engagement/Consultation**

A community impact summary sheet forms **Appendix A**.

If the installation of a 40km/h speed limit on low trafficked local streets is decided on we will, in collaboration with the Motor Accident Commission (MAC), the DPTI, and the Centre for Automotive Safety Research (CASR), develop educational materials to better explain the road safety benefits and seek to increase State Government campaigns for greater awareness and understanding of lower speeds.

***Option 1 – Precinct by Precinct Approach***

Council officers will continue investigating the suitability of each precinct within the City for the installation of 40 km/h speed limits in accordance with any guideline issued by the DPTI. Each investigation will be followed by community engagement during which we would encourage residents to provide their feedback.

The proposal for each precinct would then be presented to the Council for consideration and decision. It is anticipated that this may take 2-3 years.

***Option 2 – City Wide Approach***

If Council has a preference for a City wide approach to be immediately rolled-out for 40kph, it is proposed that a Council wide survey be undertaken by statistical sampling or Council wide survey to gauge the level of community support.

If this approach is to be undertaken, it should be coupled with a comprehensive community education campaign prior to consultation commencing.

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**Risk Management/Legislative Implications****Legislative Implications**

Councils are Local Road Authorities appointed by the Minister for Transport by delegation under Section 33 of the Road Traffic Act, 1961 and have powers and responsibilities for providing the safest possible local streets and interface with surrounding arterial roads.

The DPTI are in the process of consolidating existing speed control Operational Instructions including the guideline to councils into a single document titled 'Speed Limit Guidelines for South Australia'. This is being done as there is now overwhelming evidence that lowering speed limits improves road safety.

**Risk Management**

The consideration of 40km/h speed limits is a large and relatively complex initiative for the whole of the city and requires clear objectives and focus that are well understood by all involved in the process and whose lives may be affected. It is important for Council to move forward in a businesslike and consistent manner and to put in place transitional arrangements as it moves away from installing traffic calming devices in low trafficked local streets to only those streets where they will actually provide a measurable benefit. This can be achieved using existing resources by addressing the initiative on a precinct by precinct basis and allows time to monitor outcomes and make changes to process along the way. The proposed 2-3 year program allows this to occur.

**Conclusion**

All levels of government are concerned about the high level of road trauma and have strategies in place to reduce crash rates by 30% by the year 2020. A robust contributor to this objective is to lower speeds. The benefits of doing this, in particular reducing speeds in local streets from 50km/h to 40km/h are well documented for the South Australian experience.

Research on 40 km/h speed limits in South Australia identified significant reductions in speeds (6 km/h) and crashes (17% reduction), as well as some reduction in vehicle volumes.

For the success of this road safety initiative, the continual implementation of 40 km/h speed limits by precincts (Option 1) is manageable, programmable and provides time for educational material to be developed and delivered regarding the road safety benefits of lower speed limits.

The important aspects of this approach is the need to agree in a delivery period and the tipping point (e.g. after 2 years review outcomes and consider a tipping point of 65%) when Council would commit to reducing the speed limit to 40 km/h for all low trafficked local streets in the City of Charles Sturt.



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**Appendices**

Appendix	Title of Document	No. of Pages	TRIM Ref
A	Community Summary	2	
B	Evaluation of 40 km/h Speed Limit for Local Streets in the City of Charles Sturt	61	15/329956

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***APPENDIX A***

Appendix A consists of 2 pages.

## **Community Impact Summary on 40 km/h Speed Limits**

There have been approximately 400 crashes each year on local streets in Charles Sturt over the last 5 years. Sometimes the crash kills people, nearly always cause an injury, and cost residents about \$10M each year. Reducing the speed limit changes all these things.

We recognise that many residents don't speed in local streets, but statistically there will be a crash and lowering the speed limit will reduce the severity of that crash. Driving from the arterial road network, which is generally 60km/h, onto local streets of 50 km/h does not seem to shift driver perception that they are entering a local street, where cars reverse from driveways, people walk and cycle and children play. Lower speed limits can change driver behaviour to treat local streets as places where people live.

We also recognise that there is not much traffic in a local street, but over a year the amount of traffic adds up, and at some point in the future crashes will generally occur even in the best designed street. By lowering the speed limit, we can reduce the severity and chances of these crashes occurring.

For those people using their local streets to drive between their home and the nearest arterial road, lowering the speed limit will generally increase the travel time it takes by only a few seconds. There is much more time lost slowing down at intersections when travelling to the arterial road and from congestion.

The South Australian experience shows that people treat lower speed limits like any other speed limit and most people travel at, or below it. We recognise that not everyone will travel at the 40 km/h speed limit, but are likely to reduce their speed to some extent.

A lower speed limit in local streets will make them less attractive as a short cut, or an alternative to avoid delays on arterial roads. These streets may still need road safety devices installed, but by lowering speed limits we can sometimes avoid treatments that can be noisy, intrusive, impact on access and parking, and generally inconvenience local residents.

We are generally targeting local streets where there are less than 1,000 vehicles per day, and in reality many have only 300-400 vehicles per day.

Everyone pays rates, and when we install a physical treatment on a street, we are prioritising that street over others. Council often gets up to 5 requests for new traffic calming devices a week on local streets, and there just isn't funding to physically treat all these requests. Reducing the speed limit is the fairest way to treat road safety, and is an equitable expenditure of rate payer's dollars to treat all local streets rather than a select few.

When a road safety device is installed, some drivers chose another street and simply shift the problem. We have been chasing drivers around suburbs with road safety devices for over 45 year and have improved road safety in those individual streets only at a cost of \$40M dollars.

We have installed road safety devices in approximately 300 streets of our total 1,844 local streets. We spend about \$800,000 (1% of Council rates) each year on them and this amount is growing rapidly as we increase the number and have to replace and maintain the older devices.

The plan is not to include busier local streets which will remain at the 50km/h speed limit, however if overwhelming resident feedback is to have busier streets with a 40km/h speed limit, Council will review these roads on an individual basis.

SA experience found that the installation of 40 km/h resulted in reducing injury crashes from 29 injury crashes to 6 injury crashes (79% reduction) in Woodville West, from 49 injury crashes to 35 injury crashes (29% reduction) in Bowden/Brompton, and a 17% crash reduction in Unley. Speed data identified an average drop of 6 km/h in travel speeds when 40 km/h speed limits were installed.

Lowering the speed limit reduces the chance of a crash and the severity of it. Driving at 40km/h can save lives, and will only cost residents seconds off their delay driving.

Despite reducing the speed limit, we will still install road safety devices but only where there is a real need to do so due to crash records, driver speeds and the amount of traffic, or in character areas as part of Main Street redevelopments. This will allow us to focus spending on intersections and high traffic routes to improve safety and traffic flows on these roads, which will also deliver the wider reaching benefits for all residents.

We can continue to rely on road safety devices as the only measure to improve road safety, but it will take us many decades to make any real change across all of our local streets, and will negatively impact the amenity of local streets and have long term costs to residents.

In suburbs where we have installed the 40km/h speed limit, we rarely have residents ask to return it back to 50km/h. The only exception to this is that some drivers ask for busier roads (such as Hawker Street and Chief Street) to be put back to 50 km/h, however residents on these streets support the lower speed limits.

Council is committed to delivering on the State Governments commitment to reduce crashes by 30%, and we want our community to stop accepting crashes on our local roads as being inevitable and help us in making our local streets safer. While some crashes occur due to poor driver behaviour, many are just regular people making simple mistakes, and people shouldn't have to pay with their life or their health for one mistake if the cost to change that is as little as seconds in driving time a day.

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***APPENDIX B***

Appendix B consists of 61 pages.

# Evaluation of 40 km/h Speed Limit for Local Streets in the City of Charles Sturt

## Executive Summary

The ongoing demand for traffic calming measures on local access streets continues to well exceed the ability of Council to fund the installation of road safety outcomes for the wider community. The City of Charles Sturt is consulting with residents and installing 40 km/h speed zones where communities support lower vehicle speeds, however this approach has been achieving results for small pockets of communities only.

In the City of Charles Sturt a total of 487 casualty crashes and approximately 1,500 property crashes were reported in the period between 2010 and 2015 on its local road network which is made up of effectively low trafficked local access, collector and distributor roads. These reported crashes have a net cost to the community of approximately \$47.9M, as well as personal costs to families and friends of crash victims.

Research has shown that the benefits of lower speed limits are often misunderstood or not appreciated. Many residents feel that lowering speed limits will have severe impacts on travel time and will negatively impact on local access roads. Research into the impact of lower speeds in urban areas have identified that lowering the posted speed limit has minimal impacts to travel times, with delays to driving mostly occurring at intersections, undertaking turning manoeuvres and due to congestion and parking. The benefits of lower speeds go beyond improving road safety, and include improved local amenity and more harmonious traffic flows.

This discussion paper presents evidence quantifying the effects of lower speeds to road users and residents. These include vehicle speeds and volumes, travel time impacts, local amenity and environmental impacts, road safety outcomes and community attitudes. The research materials used have been drawn from South Australian, national and international research and best practice principles on lower speed limits.

# 1. Introduction

We all have a zero tolerance to any crashes involving our family and friends when it comes to road casualties, yet too often we define problem behaviour of others as the cause of road safety issues. While hoon behaviour is a leading cause of road safety issues, half of road crashes are normal people making every day mistakes. The key to road safety is creating a forgiving road environment that accepts that road users will make mistakes, and reduces consequential injuries and fatalities for these mistakes.

**In the City of Charles Sturt, every 3 days a road user is injured on Local Streets, robbing someone from their family and friends, taking healthy years off crash survivors and costing families and the community.**

This approach to road safety is known as the safe system approach which relies on improving road safety in 4 key elements:

- Improving roads and roadsides
- Increasing the uptake of safer vehicles
- Ensuring travel speeds are appropriate for all road users
- Safer road users

As a local road authority, the City of Charles Sturt has an important role to play in creating a transport system that is safe and forgiving by developing safety strategies that target these 4 key elements.

In developing safe system approaches to transport systems, the following need to be acknowledged:

- Human bodies are vulnerable, and are only able to absorb a certain amount of force from an impact before an injury or fatality is incurred
- People make mistakes – drivers, pedestrians and cyclists all make errors, and a transport system needs to compensate for these mistakes
- Shared responsibility – When a road crash happens, the immediate responsibility is on the party that acted in error, however the truth is that all parties involved contributed to the crash

By designing a transport system that is forgiving, as well as sharing responsibility, when one part of the system fails, another part of the system will compensate for this failure. Examples of this is a driver turning to look at something in the back seat and swerves onto the opposite side of the road, and an approaching driver being able to safely avoid the oncoming vehicle.

**Over the next decade, almost 1,000 people will be needlessly injured or killed on local roads in the City of Charles Sturt if we continue to accept current road safety conditions.**

This discussion paper has been prepared to address travel speeds in the City of Charles Sturt, one of the key elements of the safe system approach.

## 2. National and State Policy and Guidelines

### National Guidelines

The Australian Transport Councils 'National Road Safety Strategy 2011-2020' is the overarching document which provides the national framework for road safety, and is committed to by all State and Territory Governments.

The document sets forth the national standard for safe speeds, stating:

*Speed is highly implicated in a large proportion of serious casualty crashes. As well as having a direct causal role in many instances, speed contributes significantly to the severity of most crashes. Measures addressing vehicle speed can mitigate the severity of crashes regardless of the underlying reasons for the crash. The speed problem is partly a behavioural issue, with motorists frequently choosing to travel at illegal or inappropriate speeds. However, speed limits across the network should be aligned with Safe System principles.*

The strategy recommends the following actions for safe speeds for both Australia wide and in metropolitan areas:

#### Australia Wide

- Best practice speed enforcement
- Public information about the community benefits of lower travel speeds
- Introduction of risk-based national speed limit guidelines

#### Metropolitan Areas

- Reduce speed limits at intersections
- More speed limits of 40 km/h or lower in pedestrian and cycling areas

In the strategy, community acceptance is a key to ensuring compliance and the effectiveness of lower speeds. While pedestrians and cyclists strongly support lower speeds, there are mixed reactions from drivers to lower speeds on metropolitan roads. While evidence indicates that metropolitan trips are only affected by seconds, some drivers are concerned that speed limit reductions will greatly impact travel times and mobility.

The community has an expectation that travel speeds will be as high as possible and that roads should be designed to safely cater for these speeds. While there has been some gradual change in the public understanding of speed-related risk, the views of those strongly opposed to stricter speed management continue to have the loudest voice in Australia. In order to have the greatest change in this area will require the following:

- Ongoing dialogue with motoring associations and other key stakeholders
- Focus on improving community understanding of the importance of speed limits and speed limit compliance and how these contribute to road safety
- A national dialogue explaining the rationale for speed management actions and the environmental and economic benefits of lower speeds



## State Guidelines

The Government of South Australia's '*Towards Zero Together – South Australia's Road Safety Strategy 2020*', states that the biggest influences to reduce road casualties are infrastructure safety improvements, speed management, and improved driver behaviour and compliance. The document states that an important step in building safe road systems is to increase the involvement of local government in developing this system.

The South Australian government has developed a variation to the safe system approach in their road safety guidelines, which is provided below.

**The Safe System approach to road safety is built on several key principles:**

- Human Factors** – no matter how well we are trained and educated about responsible road use people make mistakes and the road transport system needs to accommodate this.
- Human Frailty** – the finite capacity of the human body to withstand physical force before a serious injury or fatality can be expected is a core system design consideration.
- Forgiving Systems** – roads that we travel on, vehicles we travel in, speeds we travel at, and communities we live in need to be more forgiving of human error.
- Shared Responsibility** – everyone has a responsibility to use the road safely with organisations, businesses and communities taking responsibility for designing, managing and encouraging safe use of the road transport system.

The strategy sets a target to reduce deaths and serious injury crashes by at least 30% by 2020. Between 2008 and 2010 53% of South Australia's serious crashes occurred in Metropolitan Adelaide, being 53 fatalities and 582 serious injuries. Research shows that in South Australia over half of fatal crashes and approximately 90% of injury crashes are the results of drivers making mistakes, not risk-taking driving.

***Travel speeds have consequences for crash risk and also for injury severity when a crash occurs. Biomechanical research into the capacity of the human body to absorb energy without significant harm suggests that safe travel speeds would ideally be less than 30km/h in areas where conflict with people walking and cycling is possible, less than 50km/h where side impacts are possible, and less than 70km/h on roads where head-on collisions are possible.***

The strategy states that the other benefits of lower speeds include:

- Better fuel consumption
- Lower greenhouse gas emissions
- Less traffic noise
- Better support for active travel modes

These benefits contribute to South Australia's environmental, sustainability and wellbeing objectives which have been set out in several state documents, including the 30-Year Plan for Greater Adelaide (2010). The strategy goes on to state that the safety benefits of small speed reductions are not always intuitively obvious and more public information will be provided to address the community's underestimation of these benefits.

In May 2015 the Department of Planning, Transport and Infrastructure for the Government of South Australia prepared an issues paper titled 'What more can be done to improve road safety?' This paper provided a background on road safety in South Australia and outlines various road safety measures that have been proven to reduce road trauma, as well as what more can be done.

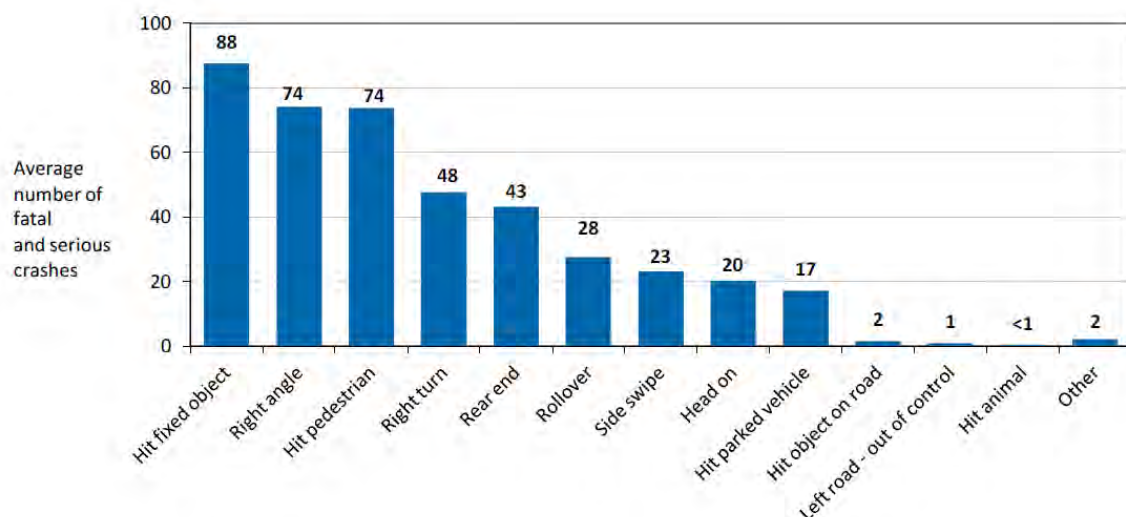
The Issues Paper states ***'A reduction in average travel speed across the road network – even by as little as 5 km/h - would be the most effective, swift way to reduce road trauma and would produce significant and immediate road safety benefits.'***

The Issues Paper estimates that travelling too fast for the driving conditions and inappropriate travel speeds on average contribute to **at least one third of fatal crashes** in South Australia. The introduction of the 50 km/h default urban speed limit in South Australia is estimated to have saved a total of 60 fatalities and 800 serious injuries over the 12 years between 2003 and 2014.

It was also noted that speed saves very little time – over a 10km journey in Metropolitan Adelaide, by increasing the average travel speed from 60 km/h to 65 km/h, a driver was estimated to save 46 seconds.

The Department of Planning, Transport and Infrastructure also prepared a Metropolitan Adelaide Fact Sheet in August 2015 about road crashes in South Australia. The fact sheet identifies that ***39% of all fatalities, 54% of all serious injury crashes, and 83% of all minor injury crashes on South Australian roads occur in Metropolitan Adelaide.***

The graph below for Metropolitan Adelaide identifies the average number of fatal and serious crashes ranked by different crash types between 2010 and 2014.



The Fact Sheet also identified that between 2010 and 2014, an average of 278 pedestrian crashes resulting in injuries per year had been recorded. Of those crashes, 26% resulted in either a serious injury or fatality. 1 in 8 serious injury crashes resulted in a pedestrian fatality.

## **Guidelines and Requirements for Installing Lower Speed Limits**

Comment was sought from the DPTI regarding their current guidelines for installing 40 km/h speed limits, with the following advice provided:

'The DPTI are in the process of consolidated existing speed control Operational Instructions into a single document titled 'Speed Limit Guidelines for South Australia'. The revised guidelines are currently in the process of being internally reviewed within DPTI, and previous feedback from the City of Charles Sturt has been taken into account to simplify the process for Councils looking to improve safety of their local streets.

While the guidelines have not been finalised, DPTI have identified that the community response and support rate requirements which were first specified in the April 2000 addendum to the standard are likely to be removed to give Councils more flexibility to conduct their own assessment of the suitability of the speed limit on their suburban streets. The guidelines will still emphasise the importance of community support for successful implementation of 40 km/h areas. The requirements for sign spacing are also likely to be reduced which will further reduce the cost to Councils to implement and maintain 40 km/h speed limit areas without impacting unduly on road users.

These changes to the guidelines will reflect DPTI's support of lower speeds as they contribute to the key actions from South Australia's Road Safety Action Plan 2013-2016 to 'create safer neighbourhoods and pedestrian friendly streets with lower vehicle travel speeds', and 'continue to work with Councils to review speed limits in response to requests from local communities'.

### 3. The State of Road Safety in the City of Charles Sturt and Metropolitan Adelaide

On the local road network managed by the City of Charles Sturt, being local access, collector and distributor roads, a total of 5 fatal crash, 49 serious injury crashes and 448 minor injury crashes were reported to SAPOL between 2010 and 2015. Approximately 1,500 property damage crashes occurred on these roads during this period. These crash statistics are based on reported crashes only. Many crashes, particularly property damage only crashes, are not reported. There is no requirements to report property damage crashes when damage is estimated to be less than \$3,000.

A report prepared by DPTI in 2012 '*Road Crashes in South Australia – Statistical Summary of Road Crashes and Casualties in 2012*' undertook an analysis of all crashes in South Australia in 2012. The analysis identified:

- On Council controlled roads, the City of Charles Sturt had 379 crashes recorded, the sixth highest ranked council in Metropolitan Adelaide
- On DPTI controlled roads, the City of Charles Sturt had 1,427 crashes recorded, the second highest ranked council in Metropolitan Adelaide
- Combined, the City of Charles Sturt ranked the second highest council in Metropolitan Adelaide for all crashes recorded with 1,806, averaging approximately 5 crashes per day

The Bureau of Infrastructure, Transport and Regional Economics Research Report 118 '*Cost of Road Crashes in Australia 2006*', provided the following estimates for the average costs of road crashes by crash outcome and jurisdiction for South Australia:

Fatal Crash	\$2,667,755	Non-hospitalized Injury Crash	\$14,722
Hospitalized Injury Crash	\$265,619	Property Damage Only	\$9,988

Based on the above figures, the cost of crashes in the City of Charles Sturt on local roads owned by Council are as follows:

Fatal Crash	\$13,338,775	Non-hospitalized Injury	\$6,595,456
Hospitalised Injury Crash	\$13,015,331	Property Damage Only	\$14,982,000

***A total of 5 fatal crashes, 49 hospitalised (serious) injury crashes, 448 non-hospitalised (minor) crashes, and approximately 1,500 property damage crashes were recorded between 2010 and 2015 on roads under the care and control of the City of Charles Sturt, costing the community approximately \$47.93M.***

The Bureau of Infrastructure, Transport and Regional Economics prepared an information sheet titled '*Fatal Road Crashes in Australia in the 1990s and 2000s: crash types and major factors*' (2011). The information sheet details the major factors which contributed crashes during this time. It is important to note that a crash can have several major factors i.e. a driver may be under fatigued and their vehicle may lose traction on a wet road, and as such the highest ranking factors were the ones that made a major contribution to a fatality.

Proportion of fatal crashes in which a major factor was:	1990	1994	1998	2002	2006
Adverse weather or road conditions	7%	9%	7%	6%	10%
Vehicle malfunction or defect	4%	5%	6%	5%	5%
Alcohol and/or drugs	32%	30%	36%	35%	35%
Fatigue	6%	8%	9%	8%	9%
Driver error, distraction or impairment (unintended)	22%	35%	52%	45%	39%
Excessive speed	19%	24%	29%	35%	33%
Other risk taking	5%	7%	10%	8%	10%

The data identifying the major crash factors have been sourced using from the National Coroners Information System, and due to coronial processes the timing for the availability of data results in significant delays in the data being available, and as such data post 2006 was available at the time of the paper.

Based on the major crash factors, excessive speed and driver error, distraction and impairment were present in a total of 72% of fatal crashes. These are factors that are constantly present in urban environments, and ones that can be addressed by improving how drivers see and treat local roads, and by reducing driver speeds.

### **Pedestrian Crashes in Metropolitan Adelaide**

As part of a 2014 review of pedestrian crashes in South Australia by DPTI, each of the councils that make up Metropolitan Adelaide were reviewed on road safety performance outcomes for pedestrians, with each councils ranked below based on the total of serious injury or fatal crashes.

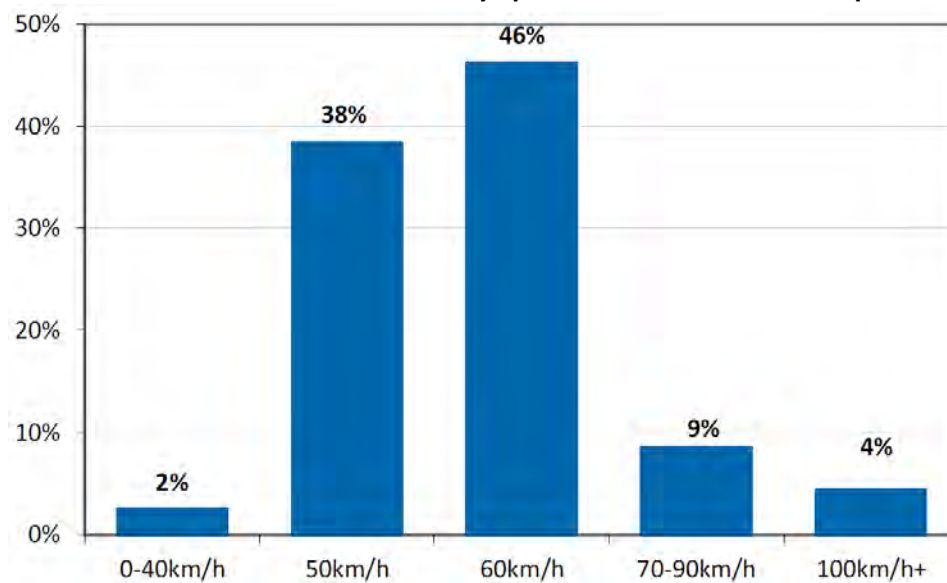
#### **Top 10 Councils Ranked by Serious or Fatal Pedestrian Crashes Occurred 2009-2013**

Local Government Area	Fatal or serious injury pedestrian crashes
Adelaide	61
Port Adelaide Enfield	42
Onkaparinga	35
Charles Sturt	34
Playford	33
Salisbury	33
Norwood Payneham St Peters	27
West Torrens	21
Marion	18
Mitcham	15

Based on data collected by the State Government, the City of Charles Sturt had the fourth highest number of pedestrians seriously injured or killed. One of the key points of this list is that Councils on this list have the majority of roads posted with speeds limits of 50km/h or more, which goes against the common idea that serious crashes only occur in high speed areas.

A breakdown of pedestrian crashes at different posted speeds in Metro Adelaide is provided below.

**Fatal and Serious Pedestrian Crashes by Speed Limit of Road in Metropolitan Adelaide**



Based on this information, 86% of pedestrian serious injury and fatal pedestrian crashes occur on roads with posted speed limits of 60km/h or less, roads that are often considered low speed roads by the general populace.

Further misconceptions regarding pedestrian road casualties are that the elderly are over-represented in casualty crashes. The highest represented age groups are 5-24 (27%) and 30-49 (27%) which combined represent 54% of all casualty crashes in South Australia. While these groups are the highest represented, the highest at risk pedestrian groups are the young and elderly due to the perceptual, cognitive and physical traits within these age groups resulting in increased risk of injuries and injuries being more severe.

## 4. What has the City of Charles Sturt Been Doing to Treat Road Safety Issues?

Like many local councils in South Australia, the City of Charles Sturt has followed the traditional approach of installing fixed infrastructure treatments to calm perceived traffic related issues on local access streets. While some of these treatments are merited, Council has been reacting to resident complaints and treating perceived road safety issues rather than actual road safety issues by installing traffic calming devices on streets with no crash history and minimal safety risk to road users. Often these streets would benefit from softer treatments that would also improve the liveability for residents.

While some residents believe this approach to be the best option for their personal needs, installing traffic calming devices on local access streets has resulted in Council funds being limited to treat important road safety issues on roads carrying higher traffic volumes and where real road safety risks are present. Council has also found that treating one street with traffic calming devices often results in pushing traffic issues onto adjoining roads.

***Since the 1970's, Council has treated approximately 300 streets of our 1,844 streets with over 720 traffic calming devices. At an average cost of approximately \$45,000, these devices have a total estimated cost of \$33M. To treat every road, over \$200M would be required, and these devices would require maintenance as well as replacement every 20-30 years, resulting in an annual cost of over \$10M.***

There is also an expectation from some residents that Council install traffic calming devices be installed to address perceived traffic issues, however few residents want these constructed outside of their properties, as they impact on-street parking, property access, amenity and can result in notable traffic noise. This results in infrastructure being required to be installed in compromised locations, which can mitigate any benefits these devices may have achieved.

Council's road hierarchy identifies the function of roads within the City of Charles Sturt. Arterial roads are roads under the care and control of DPTI, and are the major traffic routes through the City of Charles Sturt. Collector and distributor roads are under the care and control of the City of Charles Sturt and are higher order roads that move traffic from local access streets to the arterial road network. Because of the function that collectors and distributors play, these roads carry notably higher levels of traffic than local access streets, and therefore any road safety issues are more critical on these roads.

Because these roads serve a greater purpose to the community, Councils priority should be to focus physical treatments to treat traffic issues on collector and distributor roads, where funding will result in greater road safety outcomes for the whole community. As part of this commitment, Council is currently undertaking road safety audits on collector and distributor roads to identify and prioritise future upgrade work.

*Under national guidelines for cost benefit assessments, traffic treatments are installed based on the cost of crashes and the potential savings and benefits of treatments. As many local streets have low to no crashes, this limits the ability of Council to properly assess traffic treatments on local streets.*



## 5. Cost of Road Crashes to Council and the Community

*The cost to the community of crashes between 2010 and 2015 on roads under the care and control of the City of Charles Sturt is approximately \$47.93M.*

### **Impact of crashes on people**

First and foremost, crashes initially impact the people involved. These affects can include death, brain damage, including impact on cognitive functions, serious physical injuries reducing physical capabilities, including basic human functions such as walking and speech, and can require extensive medical treatments, minor injuries which can result in loss of work and ongoing medical treatment, and property damage which can result in significant financial burden and loss of personal transport

*While the people involved in the crash are initially impacted, the real impact of road crashes go well beyond them. Crashes can affect partners, children and family members, and to a lesser extent friends, carers and colleagues.*

#### Partners and Children

The impacts of loved ones being seriously injured or killed are wide and ranging. These impacts can include losing the ability to work and becoming financially dependent on one's immediate family, being reliant on a partner or children to manage a household which can include young children, and children and partners having to cope with both the physical and emotional changes of a loved one involved in a crash.

#### Family Members

It is not uncommon for relationships and families to break down when dealing with a loved one who has been significantly injured and changed after a crash. This can result in a previously independent child becoming completely dependent on other family members, resentment from family members towards being required to be a permanent carer and the financial pressure and time burden caring places on them, as well as depression from losing a loved one or seeing them changed beyond recognition.

While these changes are some of the more serious impacts of crashes on others, the impacts are not limited to the ones above. Road users are constantly faced with a vast array of issues and decisions to make when driving, riding and walking, and just one small misread or mistake can change more than just 1 life.

### **Impacts of crashes on the road network**

Road crashes also have impacts on the design and function of the road network, which can include:

- Significant traffic congestion and delays
- Can result in funding being redirected to deal with safety issues that have resulted in a crash, which can have significant safety benefits for all road users
- Can result in infrastructure being installed to prevent an accident, however this can impact existing travel habits of road users who change routes to avoid roads
- Can result in paradigm shifts where road users impacted by a crash will rethink the road environment and how they travel, including vehicle speeds

## 6. Benefits and Costs of Lower Speeds on Local Access Streets

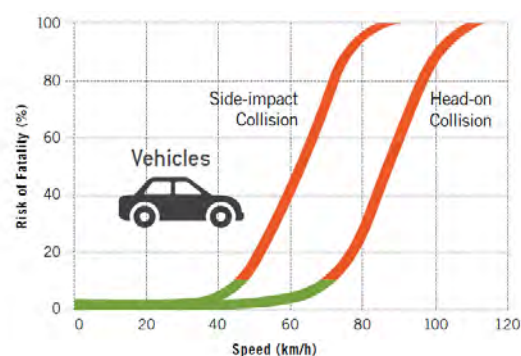
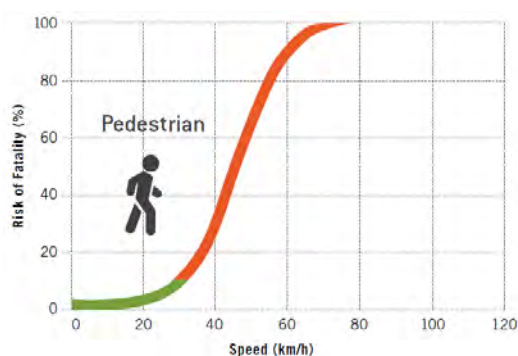
### Why should we consider lower speeds?

Lower speeds result in:

- More time for drivers to react to hazards on the road
- Decrease the distance required for a vehicle to stop –
  - A vehicle travelling at 40 km/h takes 17m for a driver to react to a hazard and a further 9m to stop, requiring 26m of total distance to stop.
  - A vehicle travelling at 50 km/h takes 21m for a driver to react to a hazard and a further 14m to stop, requiring 35m of total distance to stop
  - At 26m, a vehicle travelling at 40 km/h comes to a full stop, while a vehicle travelling at 50 km/h would still be travelling at 41 km/h
- Decrease the likelihood of losing control of the vehicle when manoeuvring
- Less chance of being involved in a crash, and lower severity crashes, as the less force involved in a crash means less impact required to be absorbed by those involved in the crash
- More time to allow and compensate for the human condition, which includes distracted drivers having time to react, drivers using cruise control on low speed roads being able to disengage the control and brake, and drivers not thinking and focusing on the task of driving

Based on Austroads 'Balance between harm reduction and mobility in setting speed limits: a feasibility study' (2005), the general impact speed tolerances for the different crashes are as follows:

- Car hitting pedestrian or cyclist – 30km/h
- Car hitting motorcyclists – 30km/h
- Car hitting a tree or pole – 40 km/h
- Side impact from car hitting car – 50km/h
- Head-on impact from car hitting car – 70km/h



Based on the existing Default Urban Speed Limit of 50km/h, the above impact speeds indicate that four out of the five crash types have a likelihood of resulting in an injury or fatality at this speed on most Council controlled roads.

Internationally accepted research by Nilsson established clear links between crash rates and average traffic speeds. A 5km/h reduction in average travel speeds of drivers resulted in 15% fewer serious injury crashes and 20% reduction in fatal crashes. Similarly a 5km/h increase in the average travel speed of drivers resulted in a 15% increase in serious injury crashes and 22% increase in fatal crashes.

In a study by Jeremy Woolley 'Further Insights into an Urban Area with Lower Speed Limits: the Unley Case Study' (2003), an analysis of crash data identified an absolute reduction of 17% in total crash numbers in the 40 km/h areas. Across all severity levels, road trauma was between 15% to 20% lower than the projected levels if the 50km/h speed zone was retained. This reduction was replicated in reducing the speed from 50 km/h to 40 km/h in Woodville West, which recorded a reduction of 79% in total crashes, and in Bowden/Brompton, which recorded a reduction of 29% in total crashes.

***Assuming a reduction of 17% of crashes by reducing the speed from 50 km/h to 40 km/h, this could result in a net saving to the Charles Sturt community of approximately \$1.6M per year.***

Speed is a critical factor in every serious crash, and speeding was directly attributable in an estimated 37% of fatal crashes

- 34% of fatally injured drivers and riders have a blood alcohol level over 0.05
- 37% of vehicle occupants killed were not wearing a restraint
- Studies have revealed 23.4% of vehicles exceed the stated speed limit

#### Travel Time

Archer et al. 'The Impact of Lowered Speed Limits in Urban and Metropolitan Areas' (2008) identifies that the factors that have the biggest influence on travel time are traffic congestion, traffic delays, congestion at intersections, and turning manoeuvres.

The research also identified that lower speed limits can result in improved travel times under certain conditions, as it can result in more harmonious traffic flows by reducing lane-change friction and speed difference between vehicles.

Notwithstanding this, lowering speed on local access streets could be expected to increase travel times, however this is expected to be negligible, as most local access streets are not long enough for travel times to be impacted in the City of Charles Sturt. Assuming a road was 400m long, a driver travelling at 50 km/h (including acceleration or deceleration) would travel in approximately 35 seconds, where a driver travelling at 40 km/h would travel it in approximately 40 seconds. This does not include delays at intersections or vehicles manoeuvring.

#### Fuel Consumption and Vehicle Emissions

A guidebook prepared by B. Degraeuwe, et al. "The Influence of Traffic Management on Emissions' (2011) states that the relationship between lowering speeds and fuel consumption/emissions created is a complex issue and not easily represented. The key to reducing fuel consumption and vehicle emissions is setting optimal speed limits that reduce the amount of braking and accelerating

Accelerating is the biggest generator of fuel consumption and vehicle emissions. By setting speed limits that reduce the ability of aggressive acceleration to occur, this will result in improving the air quality of local access streets. Notwithstanding this, if acceleration rates are the same, lower speeds might increase vehicle emissions and fuel consumption as the current vehicle fleet does not run as efficiently at lower speeds than at moderate speeds.

### Noise Pollution

Desarnaulds et al. 'Noise Reduction by Urban Traffic Management' (2004) identified that speed limitation from 50km/h to 30km/h results in a noise reduction of 2 – 4dB(A). This is an extremely small reduction in noise (normal breathing is approximately 10dB(a), however this importantly identifies that lower speed limits will not increase noise pollution on local access streets.

## **South Australian Road Safety Stakeholder Responses**

The City of Charles Sturt wrote to each of the major road safety stakeholders in South Australia to gain an understanding of their current position on lower speed limits on local streets. A copy of the letter requesting a response, as well as a response from each of the stakeholders is attached in the Appendices. A summary of each of the responses is provided below.

### DPTI

The South Australian Government's Road Safety Action Plan 2013 to 2016 supports the creation of safer communities and neighbourhoods. The Plan recognises that people friendly streets and safer roads are characterised by a necessity for lower vehicle travel speeds.

The relationship between speed limits, speed and crashes has been recognised by the Government, and has been demonstrated in South Australia with the introduction of the Default Urban Speed Limit of 50 km/h. On roads where the speed limit was reduced to 50 km/h, casualty crashes fell by 23%.

### Motor Accident Commission (MAC)

The MAC is supportive of reducing speed limits on local roads, as speed continues to be one of the main factors in a large number of serious injury crashes and fatalities on our roads.

MAC state that Councils consideration of a 40 km/h speed limit on residential streets is consistent with international trends to lower residential speed limits, and aligns with a large body of relevant road safety research and evidence.

### Centre for Automotive Safety Research (CASR)

The CASR are supportive of Councils pursuit to lower speed limits on local roads, as their evidence identifies 40 km/h speed limits to be well suited for local roads and better align to minimise harm among pedestrians, cyclists and motorcyclists.

The letter by CASR identify that lower speeds benefit all road users (cars, trucks, young, inexperience and elderly) and all crash types, both at intersections and mid-block. They also improve amenity of streets and lead to less overall emissions and fuel consumption.

### South Australian Police (SAPOL)

The SAPOL supports and encourages efforts to address issues of road safety and acknowledge the City of Charles Sturt's endeavours in the area, as speed is considered one of the leading causes of fatal and serious injury crashes on our roads.

#### Heart Foundation

The Heart Foundation is a strong advocate for lower speed limits, and have produced a series of evidence based resources regarding the correlation between encouraging people to walk, cycle and use public transport and reducing traffic speeds to reduce crashes and injuries.

The Heart Foundation recommend that a lower speed limit of 30 km/h be considered due to the evidence that the human body can generally survive an unprotected impact at this speed, however understand the importance of balancing the needs of different road users and the benefits that the reduction from 50 km/h to 40 km/h can produce.

#### RAA

The RAA support 40 km/h speed limits in heavily pedestrianized areas, where there are a high number of vulnerable road users, and there is clear definition of risks by way of the road environment.

The RAA recommend that if speed limits are to be lowered, the road environment is altered, either by Local Area Traffic Management, or other means, to achieve self-enforcement.

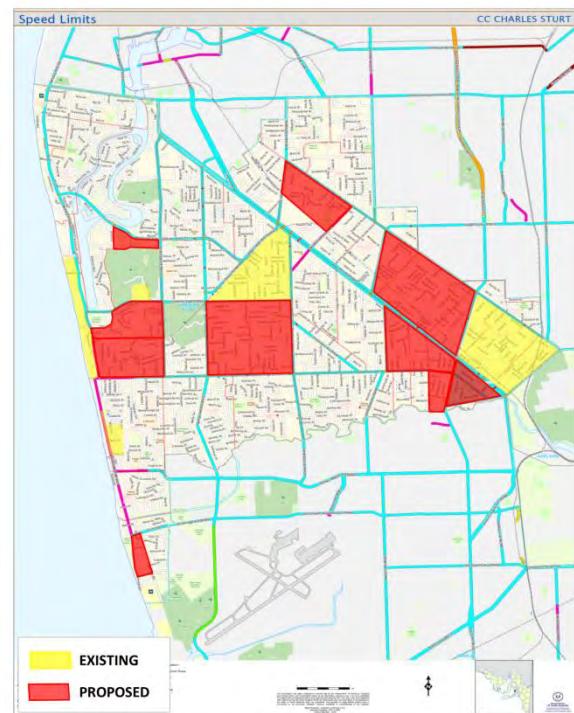
## 7. Study of Existing 40 km/h Speed Limits in Metropolitan Adelaide

40 km/h areas have been implemented in the following areas in Metropolitan Adelaide:

- |                                   |               |
|-----------------------------------|---------------|
| • Unley                           | City wide     |
| • City of Charles Sturt           | Various       |
| • Mitcham                         | Various       |
| • Norwood, Payneham and St Peters | Stepney       |
| • Prospect                        | Prospect West |

Existing 40 km/h speed zones in the Adelaide Metropolitan area; and existing and proposed 40 km/h speed zones in the City of Charles Sturt are provided below (map does not include the council wide speed approach) and includes the recommendation of the Transport and Parking Plans and the Local Area Traffic Management Plans which have been independently prepared for Council.

Map of 40 km/h speed-limited areas in greater Adelaide metropolitan region



A summary of studies for both the Unley and Woodville West 40 km/h areas has been provided below.

### Unley

In 1998, Unley extended an existing 40 km/h area to a council wide 40 km/h area, excluding arterial roads and designated collector roads. A study by Jeremy E Woolley et al. titled 'Evaluation of a South Australian 40 km/h Urban Speed Limit' (2001) was undertaken over 2 stages, with the first stage reviewed between 6-12 months after the introduction of the 40 km/h speed zone, and the second stage extended the monitoring period to 21 months post 40 km/h implementation.

The study reviewed the 85<sup>th</sup> percentile speed between 1998 and 1999 and between 1999 and 2000, with the results provided below.

Mean speed before speed limit lowered	Change in 85 <sup>th</sup> speed percentile 1998-1999	Change in 85 <sup>th</sup> speed percentile 1999-2000
<b>Greater than 40 km/h</b>	Fell 5.1 km/h	Fell a further 1.1 km/h
<b>Less than 40 km/h</b>	Fell 1.5 km/h	Fell a further 0.7 km/h

The study also reviewed the impact that implementing a 40 km/h speed zone on local roads had on traffic volumes, provided below.

Street characteristics	No. of sites	Mean volume reduction
<b>Minor residential</b>	46	3%
<b>Medium residential</b>	24	7%
<b>Major residential</b>	9	9%

Enforcement was a key issue, with the perception that the bulk of speeding through Unley pre-1998 occurred from people living outside of the Unley area. The reality was that approximately 40% of all speeding in Unley occurred from residents living in and around Unley. A survey of residents in 2000 identified that 16% of residents (self-reported) had been fined for speeding offences in the 40 km/h area of Unley, and the support rate of people who had been fined for the 40 km/h area was found to be lower than the general populace.

In a further study by Jeremy Woolley 'Further Insights into an Urban Area with Lower Speed Limits: the Unley Case Study' (2003), an analysis of crash data identified an absolute reduction of 17% in total crash numbers in the 40 km/h areas. Across all severity levels, road trauma was between 15% to 20% lower than the projected levels if the 50km/h speed zone was retained.

***The implementation of the 40 km/h speed limit in the City of Unley has generally been a success in terms of reducing vehicle speeds, volumes and improving resident amenity, and support for the scheme is still strong.***



## Charles Sturt

The City of Charles Sturt has implemented 40 km/h speed limits in multiple areas, including Bowden/Brompton and Woodville West.

An analysis of the Woodville West LATM was prepared in December 2006 by Dorrestyn and Co analysing the 40 km/h area that was installed in Woodville West in October 2001. The study compared data collected from 2001 prior to the installation of the 40 km/h speed zone.

Traffic volumes were collected at 10 roads in Woodville West, including:

- Gawler Street
- Holden Avenue
- Nicholls Street
- Patricia Street
- Pitman Avenue
- Todville Street at 2 locations
- Victor Avenue
- Alma Terrace
- Claire Street

A total of 8,026 vehicles were recorded on these streets in 2001, and this had reduced to 6,604 in 2006, a total reduction of 17.7%. While this may have some impact on traffic, this traffic reduction was considered consistent with results from other 40 km/h, which the report stated indicated that traffic was choosing to avoid Woodville West.

***Traffic speeds collected in 2001 identified an average speed of 47.6km/h, and an average speed of 41.8km/h was recorded in 2006, resulting in an average reduction of 5.8km/h.***

The biggest reduction in speeds were recorded on streets where roundabouts or road closures were installed, however streets such as Patricia Street and Claire Street all recorded notable reductions in speeds, with all excluding 2 streets recording a minimum reduction of 5.1% and a maximum reduction of 22.2%.

Collision data for both Bowden/Brompton and Woodville was sourced from crash records by the DPTI and are detailed below. The year of the installation of the lower speed limit has been excluded due to installation times, education periods and motorists becoming aware of the change in speed limit.

### Bowden/Brompton

Crash records are available from 1995, and as such only the 3 years prior to the installation of the 40 km/h speed limit in Bowden in 1998 was available. Between 1995 and 1997, 7 serious injury crashes and 42 minor injury crashes were recorded. In the 3 years after the installation of the 40 km/h speed limit in 1998 (1999-2001), 2 serious injury crashes and 33 minor injury crashes were recorded, a total injury crash reduction of 29%.

### Woodville West

Between 1997 and 2001, 5 serious injury crashes and 24 minor injury crashes were recorded. In the 5 years after the installation of the 40 km/h speed limit in October 2001 (2003-2007), 1 serious injury crash and 5 minor injury crashes were recorded, a total injury crash reduction of 79%.



While RBT was introduced in 2001, which may have had some impact on a reduction in crashes, the number of crashes between 1999 & 2004 increased in the neighbouring area of Woodville South, which indicates that the installation of a 40 km/h speed limit had positive impacts on crashes. This affect is also similar to what is experienced when installing traffic control devices, with traffic affects often pushed to nearby streets and areas, which indicates that lower speeds play a similar role to physical controls in improving driver behaviour,

***After the installation of 40 km/h speed limits, an injury crash reduction of 29% was recorded in Bowden/Brompton, and an injury crash reduction of 79% was recorded in Woodville West.***

#### **Summary**

It is evident from the 2 studies that that reducing the speed limit resulted in significant road safety benefits, including a crash reduction of 29% in Bowden/Brompton and 79% in Woodville West. An average speed reduction of 6 km/h was recorded in both Unley and Woodville West. The success of 40 km/h areas has been recognised by the DPTI, who are currently updating their speed zoning guidelines to reflect these road safety benefits and improving the process and reducing the red tape for Councils to have lower speed areas approved and installed on local streets.

## 8. Why are Lower Speeds Objected to?

What are the reasons for drivers to want to travel faster and why do people object to lower speeds? The Centre for Automotive Safety Research's 'Safer Speeds: An Evaluation of Public Education Material' (2013), provides a breakdown on why people feel that higher speeds are necessary. These and other reasons are provided below in red, and the response to each reason in blue.

To save time – There is a perception that driving at higher speeds improves travel times regardless of the trip length

Response - State Government research indicates over a 10km journey in metro Adelaide, increasing the average travel speed from 60 km/h to 65 km/h, a driver was estimated to save 46 seconds.

Perception that the risk is minimal – Many drivers believe their skills to be superior to other drivers, that cars are safer, that they know the road and the conditions, that their reaction times are adequate to deal with any risks, and that travelling at faster speeds is safe.

Response - The simple truth is that most drivers are average in their ability to drive and understand road conditions, and as we age our reaction time decreases. The more mature the driver, the better the experience but the slower the reaction to a potential crash

Following the posted speed limit – Drivers tend to drive to the posted speed limit as opposed to driving to the conditions

Response - While some drivers feel that speeds should be dictated by the road design and conditions, in urban areas, there are many factors which impact on road safety, including other road users and the need to be able to slow/stop with minimal notice

Normalisation – The belief that everyone else is driving faster so they must drive faster to keep up with traffic

Response - This pressure is a result of bad driving behaviour, including tail-gating and overaggressive driving

Changes to speed limits causing confusion – Speed limits along roads can change, which some drivers argue causes confusion with regard to speeds they should be driving at

Response - Council is working closely with the DPTI to address this issue and make sure that speed limit changes are clearly understandable and logical for drivers

Purpose of Speed Enforcement – Some drivers question the legitimacy of speed enforcement, arguing that it is revenue raising, and does not provide a road safety function.

Response - Speed limits are put up for the safety of all road users. On local access streets, Council works with DPTI to carefully select the best speed limit to improve safety and road function. SAPOL work independently to Council and DPTI

Hoon Drivers – Many road users believe it is hoon drivers that cause safety issues, not the speed of ordinary drivers

Response - Speeding at high speeds is listed as a hoon driving offence. Most crashes are the result of drivers not driving to conditions or being careless and taking risks.

Crashes are really only at intersections – Some drivers believe that crashes are mostly only at intersections, not along sections of road

Response – Between 2010 and 2014, an average of 37 fatal crashes and 383 serious injury crashes occurred each year. Of these crashes, 32% of fatal and 48% of serious injury crashes occurred at intersection, meaning the majority of serious and fatal crashes occurred along sections of roads

The speed limits aren't seen as legitimate – The reasoning behind the sign posted speed limit may not be readily apparent, and as such drivers may reject the limit based on their perception of what travel speeds are suitable

Response - The slower the speed, the less serious crashes are and the less crashes occur. Local access streets are not routes for cut-through traffic, but for residents, and slowing vehicles down in local/residential areas improves road safety and amenity for local residents.

Fun – Some drivers enjoy the thrill of travelling at high speeds

Response - Roads aren't racetracks. This line of thinking puts innocent road users at risk for personal thrills.

Habit – Some drivers feel they have always driven at higher speeds and don't believe that changes to their behaviour are necessary

Response - As Adelaide continues to grow, population densities increase, and more people use our roads. Old habits are particularly worrying for road safety, as complacent drivers are just as dangerous as hoon drivers

More money should be spent on making roads safer – Drivers argue the roads are unsafe, and more money should be spent on maintaining roads better and improving safety features to compensate for higher speeds

Response - Over 90% of accidents are caused by drivers, and many crashes could have been avoided by drivers driving more suitably to the road conditions. Most urban roads are maintained to a level that do not significantly contribute to road crashes except in instances of extreme weather

Everyone already drives at less than 40 km/h in my area, why bother?

Response - Installing a 40 km/h speed limit will formalise what people are already doing, and assist with reducing the speed of those not currently traveling at this speed.

## **But Crashes don't happen on my street or in my area!**

The general perception of residents is that most serious and fatal crashes occur in rural or high speed areas, however based on DPTI's '2015 Road Fatalities and Serious Injuries in South Australia' report, in 2015 a total of 25 fatalities and 146 serious injuries occurred on streets with a speed limit of 50 km/h. Roads with a speed limit of 60 km/h recorded 25 fatalities and 162 serious injuries. Roads with a 50 km/h speed limit made up 22% of all serious and fatal crashes recorded, and roads with a 60 km/h speed limit made up 26% of all serious and fatal crash recorded.

***In South Australia, almost half (48%) of all serious injury and fatal crashes occur on streets with a sign posted speed limit of 50 km/h and 60km/h. Speed is a critical factor in every serious crash, and speeding was directly attributable as a key factor in an estimated 37% of fatal crashes for the 2008 to 2010 period.***

## 9. Response Strategy

***A 40 km/h speed limit is proposed for ALL LOCAL ACCESS STREETS. This does not include arterial, collector or distributor roads except where community demand or road design identifies opportunities for lower speeds.***

It is evident that introducing lower speed limits will result in immediate reductions in crashes across the whole local street network. This is an affordable option as it also values the need for more road safety devices, but gives Council a strong mechanism to focus these treatments on heavily traffic roads where road safety is paramount.

The current process of installing road safety devices in response to community engagement is having localised affects, and this takes many years to deliver due to high costs of installation and significant ongoing maintenance costs that do not deliver an equitable result for road safety issues across the Council.

### **What roads would remain at their current speeds?**

The object of the proposal to reduce speeds to 40 km/h in the city of Charles Sturt is to target streets with local access and pedestrian/cyclist activities. An explanation of each of the different classified roads and what is proposed is provided below.

#### **Arterial Roads**

Arterial roads are under the care and control of the DPTI, and this proposal will not affect these roads. A list of arterial roads is provided below.

Old Port Road	Tapleys Hill Road	Holbrooks Road	Port Road
Military Road (part)	Manton Street	West Lakes Boulevard	Trimmer Parade
Park Terrace	Frederick Road	Clark Terrace	Grange Road
Cheltenham Parade	Addison Road	East Avenue	Hanson Road
Woodville Road	Adam Street	Torrens Road	David Terrace
Seaview Road (part)	Regency Road	South Road	Bower Road
Findon Road	Henley Beach Road	Burbridge Road	Kilkenny Road
Grand Junction Road	Crittenden Road	West Beach Road	

#### **Distributor Roads**

Distributor roads are roads under the care and control of the City of Charles Sturt, and are the major traffic routes moving people from local collector roads to the arterial road network. These roads generally carry between 3,000 – 10,000 vehicles per day. A review of distributor roads will be undertaken under a process separate to this proposal to review safety and conditions of these roads, including speeds, however it is envisioned that no change to the speed limits of these roads will occur as part of this process. A list of distributor roads is provided below.

Bartley Terrace	Athol Street	Glenroy Street	Ninth Avenue
Audley Street	First Avenue	Gray Street	Marlborough Street
Hawker Street	Sportsman Drive	Pope Street	William Street
Toogood Avenue	Ledger Road	Fife Street	Hartley Road
Valetta Road	Frogmore Road	Brebner Drive	Turner Drive

### Local Collector Roads

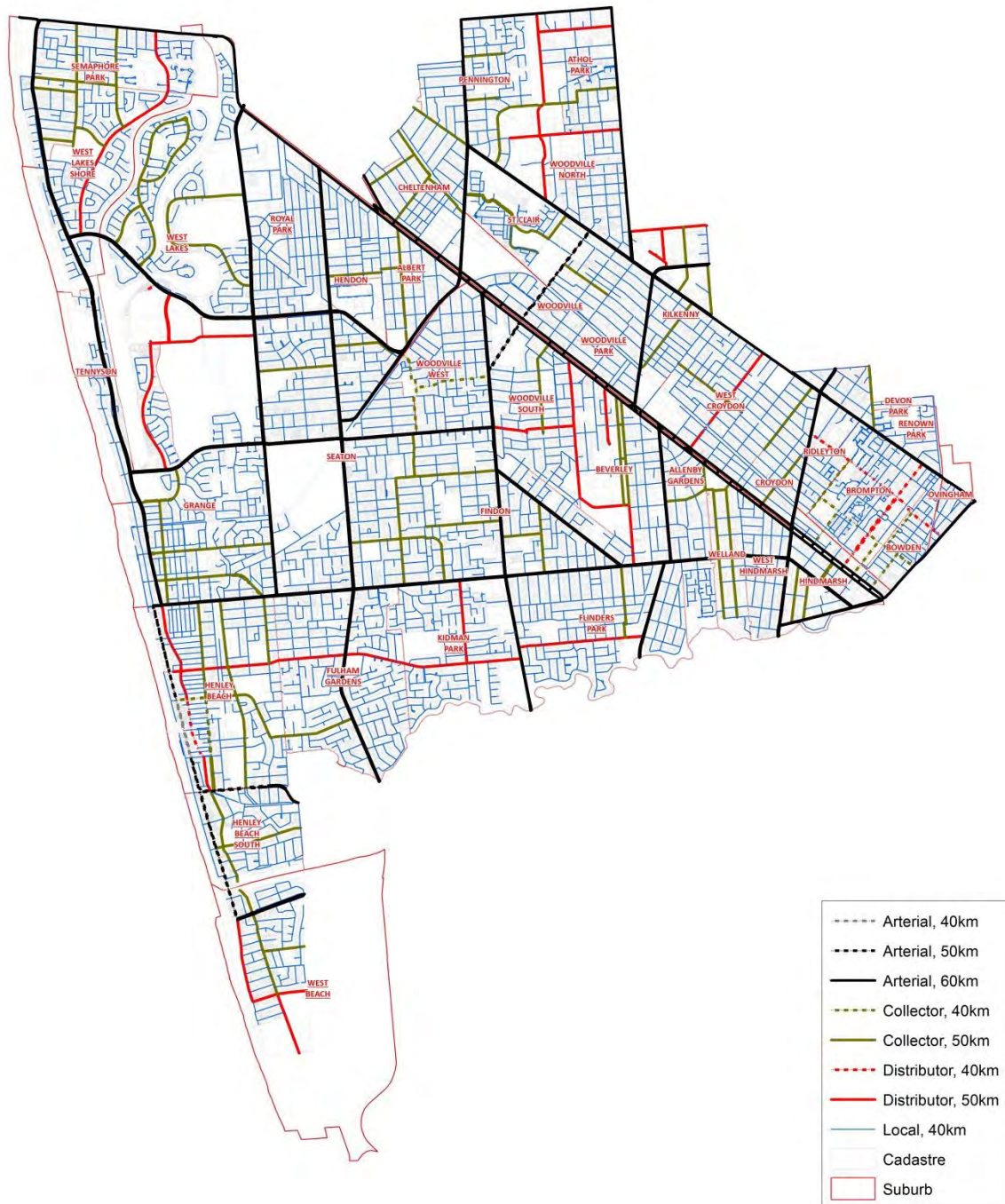
Local collector roads are roads under the care and control of the City of Charles Sturt, and move people from local access roads and properties to the distributor and arterial road network. They generally carry between 1,000 -3,000 vehicles per day, or may be designated as a bus route. A review of collector roads will be undertaken under a process separate to this proposal to review safety and conditions of these roads, including speeds. It is envisioned that some collector roads will be identified for lower speeds depending on the geometry of the road, land use and access to properties, etc. Where this is identified, further community consultation will be undertaken. A list of collector roads is provided below.

Fairford Terrace	Recreation Parade	Sansom Road	Corcoran Drive
Delfin Drive	Lochside Drive	Railway Terrace	Colston Street
Hawkesbury Way	Tewkesbury Street	Stroud Street South	Arthur Street
King Street	Northgate Street	Park Avenue	Alicia Street
St Clair Avenue	Brocas Avenue	Actil Avenue	West Avenue
Beaufort Street	Humphries Terrace	Goodall Avenue	Wilpena Terrace
Alfred Road	Ellen Street	Elizabeth Street	Queen Street
Harrison Road	Wood Avenue	Second Street	Coglin Street
East Street	Gibson Street	Sixth Street	Milner Street
Holden Street	Bacon Street	Welland Avenue	Frederick Street
Way Terrace	Brand Avenue	Frobisher Avenue	Sturdee Street
Charles Road	West Street	William Street	Oval Avenue
Hammond Road	Bridgman Road	Farman Avenue	Spence Street
Botting Street	Lexington Road	East Terrace	Pioneer Street
Balcombe Avenue	Kingborne Avenue	Angley Avenue	Sando Street
Dumfries Avenue	Jetty Street	Fort Street	Charles Sturt Avenue
Beach Street	Mitton Avenue	Cheadle Street	North Street
Cudmore Terrace	Simcock Street	Military Road*	Island Drive
First Avenue	Dunstone Road		

\*between Lexington Road and West Beach Road

### What will Council look like?

The following map shows all local access streets proposed to be included in the 40 km/h speed limits in blue.





## 10. What Our Community Thinks

The importance of community engagement is set forward in the City of Charles Sturt Community Plan 2013-2027, which states:

***Together, the elected Council and the Administration actively engages with the local community, other service providers and levels of government on matters that affect our community and that assist in good decision making and relevant service delivery.***

Effective community consultation actively seeks to engage the community with not just a greater understanding and appreciation for a project, but a sense of ownership. By encouraging local knowledge input and including the community in the Council decision making process; a project is not only more likely to be accepted by a community, but to be actively engaged in by a community.

***Lowering speed limits has never been a readily accepted solution in South Australia. While this is subjective, Adelaide is a predominantly car orientated city, from the amount of car parking provided to roads being first and foremost designed for vehicles rather than for all road users. Shifts in thinking are needed about how we use roads, and what function they should play in everyday life.***

Nevertheless, the City of Charles Sturt continuously delivers treatments to reduce speed in local streets. In order to overcome objections to lower speeds, Council is developing clear educational material and including residents in the process, and communities have shown through previous consultation processes that many are ready to accept lower speed and safer road environments. A summary of the previous consultation results for 40 km/h areas in the City of Charles Sturt over the past 5 years is provided below.

Project	Start Date	Support Rate	Project Outcome
Grange, north of Trimmer Parade	July 2011	76%	Implemented March 2012
Henley Square	June 2014	65%	Implemented Dec 2014
Grange, South of Trimmer Parade	May 2015	44%	Still in Progress
West Hindmarsh	September 2015	62%	Endorsed by AMC Feb 2016
Hindmarsh Industrial	December 2015	22%	Endorsed by AMC Feb 2016
West Croydon	November 2015	60%	Endorsed by AMC Feb 2016
Allenby Gardens, Welland and West Hindmarsh	November 2015	61%	Endorsed by AMC Feb 2016

The City of Charles Sturt has had 40 km/h speed zones operating for 18 years, and have continued to roll out 40 km/h Areas during this time. Importantly, no complaints regarding increasing the speed limit post installation of 40 km/h speed limits have been received. This

indicates that there is reasonable level of support within these areas for the reduced speed zones, and that greater community engagement is required to inform future potential 40 km/h areas of the benefits that lower speeds bring to both road safety and amenity. Council is also committed to ensuring that lower speed limit areas are operating effectively for the community, and a follow-up process is being developed to review driver speeds prior to and post implementation of 40 km/h, as well as garnering community feedback over the operation of the lower speed limits.

#### Community Engagement Material

The results shown above have been based on a typical community consultation approach of sending out letters to residents with information specific to their area. Recently the City of Charles Sturt has released a fact sheet on the benefits of 40 km/h areas which are now included in all information packs to residents, and new ways to hold community open days are being trialled to get more residents involved in the decision making process.

While this is a start, more work needs to be done in this area. As part of this proposal, Council initiatives to engage and educate the community could include:

#### **Education**

- Hosting open workshops and speak outs to demonstrate the difference lower speeds can make on our roads, and to discuss community concerns and objections.
- Work with local communities to create local knowledge bases, which will give residents a source of information relevant to their local area, such as local focus groups and identify local resident champions.
- Work with the Motor Accident Commission and Centre for Automotive Road Safety to develop advertising/video campaign and research based information for communities

#### **Implementation Strategy**

There are several options for how to implement 40 km/h speed limits on local streets in Council. Two of these are discussed below:

##### Option 1 – Continued implementation by precinct

This option continues the process of identifying an area bounded by arterial, distributor or collector roads and consulting with affected residents and businesses in this area. This will take time and have a community cost for individual consultation.

There are a number of options available by going precinct to precinct, and once a tipping point is achieved, where when say 65% of the Councils local streets have 40 km/h speed limits installed, the default on local streets in the City of Charles Sturt will be considered by Council to be made 40 km/h.

If no tipping point is in place, this may cause issues where an area with low supports rates are retained at 50 km/h while all adjacent areas are 40 km/h and could result in extensive delays and difficult decisions for Council to make. This may also result in replicating the negative results that Councils including the City of Burnside and the City of Norwood, Payneham and St Peters have recently received.



## Option 2 – Whole of Council survey

Statistical sampling could be done on a whole of Council basis to identify current support levels for 40 km/h speed limits, and a follow up statistical sampling based on a percentage of population from each Ward.

The positive of this option is that it will save time and money for Council in not requiring individual consultation for each precinct, and this could translate into more spending and focus on educational and promotional material.

Alternatively, surveys could be undertaken for all residents within Council, however this would carry significant costs and would be a time consuming process.

The risk with this approach is that if a negative support rate was received, it would leave Council in a situation similar to the City of Burnside and the City of Norwood, Payneham and St Peters, where these councils withdrew from the initiative to install 40 km/h city wide with the loss of immediate and real road safety benefits for the community.

### **Statistical sampling using phone surveys**

- This sampling can be done based on approximately 600 randomly selected residents, and will provide Council with 95% confidence that the results obtained represent current community feelings.
- Statistical sampling similar to that described above, however done based on a minimum of 1,100 residents randomized across Council, which would achieve a 99% confidence rate that the results obtained represent current community feelings

### **Non-statistical sampling**

The issue with this type of sampling is that only the people with polarised and strong views tend to respond, and the views of the silent majority are often not received.

- Consult with all Council residents using paper and online surveys, and have community open days similar to those currently held as part of 40 km/h local area consultations
- Develop a survey for the purpose of creating a transport profile for Council, identifying how people travel, what their travel needs are and their support levels for 40 km/h speed limits on local roads
- Print 40 km/h surveys on a page in the City of Charles Sturt's 'Kaleidoscope' magazine, for households to fill out and mail back. This option could be undertaken in conjunction with one or more of the statistical sampling options above

### Recommendation

It is recommended that Option 1 be used, with a tipping point of 65% for the whole of Council to become 40 km/h on all local streets. This provides a balanced approach that continues to roll out strong community engagement, and gives Council hands on experience in the local areas, which leads to better understanding of local issues.

## 11. Conclusion

The impacts of lower speed limits are often misunderstood or not appreciated. Many residents feel that lowering speed limits will have severe impacts on travel time and will negatively impact on local access. Research into the impact of lower speeds identify minimal impacts on travel time, with most delays occurring at intersections, whilst undertaking turning manoeuvres or parking and during traffic congestion. The benefits of lower speeds go beyond greatly improving road safety, and include improved local amenity and more harmonious traffic flows

Approximately 500 people were killed or seriously injured on local access streets in the City of Charles Sturt between 2010 and 2015. While individually treating streets can have some impacts on the amount of casualty crashes for individual streets if treated correctly, reducing the speed limits on local access streets would have a far greater impact to road safety across the Council, and is significantly cheaper than installing physical treatments.

Research on 40 km/h speed limits in South Australia identified significant reductions in speeds and crashes, as well as some reduction in vehicle volumes. Speed reductions recorded averaged approximately 6 km/h in both Unley and Woodville West post the implementation of 40 km/h speed limits. Crash data from Unley identified an absolute reduction of 17% in total crash, and across all severity levels road trauma was between 15% to 20% lower than the projected levels if the 50km/h speed zone was retained. After the installation of 40 km/h speed limits, a crash reduction of 29% were recorded in Bowden/Brompton, and a crash reduction of 79% was recorded in Woodville West.

Both national and international research indicates negligible impacts to travel times in urban areas on local access streets. Vehicle emissions may marginally increase, as the current vehicle fleets are not as efficient at lower speeds than higher, however by smoothing out the acceleration and deceleration of vehicles, this will result in significant reductions in vehicle emissions. Very marginal improvements in noise pollution were identified from reduced speeds.

For the success of this road safety initiative, the continual implementation of 40 km/h speed limits by precincts (Option 1) is manageable, programmable and provides time for education material to be developed and delivered regarding the benefits of the lower speed limits.

The important aspects of this approach is the need to agree in a delivery period and the tipping point (e.g. within 2 years and a tipping point of 65%) when Council would commit to reducing the speed limit to 40 km/h for the whole of the City of Charles Sturt.

## **Appendix A**

Letter from City of Charles Sturt seeking comment on The Case for Reduced Speed Limits on Local Roads

72 Woodville Road, Woodville  
South Australia 5011  
PO Box 1, Woodville SA 5011

T 08 8408 1111  
F 08 8408 1122  
charlessturt.sa.gov.au



9 October 2015

Name  
Address

Dear

### **The Case for Reduced Speed Limits on Local Roads**

I write to you seeking comment regarding speed limits on urban streets in South Australia, and the potential impacts of lowered speed limits for all road users, as well as residents and communities.

Urban development and local street designs have changed over the last decade, with narrow streets and high density housing becoming the norm in the inner urban areas of our capital cities. This has resulted in more people using less space, and greater potential for conflict between road users. Improvements in technologies have also resulted in shifts in the behaviour of road users and how they interact with their environment.

Since the 1970's, the City of Charles Sturt have followed traditional methods of addressing traffic issues by installing traffic calming devices, such as speed cushions and roundabouts, on local streets to address these problems. Over this time, we have installed over 700 measures at an estimated value of \$33m. While these measures may address one issue on a street, these issues tend to appear on adjacent streets, creating a domino effect that is difficult to address with limited funding available to councils.

Despite having traffic calming measures on approximately one sixth of our streets; over the past 5 years the City of Charles Sturt has experienced 32 serious injury crashes and 226 minor injury crashes occurring on local streets. This does not include local collector or distributor roads. The crash data identifies that these accidents are still occurring on streets with traffic calming measures, indicating that traditional methods to calm traffic are not achieving the desired safety outcomes.

Given the shortcomings and cost prohibitive nature of traffic calming measures, the City of Charles Sturt is now considering alternative measures to have a positive impact on road safety and the liveability of our streets. Speed limit reduction has been shown to be a key contributor to improving road safety in urban areas. The City is keen to explore this field, and is seeking comment from organisations and research agencies that have an interest in road safety.

We are seeking comments and research papers about the effects of reducing speed limits from 50km/h to 40km/h, which could include:

- The appropriateness of the default urban speed limit of 40km/h for local streets
- What data is available to make a clear and informed decision on the impact of lower speeds on local streets
- The general and specific links between speed and road risk, and how to manage speed to reduce the number and severity of road crashes
- The importance of a multidisciplinary approach to long term speed management
- Risks of introducing lower speed limits on local streets, particularly regarding compliance and driver behaviour
- What educational tools can be accessed to ensure our community understand the importance of speed management and to improve compliance
- What marketing and publicity strategies should be established to run in conjunction with education programs
- Evaluation methods to identify the success of lower speed limits

We would appreciate not more than a two page response with any research papers or links that you may wish to provide to include in a discussion paper being prepared to be presented to Council members. We advise that your response will be included in its entirety in the Discussion Paper which will be included in a publically available Council Agenda.

I appreciate your time in considering this information and look forward to reading your response.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'BR', with a stylized, sweeping flourish extending from the end.

**Bryan Ruhle**  
**Transport Engineer**

## **Appendix B**

Letter - Response from Minister of Road Safety – Honourable Tony Piccolo re: The Case for Reduced Speed Limits on Local Roads

HON TONY PICCOLO MP



Government  
of South Australia

Minister for Disabilities  
Minister for Police  
Minister for Correctional Services  
Minister for Emergency Services  
Minister for Road Safety

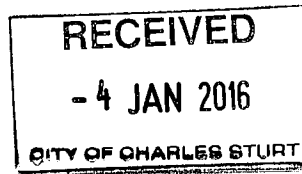
Level 2, 45 Pirie Street  
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GPO Box 668  
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Tel 08 8463 6641  
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[ministerpiccolo@sa.gov.au](mailto:ministerpiccolo@sa.gov.au)

MRS15D0538



Mayor Angela Evans  
City of Charles Sturt  
PO Box 1  
WOODVILLE SA 5011

Angela  
Dear Mayor

I refer to the letter dated 13 October 2015, from Mr Bryan Ruhle, Transport Engineer at the City of Charles Sturt, to the South Australia Police, seeking comment on the potential impacts of lowering the speed limit on local roads from 50 km/h to 40 km/h. As this matter falls within the portfolio responsibilities of the Minister for Road Safety, Council's letter was forwarded to me for a response.

South Australia's Road Safety Strategy 2020 *Towards Zero Together* and its Road Safety Action Plan 2013 to 2016 supports the creation of safer communities and neighbourhoods. The plan recognizes that people friendly streets and safer roads are characterised by a necessity for lower vehicle travel speeds. A key component of the acceptance of lower travel speeds and the setting of speed limits is that they are safe and appropriate for the type and condition of the road and roadside environment.

The Department of Planning, Transport and Infrastructure (DPTI) have developed an online resource in Living Neighbourhoods which provides a range of self-managing tools for communities and individuals to turn ideas into action. The program aims to create people friendly and safer streets through planned and practical people-centred local action at minimal cost. More information on this program can be found online at: [www.dpti.sa.gov.au/livingneighbourhoods](http://www.dpti.sa.gov.au/livingneighbourhoods).

Another key action in the Road Safety Action Plan 2013- 2016 is to continue to work with Councils to review speed limits in response to requests from local communities. In addition to providing direction to improve safety for all road users, the Strategy provides other information that Council may find useful such as the fatality risk to pedestrians at different collision speeds. Links that may be of assistance in the endeavour are provided below.

- Road Safety Strategy 2020 *Towards Zero Together*.  
[http://www.dpti.sa.gov.au/\\_data/assets/pdf\\_file/0020/82163/South\\_Australia\\_Road\\_Safety\\_Strategy\\_to\\_2020.pdf](http://www.dpti.sa.gov.au/_data/assets/pdf_file/0020/82163/South_Australia_Road_Safety_Strategy_to_2020.pdf)
- Road Safety Action Plan 2013 to 2016:  
[http://www.dpti.sa.gov.au/\\_data/assets/pdf\\_file/0010/113212/7803946\\_Road\\_Safety\\_Action\\_Plan\\_2013-2016.pdf](http://www.dpti.sa.gov.au/_data/assets/pdf_file/0010/113212/7803946_Road_Safety_Action_Plan_2013-2016.pdf)

To help educate and encourage the public to support speed management programs, it is important to understand that speed plays a role in all road crashes and the relationship between speed and the severity of those crashes.



The relationship between speed limits, speed and crashes has been demonstrated in South Australia with the introduction of the default urban speed limit of 50km/h in March 2003. On roads where the speed limit was reduced, casualty crashes fell by 23%. Similar results were achieved by other Australian jurisdictions when they introduced the 50 km/h default speed limit in built-up areas.

The following links provide general information in relation to this topic.

- Evaluation of a 50 km/h Default Urban Speed Limit for Australia, November 2001  
[http://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=5&cad=rja&uact=8&ved=0ahUKEwjv6o6JkM7JAhUGsJQKHbh\\_Dt8QFggzMAQ&url=http%3A%2F%2Fwww.monash.edu.au%2Fmiri%2Fresearch%2Freports%2Fother%2Fnrtcspe.pdf&usg=AFQjCNGJzpWlnWJ14ME487q7-dpcpwZlpA](http://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=5&cad=rja&uact=8&ved=0ahUKEwjv6o6JkM7JAhUGsJQKHbh_Dt8QFggzMAQ&url=http%3A%2F%2Fwww.monash.edu.au%2Fmiri%2Fresearch%2Freports%2Fother%2Fnrtcspe.pdf&usg=AFQjCNGJzpWlnWJ14ME487q7-dpcpwZlpA)
- The Impact of Lowered Speed Limits in Urban/Metropolitan Areas 2008:  
[http://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwjv6o6JkM7JAhUGsJQKHbh\\_Dt8QFggzMAM&url=http%3A%2F%2Fwww.monash.edu.au%2Fmiri%2Fresearch%2Freports%2Fmuarc276.pdf&usg=AFQjCNFO8uliXt6pvmaHwyj-LH8LQPxIaQ](http://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwjv6o6JkM7JAhUGsJQKHbh_Dt8QFggzMAM&url=http%3A%2F%2Fwww.monash.edu.au%2Fmiri%2Fresearch%2Freports%2Fmuarc276.pdf&usg=AFQjCNFO8uliXt6pvmaHwyj-LH8LQPxIaQ)
- Austroads website:  
<https://www.onlinepublications.austroads.com.au/>
- Towards Zero Together website:  
[http://www.dpti.sa.gov.au/towardszerotogether/road\\_safety\\_strategies](http://www.dpti.sa.gov.au/towardszerotogether/road_safety_strategies)
- Centre for Automotive Safety Research website:  
<http://casr.adelaide.edu.au/publications/>

Enclosed is a map showing current and proposed 40 km/h speed-limited areas in Metropolitan Adelaide.

I trust this information is of assistance.

Yours sincerely



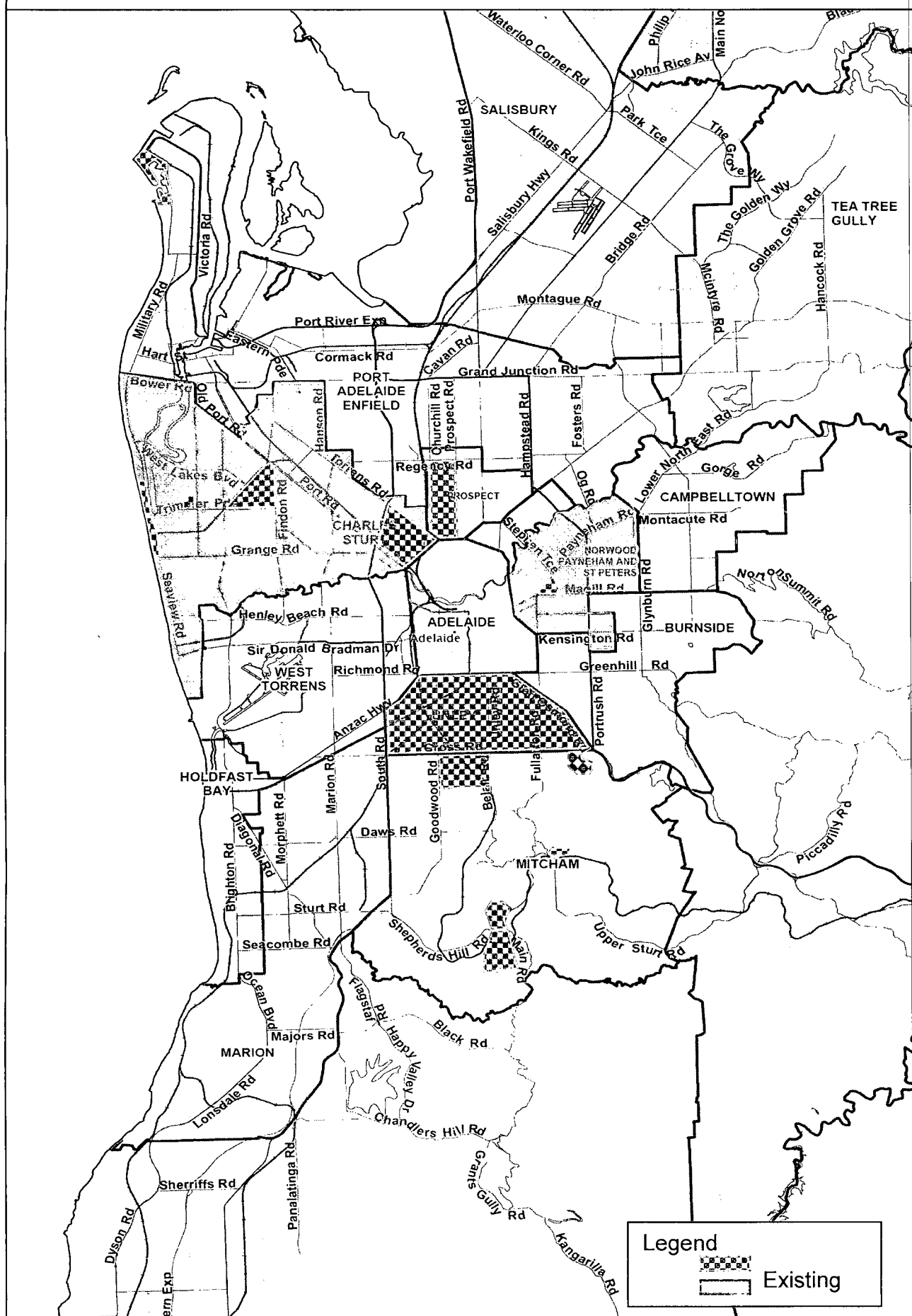
**Hon Tony Piccolo MP**  
Minister for Road Safety

23 / 1 / 2015

Encl:



Locality map of metropolitan Adelaide showing existing 40 km/h speed-limited areas and 40 km/h city-wide proposals of the Cities of Charles Sturt and Norwood Payneham and St Peters



## **Appendix C**

Letter – Response from Motor Accident Commission (MAC) Re: The Case for Reduced Speed Limits on Local Roads



**Motor Accident Commission**  
GPO Box 2438, Adelaide SA 5001  
**T** 08 8422 8100 **F** 08 8422 8101  
mac@sa.gov.au [mac.sa.gov.au](http://mac.sa.gov.au)

File Ref: MAC12/0011  
Doc Ref: MAC15D0759

22 December 2015

Mr Bryan Ruhle  
Transport Engineer  
City of Charles Sturt  
PO Box 1  
WOODVILLE SA 5011

Dear Mr Ruhle

**RE: THE CASE FOR REDUCED SPEED LIMITS ON LOCAL ROADS**

Thank you for your letter dated 13 October 2015 seeking comments and research papers on the effects of reducing speed limits on local roads.

The Motor Accident Commission (MAC) is pleased to contribute and is supportive of reducing speed limits on local roads, as speed continues to be one of the main factors in a large number of serious injury crashes and fatalities on our roads.

The Council's consideration of a 40km/h speed limit on residential streets is consistent with international trends to lower residential speed limits, and aligns with a large body of relevant road safety research and evidence.

The attached is a summary of relevant information for the Council's consideration.

We thank you for the opportunity to contribute and welcome any further correspondence or input regarding this matter.

Yours sincerely

**MICHAEL CORNISH APM**  
General Manager, Road Safety and Strategic Communications



**Government  
of South Australia**

## The appropriateness of the default urban speed limit of 40km/h for local streets

40km/h is regarded by many experts and community leaders globally as the upper end of safe urban speed limits for local roads. The most successful road safety countries have local residential limits of 40km/h, or 30 km/h, or 20km/h (see Figures below for examples: all photos by Soames Job, and available for the Council to use). The ETSC (European Transport Safety Commission) recommends all member countries lower urban residential roads to 30km/h, and Milan has adopted this in 2015, following many other cities and countries<sup>1</sup>.

Local roads are appropriate for lower speed limits for safety reasons because of driveways, children crossing streets, people (including children) riding bicycles, extensive use of residential streets for various activities, and the design of many streets which lack raised medians and other safety features of reasonably designed arterial roads.

**Photo 1: 30km/h zones are common for local roads in Europe**



**Photo 2: 20km/h residential zones in Switzerland (note narrowing of the street and speed humps)**



<sup>1</sup> <http://etsc.eu/30-kmh-limits-gaining-rapid-acceptance-across-europe/>

**Photo 3: 30km/h zones are becoming increasingly common in Brazil and many other countries**



**Figure 4: In France 30km/h is the required and engineered speed for pedestrian areas even on many major roads**



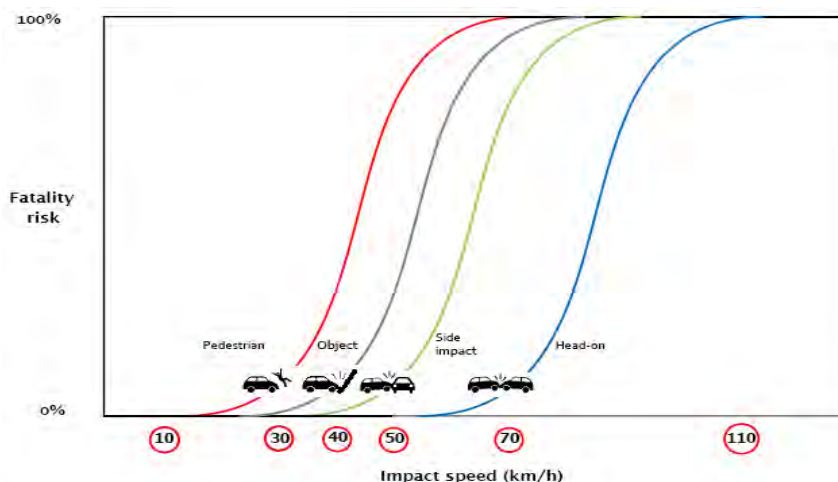
**What data is available to make a clear and informed decision on the impact of lower speeds in local streets**

*Risk for pedestrians*

Pedestrians (and cyclists) are most vulnerable to serious injury in collisions and are much more likely to die in crashes even at moderate speeds. Figure 5 presents a synthesis of the results of multiple studies of impact speed and risk of death. This figure shows that the risk of death for pedestrians rises most sharply in the moderate speed range, with the chance of survival more than halving between 40km/h and 50km/h impacts.



**Figure 5: The relationship between impact speed and probability of death, for various crash types.**



#### *The injury and lifesaving benefits of lowering speed limits generally*

Many studies in Australia and overseas have shown that lowering speed limits results in improved safety in terms of deaths and serious injury reductions. A few examples are noted below:

- A study from the NSW Centre for Road Safety evaluated crashes before to after a speed limit reduction. It shows a 26.7% reduction in casualty crashes with a reduction in speed limit from 110 to 100km/h on a rural highway in NSW. Reference: Bhatnagar Y., Saffron D., de Roos M. and Graham A. *Changes to speed limits and crash outcome - Great Western Highway case study*. In Proceedings of the 2010 Australasian Road Safety Research, Policing and Education Conference, 31 Aug - 3 Sep 2010, Canberra, Australian Capital Territory.
- Study from the Centre for Automotive Safety Research (CASR) evaluates long term changes in serious crashes in SA on roads where limits were reduced from 110 to 100, compared with roads where limits remained at 110. This study reveals large benefits. Their summary is: "The number of crashes on the subject roads since the speed limit was lowered was found to be 27.4 per cent lower than would have been expected if the subject roads had just followed the control road (roads that remained at 110 km/h) reductions." This reduction was statistically significant, and the number of people injured also fell by a similar amount. Reference: Mackenzie, JRR Kloeden, CN Hutchinson TP (2014). *Reduction of speed limit from 110 km/h to 100 km/h on certain roads in South Australia: a follow up evaluation*. CASR report, 2014.
- A particularly powerful study exists from Victoria because it shows both the increase in injury crashes and the decrease when speed limits are increased and lowered. It shows a casualty crash rate increase by around 25% when speeds were increased from 100 to 110km/h and a casualty crash rate decrease by almost 20% when the speed limit was decreased back to 100 km/h, after the safety problem was acknowledged. Sliogeris J, 1992, *110 kilometre per hour speed limit-evaluation of road safety effects*. VicRoads, Victoria, Australia.

#### *The injury and lifesaving benefits of lowering urban speed limits*

Specific studies of the value of reductions from 60 to 50km/h or from 50 to 40km/h are less common but do exist and show the substantial safety benefits we would expect based on the scientific evidence of the role of speed in crashes. The Netherlands has shown large reductions in casualties with reductions in speed limits from 50 to 40km/h and then from 40 to 30km/h on residential streets. A few examples from Australia are below:



- A study in SA showed that when the default urban speed limit was changed from 60 to 50km/h there was a significant reduction in mean speeds (despite clearly incomplete compliance) and a 23% reduction in casualty (i.e., injury and fatal) crashes on 50km/h roads. Interestingly, there was also a corresponding 16% reduction in casualties on 60 km/h arterial roads because speeds also reduced on these roads due to more signposting of limits. (The latter may also have occurred in part because people did not drive as fast on 60km/h roads because they were more used to 50km/h speeds). Reference: Kloeden, C. N., Woolley, J. E., & McLean, A. J. (2007). *A follow-up evaluation of the 50km/h default urban speed limit in South Australia*. Road Safety Research, Education and Policing Conference, Melbourne, Australia, 17-19 October 2007.
- The NSW Centre for Road Safety undertook a large scale evaluation of the safety value at 820 locations where speeds were lowered to 40km/h as school zones. This large scale study showed impressive reductions in crashes for all road users not just school aged pedestrians. Pedestrian casualties aged 5 to 16 decreased by 46% while all pedestrian casualties decreased by 45%. Reference: Graham, A, & Sparkes, P. (2010). Casualty reductions in NSW associated with the 40 km/h school zone initiative. *2010 Australasian Road Safety, Research, Policing and Education Conference 2 31 August – 3 September 2010, Canberra, Australian Capital Territory*

### **The general and specific links between speed and road risk, and how to manage speed to reduce the number and severity of road crashes**

A commonly held belief is that speeding increases the severity of crashes, but does not cause crashes. However, speeding contributes to both the severity of crashes (through increasing impact and energy) and the occurrence of crashes (through reducing capacity to stop in time; reducing manoeuvrability in evading a problem; making it impossible to negotiate curves and corners at speeds above those which simple physics will allow for the friction available; and causing others to misjudge gaps, for example by allowing pedestrians less gap to cross the road than expected because the vehicle is travelling above the speed limit).

Speeding is recognised as the largest single behavioural contributor to road deaths. Speeding is the key factor in road related trauma as identified in best quality research and reviews<sup>2</sup> including by world leading authorities: the World Health Organisation, World Bank, and Global Road Safety Partnership of the International Red Cross<sup>3</sup>, as well as the OECD<sup>4</sup>.

Furthermore, even in official figures speeding is generally underestimated as a factor in fatal and serious crashes, and thus benefits of reduced speeds can be larger than expected. This claim is demonstrated by the effects of speed cameras. For example, official estimates (based on Police reports) indicated that speeding contributed to around 35 to 40% of fatal crashes in the state of NSW, yet the independent evaluation of the NSW fixed speed cameras revealed that at treated locations, the cameras resulted in a 71% reduction in speeding and an 89% reduction in fatalities<sup>5</sup>. Because speed cameras only address speeding as a crash factor, clearly these results suggest that speeding was contributing to most fatalities

<sup>2</sup> Nilsson, G. 2004. *Traffic Safety Dimension and the Power Model to describe the Effect of Speed on Safety*, Lund Institute of Technology, Sweden.

<sup>3</sup> World Health Organisation (2008). *Speed Management: A road Safety Manual for decision makers and practitioners*. WHO/GRSP, 2008

<sup>4</sup> OECD (2006). *Speed Management. Report of the Transport Research Centre*, ECMT Paris.

<sup>5</sup> Job, R.F.S. (2011). Challenges in the safer speeds pillar of Safe System. Invited Paper presented to Australasian College of road Safety Conference- A Safe System- making it happen, Melbourne, September, 2011.



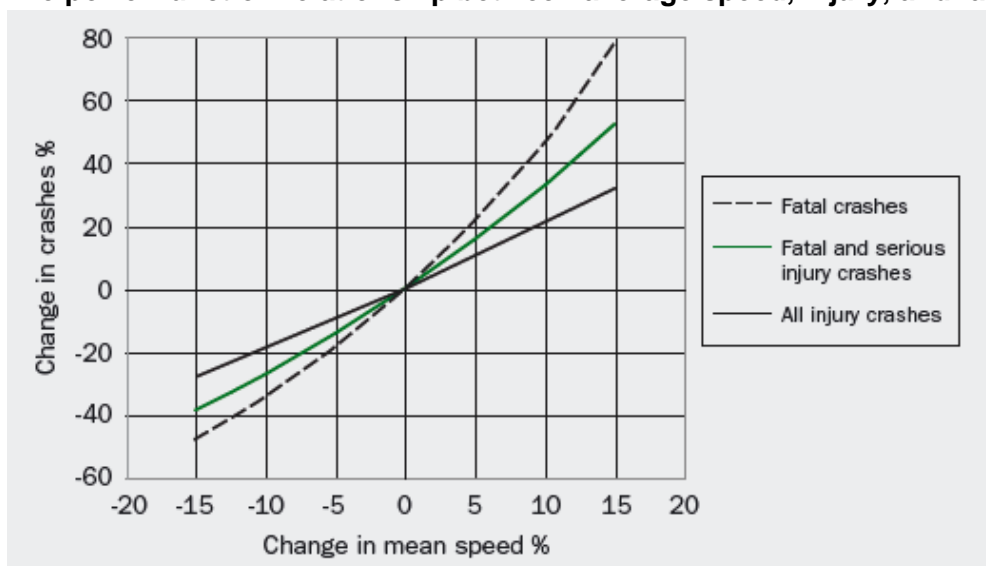
not merely 35 to 40%. Evaluations of point-to-point (or section control) cameras in Europe has revealed similarly dramatic reductions in serious crashes when speeding is managed.

#### *Risks of death and injury by speed*

An extensive analysis of many studies over many countries<sup>6</sup> found a strong relationship between average speed and the risk of injury and of death. The relationship is shown in Figure 6, and identifies that each 1km/h reduction in mean speed will, on average, yield around a 4% reduction in fatal crashes and a 3% reduction in serious injury crashes.

The scientific studies cited above of the effects of changes in speed limits are consistent with this size of effect.

**Figure 6: The power function relationship between average speed, injury, and fatal crashes**



One, little appreciated, reason for the substantial effects of even small changes in average travel speeds is that relatively small differences in speed at the beginning of an incident can produce surprisingly large differences in severity of the outcome. For example, one driver traveling at 100km/h versus another driver traveling at 110km/h can end with the first driver braking in time and having no crash versus the second driver with the same judgement and reaction times and the same braking as the first driver still traveling at around 59km/h where the first driver stopped, and most likely having a fatal or very serious crash. That is, a 10km/h difference at the start can produce a 59km/h difference at the end.

#### **The importance of a multi-disciplinary approach to long term speed management**

A multi-disciplinary approach is absolutely the right approach to speed management. The relevance of each pillar of the road transport system is noted below.

#### *Safe Roads and Roadsides*

It is most helpful if the perception of the road matches the speed limit. However, we should not expect this to be complete. People vary considerably in their degree of driving confidence and over-confidence, their

<sup>6</sup> Nilsson, G. 2004. Traffic Safety Dimension and the Power Model to describe the Effect of Speed on Safety, Lund Institute of Technology, Sweden.





perceptions of safety and of risk, and their preparedness and motivation to accept risk<sup>7</sup>. Thus, it is not feasible to expect everyone to agree on a safe speed based on the road alone, making speed limits essential. Nonetheless, the matching of speed limit and road environment assists with compliance as do clear and repeated signage. Road and roadside infrastructure are important elements of the system in the management of speed. A number of elements are relevant to speed and are especially applicable to pedestrian crashes as well as crashes more generally<sup>8</sup>. Examples include:

- Well-designed roundabouts reduce speeds, including even well-designed mini-roundabouts
- The narrowing of apparent lane width through use of lane lines reduces speeds
- Rumble zones reduce speeds, though they produce noise and thus may not be suitable for residential streets
- Speed humps and speed cushions reduce speeds though only for around 120m<sup>9</sup>.
- Chicanes or pinch points also reduce speeds.

### *Safe People: Education and enforcement*

Whilst enforcement is not MAC's role, it is relevant to comment on due to its interrelationship with awareness and education. There is value in explaining to the community why the change in speeds is being made. Some of the content of this document may assist with this.

It is important that changes are promoted to the community before they are enforced. This provides two broad benefits. First people are more accepting of the change if they feel that they were informed rather than it was a trick to catch them. Second, compliance is greater if people change their behaviour before any enforcement takes effect rather than waiting on enforcement.

Nonetheless, once the education and warning of change processes have occurred enforcement is an important follow-up activity to increase compliance from the minority of drivers who continue to deliberately exceed speed limits.

The evidence for the road safety value of speed enforcement, including speed cameras is irrefutable. Speed camera enforcement has been shown repeatedly to reduce the toll of deaths and injuries in case studies from many countries<sup>10</sup>. Dozens of studies attest to the value of speed cameras, as reviewed in a

<sup>7</sup> See: Prabhakar, T., Lee, S.H.V., & Job, R.F.S. (1996). Risk Taking, optimism bias and risk utility in young drivers. L. St.John (Ed.), *Proceedings of the Road Safety Research and Enforcement Conference*. (pp.61-68). Sydney, NSW: Roads & Traffic Authority of NSW, and

Fernandes, R., Hatfield, J. & Job, R.F.S. (2010). A systematic investigation of the differential predictors for speeding, drink-driving, driving while fatigued, and not wearing a seat belt, among young drivers. *Transportation Research Part F: Traffic Psychology and Behaviour*, 13, 179-196.

<sup>8</sup> A number of overviews and manuals exist relevant to these treatments. For example see:

WHO (World Health Organization) (2013). *Pedestrian Safety: A road safety manual for decision-makers and practitioners*. WHO: Geneva.

<sup>9</sup>Huang, J., Liu, P., Zhang, X., Wan, J., and Li, Z.(2011) Evaluating the Speed Reduction Effectiveness of Speed Bump on Local Streets. *ICCTP 2011*: pp. 2348-2357. [http://ascelibrary.org/doi/abs/10.1061/41186\(421\)234](http://ascelibrary.org/doi/abs/10.1061/41186(421)234)

<sup>10</sup> For example:

Cameron, MH, Cavallo, A & Gilbert, A. (1992). *Crash based evaluation of the speed camera program in Victoria 1990-1991*. Report 42. Monash University Accident Research Centre, Victoria Australia.

Job, R.F.S. (2012). Applications of Safe System Principles In Australia. *Paper to the 2012 Australasian Road Safety Research, Policing and Education Conference, Wellington, New Zealand, October*.

Keall, MD., Povey, LJ. & Frith, WJ. (2001). The relative effectiveness of a hidden versus a visible speed camera programme. *Accident Analysis & Prevention*, 33, Issue 2, 1 March 2001, Pages 277–284

Gains A, Heydecker B, Shrewsbury J, Robertson S. (2004). *The national safety camera programme -Three-year evaluation report*. Department of Transport. Road Safety Division. London UK 2004:1–110.





comprehensive analysis by the highly credible Cochrane Library<sup>11</sup>, and reports from the World Health Organisation<sup>12</sup> and the OECD<sup>13</sup>.

A possible sequence might be:

- Decision to adopt 40km/h
- Collection of baseline speeds and other data for evaluation
- Communication of this decision and the reasons, including safety and other benefits
- Communication of which streets will be made safety through 40km/h – including local media, website, letters/flyers to residents of improved streets, provision of stickers, outdoor advertising etc
- Signage of changed traffic conditions as well as new speed limit signage
- Installation of selected appropriate measures to assist drivers with the new speed limit (such as those noted above under safe roads and roadsides. These may also include extra signage of speed limits painted on the roadway to ensure visibility)
- An adjustment period
- Media of coming enforcement
- Enforcement
- Collection of evaluation data
- Collection of long term follow-up evaluation data.

### *Safe Vehicles*

Vehicles can be an important element of speed management, especially if they are fitted with speed zone warning systems or intelligent speed limiting systems. Unfortunately, there is no regulatory requirement for such systems. However, speed limit information which reaches the driver in the car (or on the motorcycle) is of course useful. It will be of assistance to have the revised speed limits notified as they occur, to allow for revisions of speed zoning maps in GPS devices.

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<sup>11</sup> Wilson C, Willis C, Hendrikz JK, Le Brocq R, Bellamy N. (2010). *Speed cameras for the prevention of road traffic injuries and deaths*. Cochrane Database of Systematic Reviews, Issue 11

<sup>12</sup> World Health Organisation (2008). *Speed Management: A road Safety Manual for decision makers and practitioners*. WHO/GRSP, 2008

<sup>13</sup> OECD (2006). *Speed Management. Report of the Transport Research Centre*, ECMT Paris.



## **Appendix D**

Letter – Response from Centre of Automotive Safety Research (CASR) - Re: The Case for Reduced Speed Limits on Local Roads



THE UNIVERSITY  
of ADELAIDE

CENTRE FOR AUTOMOTIVE  
SAFETY RESEARCH

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jeremy@casr.adelaide.edu.au

Mr Bruan Ruhle  
Transport Engineer  
City of Charles Sturt

9 November 2015

Dear Mr Ruhle,

**Re: The case for reduced speed limits on local roads**

Thank you for your letter seeking comments regarding the impacts of lower speed limits on rural roads. As you are likely aware, we have been conducting research into the benefits of lower speed limits for several decades now and I am encouraged that the City of Charles Sturt is giving the issue further consideration.

In relation to your specific questions about the effects of reducing speed limits from 50 to 40km/h:

***The appropriateness of the default urban speed limit of 40km/h for local streets***

The 40km/h speed limit is quite suitable for local roads and better aligned to harm minimisation principles amongst pedestrians, cyclists and motorcyclists. One great benefit of lower speed limits is that it is of benefit across all road users (cars, trucks, young, inexperienced and elderly) and all crash types (intersections and mid-blocks). The lower speeds will also improve the amenity of the streets and lead to less overall emissions and fuel consumption. It should also be noted that by international standards, our speed limits in Australia are high and in many parts of the world, a 30km/h speed limit is considered appropriate for residential areas. In this context 40km/h is regarded as a good compromise.

***What data is available to make a clear and informed decision on the impact of lower speeds on local streets***

When the default urban speed limit in South Australia was reduced from 60 to 50km/h, average vehicle speeds decreased by 3.8 km/h after three years and casualty crashes fell by 23%. Even on roads where the speed limit remained at 60 km/h, average vehicle speeds reduced by 2.1 km/h after three years and casualty crashes fell by 16%. It is important to note that very few other safety treatments are able to achieve this scale of reduction in an economically viable manner.

There are several studies from the City of Unley that demonstrate that the 40km/h speed limit has been a positive experience across a range of measures in addition to safety (these are attached).

***The general and specific links between speed and road risk, and how to manage speed to reduce the number and severity of road crashes***

This relationship has been quantified by our centre and the appropriate curve is attached. Fundamentally, we found that crash risk doubles for each 5km/h increase in travelling speed (when there was a 60km/h urban speed limit). Many people have difficulty accepting this as the risk of a crash is small, and doubling a small risk does not make it any more perceptible. The issue should therefore be considered as a community risk issue: if everyone were to travel 5km/h faster we would double the number of crashes overall.

Whenever speed limits have been lowered around Australia and internationally, road trauma has reduced. The empirical evidence is very clear on this.

We note that just putting a lower speed limit on a long wide street may not achieve desired outcomes. Council should be receptive to the need to fine tune its network with engineering treatments, enforcement and obtaining community ownership of the issue. ITS solutions such as speed feedback signs may also influence behaviours but need to be used in a way that does not achieve wear-out.

Our studies have shown that benefits from speed limit reductions continue to accrue for many years after the reduction.

***The importance of a multidisciplinary approach to long term speed management***

It is important that a holistic approach is taken to speed limit reductions. Solutions will be more robust if a multidisciplinary approach is taken and amenity and environmental benefits should also be emphasised.

***Risks of introducing lower speed limits on local streets, particularly regarding compliance and driver behaviour***

We have not identified any consequences that are detrimental. Compliance is often raised as an issue however all of the major speed limit reductions we have researched have achieved benefits largely in the absence of significant increases in enforcement, if any increases at all. It is however important that fine tuning is performed on the network to tackle persistent problem locations. Our studies show that lower speed limits tighten up speed distributions so there is less variation when selecting gaps in traffic for example.

***What educational tools can be accessed to ensure our community understand the importance of speed management and to improve compliance***

CASR have conducted an evaluation of publicly available speed education materials considering aspects such as evidence base, ease of understanding, potential to influence the general public, and support for the speed management principles of the National Road Safety Strategy (setting speed limits that match the road and environment and reduce crash impact forces to within the range of human tolerance, and increasing compliance with speed limits). Several elements of this report may be of interest to you:

- It contains a list of all the public educational materials reviewed, including web links to the relevant materials and the responsible organisation
- It identifies several examples of good public education materials
- It outlines options for either improving existing material or developing new materials.

A copy of this report is attached.

***What marketing and publicity strategies should be established to run in conjunction with education programs***

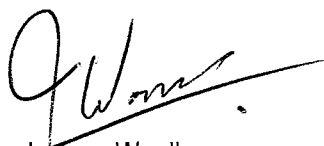
We should be careful about the short term results we can expect from education campaigns. For best chances of success, they need to be accompanied by enforcement activity and backed up wherever possible (in schools, signs on bins, shopping centres etc). If some form of community ownership is created, there will be a greater chance of success. Benefits other than reductions in crashes should also be emphasised. Businesses in 40km/h areas also thrive and travel time impact is minimal.

***Evaluation methods to identify the success of lower speed limits***

There is no substitute for a properly planned and executed evaluation. This means planning the measurements in advance and thinking carefully about the indicators of success. Often in local government areas, crashes are too infrequent to establish robust statistical relationships in short time frames, therefore a focus just on crashes may not be useful. Other indicators such as travelling speeds, traffic volumes and amenity might be more appropriate in the interim.

I hope that this information has been useful and I would be happy to hold further discussions about the subject if desired.

Regards,

A handwritten signature in black ink, appearing to read 'J. Woolley', with a long horizontal stroke extending to the right.

Jeremy Woolley  
Acting Director  
Centre for Automotive Safety Research  
The University of Adelaide

## **Appendix E**

Letter – Response from South Australian Police (SAPOL) Re: The Case for Reduced Speed Limits on Local Roads

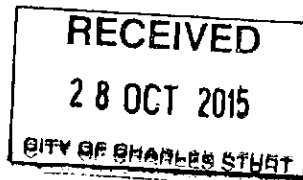


**SOUTH AUSTRALIA POLICE**  
**KEEPING SA SAFE**

**POLICE**

Your Ref  
Our Ref 15/3453  
Enquiries  
Telephone 8207 6595  
Facsimile

22 October 2015



Mr Bryan Ruhle  
Transport Engineer  
City of Charles Sturt  
72 Woodville Road, Woodville  
PO Box 1, WOODVILLE SA 5011

Dear Sir

I refer to your letter dated 13 October 2015 regarding a proposal to lower speed limits on local roads within the City of Charles Sturt.

I wish to advise that the questions being asked would be more appropriately answered by road safety stakeholders such as the Motor Accident Commission and the Centre for Automotive Safety Research.

Speed is considered one of the leading causes of fatal and serious injury crashes on our roads along with distraction, dangerous road users, seatbelts and drink and drug driving.

The South Australia Police supports and encourages efforts to address issues of road safety and acknowledges your endeavours in this area.

Yours sincerely

(Grant Stevens)  
COMMISSIONER OF POLICE



**Government  
of South Australia**

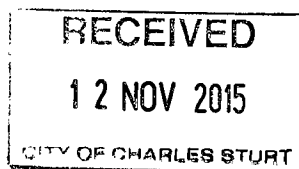


## **Appendix F**

Letter – Response from The Heart Foundation Re: The Case for Reduced Speed Limits on Local Roads

11 November 2015

Bryan Ruhle  
Transport Engineer  
City of Charles Sturt  
72 Woodville Rd  
Woodville SA 5011



National Heart Foundation  
of Australia (South Australian  
Division) Inc  
ABN 70 140 886 652

155-159 Hutt Street  
Adelaide SA 5000

PO Box 7174 Hutt Street  
Adelaide SA 5000

Telephone (08) 8224 2888  
Facsimile (08) 8223 1416

For heart health information  
1300 36 27 87  
[www.heartfoundation.org.au](http://www.heartfoundation.org.au)

**Re: The case for reduced speed limits on local roads**

Dear Mr Ruhle,

Thank you for the opportunity to provide comment regarding speed limits on urban streets in Charles Sturt. The Heart Foundation has for many years advocated for lower speed limits, and have produced a series of evidence based resources and position statements for councils and government. Encouraging people to walk, cycle and catch public transport goes hand-in-hand with reducing traffic speeds to reduce traffic injuries.

I have attached the Heart Foundation South Australian position snapshot *Slow Motion: Why reducing speed will promote walking and cycling*.

In the interests of safety, where there is pedestrian and cyclist activity, the Heart Foundation recommends lower speeds such as 30 km/h in residential areas, and 40 km/h around busy retail precincts.

**Why 30km/h?**

International evidence shows that human tolerance to injury by a car is exceeded if the vehicle is travelling at more than 30 km/h. While most unprotected road users survive if hit by a car travelling at 30km/h, the majority are killed if hit by a car travelling at 50 km/h<sup>i</sup>. In a study of the risk factors associated with injury severity of non-motorists in traffic crashes Eluru et al<sup>ii</sup> noted that patterns of injury severity were similar for pedestrians and cyclists. This relationship is the basis for the recommended 20-30 km/h speed limit in high pedestrian/cyclist traffic areas<sup>iii</sup>, which when implemented, contributes to the low pedestrian and cyclist injury rates in Netherlands and Germany compared with the USA, which generally has higher speed limits.

**What are the benefits of 40km/h speed limits?**

The setting of speed limits in urban areas in Australia is based mainly on achieving a balance between mobility and injury reduction. 40 km/h speeds have significant injury reduction benefits but traditionally, little consideration has been given to the additional, non-injury benefits. These are multiple and wide-ranging, and include increased active transport and the associated benefits of active living and reduced motor vehicle use. These are important for all members of the community as we are all pedestrians at some time, but are particularly important for people who rely on active and public transport as their primary mode (such as children and older adults who cannot or choose not to drive).

Cars also contribute significantly less noise pollution when travelling at lower speeds. This has important implications for the community, and particularly for children, who have been shown to be negatively impacted by traffic noise.

### **Myths: lowering speeds causes congestion and increases travel time**

Fildes et al<sup>iv</sup> noted that the cost impact of increased travel times arising from any change in speed limits is often less than perceived by road users:

*"It is generally considered that the greater the speed at which a driver travels, the faster the driver will arrive at the destination. While this direct relationship is largely true on highways with free flowing traffic, the assumption of shorter travel time for higher speeds is less justified in urban environments. Traffic flow in built up urban areas is more dependent on the number of intersections and type of traffic control used, as well as roadway capacity and congestion. A considerable share of urban driving may therefore be spent stationary or travelling at very low speeds."*

In addition:

- Congestion occurs anyway; at peak travel times because of standard working hours
- In busy urban environments the average journey speeds are considerably less than the set speed limits<sup>v</sup>
- Data shows that lowering speed limits in built up urban areas has a minimal impact on drivers' travel time<sup>vi</sup>
- lower speed limits reduce delays – meaning smoother progression of traffic flow<sup>vii</sup> or harmonic traffic rhythm<sup>viii</sup> – under *medium* congestion levels
- In Unley, travel time has *decreased* slightly since the 40 km/h speed limit<sup>ix</sup>
- Mobility for car drivers is not more important than mobility for pedestrians and cyclists.

We congratulate Charles Sturt council on successfully implementing 40 km/h zones since 1998, and leading the way in Grange, Bowden and Brompton, Tennyson and Woodville West.

If you have any further questions or require clarification do not hesitate to contact me

Kind regards



**Ms Tuesday Udell**  
**Senior Policy Advisor**

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<sup>i</sup> World Health Organisation (WHO) (2008). Speed management: a road safety manual for decision-makers and practitioners. Geneva, Global Road Safety Partnership.

<sup>ii</sup> Eluru N, Bhat CR, Hensher DA. (2008). A mixed generalized ordered response model for examining pedestrian and bicyclist injury severity level in traffic crashes. Accident Analysis and Prevention, 40(3): 1033-54.

<sup>iii</sup> World Health Organisation (WHO) (2008). Speed management: a road safety manual for decision-makers and practitioners. Geneva, Global Road Safety Partnership.

<sup>iv</sup> Fildes B, Langford J, Dale A, Scully J. (2005). Balance between harm reduction and mobility in setting speed limits: a feasibility study. Sydney, Austroads Inc.

<sup>v</sup> Taylor MAP: Network modelling of the traffic, environmental and energy effects of lower urban speed limits. Road and Transport Research. 9: 48-57, 2000.

<sup>vi</sup> Fildes B, Langford J, Dale A and Scully J: Balance between harm reduction and mobility in setting speed limits: a feasibility study. Sydney, Austroads Inc, 2005.

<sup>vii</sup> Fildes B, Langford J, Dale A and Scully J: Balance between harm reduction and mobility in setting speed limits: a feasibility study. Sydney, Austroads Inc, 2005.

<sup>viii</sup> Archer J, Fotheringham N, Symmons M and Corben B: The impact of lower speed limits in urban metropolitan areas. Melbourne, Monash University Accident Research Centre, 2008.

<sup>ix</sup> Dyson C, Taylor MAP, Woolley J and Zito R: Lower urban speed limits - trading off safety, mobility and environmental impact: 24th Australian Transport Research Forum. Hobart, 2001.

## Position Snapshot

# Slow Motion: Why reducing speed will promote walking and cycling

Increasingly cities and towns both in Australia and overseas, have adopted 40 km/h or lower speed limits to reduce traffic injuries and improve health, transport efficiency, the environment, economy and community liveability. In addition, traffic calming treatments have been used to slow down traffic where the speed limits have been lowered, or have been used to slow traffic in the absence of a speed limit change.

At a collision speed of 30 km/h pedestrians have some chance of surviving a crash but this rapidly decreases with higher speed, with the majority killed if hit by a car at 50 km/h or above.<sup>1</sup> In South Australia, the speed limit around some schools has been set to 25 km/h in recognition of pedestrian vulnerability. In Unley, a 40 km/h limit on all local streets has been in place since 1999 as well as in numerous other suburbs in Adelaide such as Bowden/ Brompton and North Haven. In some Melbourne suburbs and also on main roads through shopping precincts a 40 km/h speed limit has been applied. Brisbane CBD is now a 40 km/h zone. European cities such as Sweden, Germany and Britain are implementing 30 km/h speed limits on residential and shopping strips as world's best practice.

## The Heart Foundation (SA) works towards creating places that encourage more people to walk more often.

Initial indications of the effectiveness of the Swedish 30 km/h speed limit suggest that average speeds and traffic flow remain relatively unaffected while the maximum speed has decreased notably.<sup>2</sup>

In South Australia councils are considering reducing speeds in order to make their shopping precincts and mainstreets more attractive to pedestrians, cyclists and public transport users and to add value to the local economy.<sup>21</sup> Slower speeds add to the amenity of the area, by improving street environments. Currently vehicle speeds are a threat to safety of these road users. Councils are also considering reducing speeds in built-up neighbourhood areas.

## Recommendation

**In the interests of safety, where there is high pedestrian and cyclist activity, the Heart Foundation recommends lower speeds such as 30 km/h in residential areas, and 40 km/h around busy retail precincts.**

There has been some reluctance to undertake this effective public health measure because of community concerns that it will increase congestion, travel times and pollution; negatively affect public transport services and impact on the surrounding neighbourhoods. In isolation, speed reduction schemes could cause driver confusion.<sup>3</sup>

This position statement provides evidence for the positive benefits to health and wellbeing from reducing vehicle speeds.



## Arguments for and against speed limit reductions

Opponents say	Response
Lowering speed limits will cause congestion and increase travel time	<p>In busy urban environments the average journey speeds are considerably less than the set speed limits.<sup>4</sup></p> <p>Data shows that lowering speed limits in built up urban areas has a minimal impact on drivers' travel time.<sup>5</sup></p> <p>Lower speed limits reduce delays – meaning smoother progression of traffic flow<sup>4</sup> or harmonic traffic rhythm<sup>2</sup> – under medium congestion levels.</p> <p>Adjusting traffic lights in slower speed areas will minimise delays, generate smoother traffic flow and relieve congestion.<sup>4, 6</sup></p> <p>Drivers assume that driving faster will reduce overall travel time – not true in urban environments! Travel time is mostly influenced by frequent stopping or slowing down, such as at intersections and rail crossings.<sup>2</sup></p> <p>In Unley, travel time has decreased only slightly since the 40 km/h speed limit.<sup>7</sup></p> <p>Traffic congestion in urban areas is a major consideration for assessing various modes of transport. Lowering speed limits will encourage more walking and cycling, and this shift will add capacity to our roads and reduce the strain on public transport services.<sup>8</sup></p>
Changing speed limits will cause driver confusion	Speed limits should be one part of an overall strategy to calm traffic and improve the walking and cycling environments. <sup>9</sup>
Cars are more fuel efficient at higher speeds – fuel consumption and emissions will be higher	<p>Reducing speeds is not just about reducing pollution it's about driver safety, pedestrian and cyclist safety, improving health and increasing trader business.</p> <p>Emissions may be reduced under a 40 km/h speed limit compared to a 60 km/h.<sup>7</sup></p> <p>If people shift from cars to active transport there will be reduced noise and air pollution.<sup>10</sup></p> <p>Lower speed coupled with signal coordination can actually reduce emissions and fuel consumption.<sup>4</sup></p> <p>Aggressive driving such as accelerating hard from traffic lights and lane changing is a much bigger factor in fuel consumption than vehicle speed.<sup>2</sup></p>
Reducing speed limits are just about raising revenue through speeding fines	<p>No, it's about putting people and their safety first.</p> <p>It will improve the walkability and liveability of the city.</p>

### What is the problem?

- Less than 30% of South Australians are meeting their recommended daily physical activity levels for health gain.<sup>(vi)</sup>
- Sedentary behaviour is believed to be associated with the rise in overweight and obesity, and has been shown to increase an individual's risk of cardiovascular disease, and type 2 diabetes.<sup>(iv)</sup>
- For many older people a sense of not having enough time to cross a road safely can result in a loss of confidence which leads to a loss of mobility.<sup>(iv)</sup>
- Pedestrians and cyclists struck by a motor vehicle travelling at 50 km/h have about an 85% chance of being killed, while at 30 km/h this drops to 10%.<sup>(v)</sup>

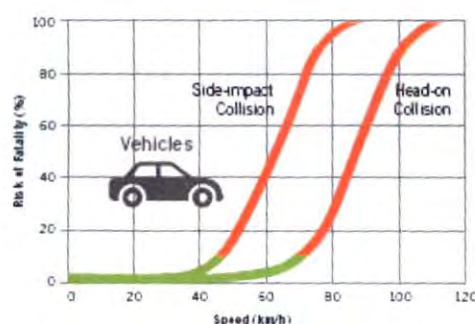


## How reducing speeds will improve health

Reducing speeds in neighbourhoods and shopping precincts makes the road system safer, or perceived to be safer, for all users.<sup>9</sup> This perception of safety removes a major barrier to people walking or cycling, and can encourage increased physical activity levels. In addition, the community's health and wellbeing improves through more active living, and results in environmental improvements such as less air and noise pollution and safer, healthier neighbourhoods.



1. **Increase the number of people walking and cycling every day**
  - Lowering speed limits in busy pedestrian areas will make these streets more walking and cycling friendly.
  - It's a good way to get kids back on bikes and riding to school. Evidence has shown that traffic calming measures such as speed reductions increase the number of children allowed to walk, cycle and play outside<sup>14</sup>.
  - Pedestrians and cyclists are legitimate road users but their needs for safe journeys are often over-looked by car-orientated transport systems.
  - Application of speed limits is often considered a traffic management issue – however it can also be part of wider improvements and initiatives to improve the walking environment.
2. **Increase safety for drivers, cyclists and pedestrians**
  - Lowering speed limits offers significant road safety benefits<sup>15</sup>.
  - Studies have found that speed reduction schemes improve people's perception of safety and increase involvement in regular physical activity.
  - Lowering speeds will lower fatal accidents, especially involving children.
  - In the UK it is considered that 30mph (48 km/h) is often too fast in many residential areas, particularly where there are a significant number of pedestrians, especially children, the elderly, the disabled and cyclists.



Source <sup>17</sup>

### The Impact of Speed on Pedestrian Survival

Research into the capacity of the human body to absorb crash energy indicates that speeds would ideally be less than 30km/h in where conflict with people walking and cycling is possible, less than 50km/h where vehicle side-impacts are possible and less than 70km/h where head on collisions are possible.<sup>17</sup>

In 2004 road safety research showed that lower vehicle speeds strongly correlate to the pedestrian's chance of surviving a crash. The figure here compares international and historic data to illustrate the increased likelihood of a pedestrian surviving a motor vehicle crash in lower motor vehicle speed environments.<sup>18</sup> A 2010 paper showed that school speed zone reductions were associated with a significant reduction in child pedestrian trauma in the identified school zones.<sup>19</sup>



## Do slower speeds mean longer travel time?

For communities overall, the small increase in travel time will be far outweighed by the reduced risk of car accidents associated with lowering speeds. This is a difficult argument to make to people who are concerned about their individual travel time. However, speed limits and speed travelled are not the major factors in travel time in urban environments. Of more significance are signal timings, number and type of intersections, or trouble finding parking. At rush hour in Adelaide CBD and feeder roads, the average travel speed is significantly slower than the speed limit. In addition, lower speeds mean fewer crashes, and fewer crashes means less delays. Improving intersection safety and function and coordinating signal timing are better ways to improve flow than increasing traffic speed.<sup>16</sup>

### Resources

Streets for People. A Compendium for South Australian Practice. 2012.  
<http://saactivelivingcoalition.com.au/>

### Terminology

**Congestion:** Also known as high traffic volume. Congestion occurs when preceding vehicles prevent the adoption of a discretionary free-flow speed. It Regular/cyclic congestion occurs at peak travel times such as early morning and late-afternoon, when car users are travelling to work, home or school. Irregular congestion occurs due to incidents such as break-downs and traffic accidents and impacts us more because of its random nature.

**High density urban areas:** city areas with pedestrians, especially children, the elderly, the disabled and cyclists.

**Mainstreet:** A street or street section that contains mixed-uses that enable social interaction and attract custom of the local and wider community.

**Traffic calming:** A general description of the methods used to physically enforce lower traffic speeds and to reduce traffic volumes.<sup>20</sup>

**Vulnerable users:** Pedestrians, especially children, the elderly and the disabled.

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## **Appendix E**

Letter – Response from RAA Re: The Case for Reduced Speed Limits on Local Roads



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24/12/15

Mr Bryan Ruhle  
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**THE CASE FOR REDUCED SPEED LIMITS ON LOCAL ROADS**

Dear Mr Ruhle,

We refer to your letter dated 13 October 2015 and would like to firstly apologise for the delay in our response. RAA would like to thank the City of Charles Sturt for the opportunity to provide comment for the Council's discussion paper and would offer the following comments on the subject of 50km/h to 40km/h speed reductions.

**Appropriateness of the default urban speed limit of 40km/h for local streets**

RAA do not support blanket approaches to speed limit reductions and believe that when speed limit reductions are considered, each road should be considered on a case by case basis that examines the risk factors along the road. The factors should include but are not limited to:

- 85<sup>th</sup> percentile speed of the road;
- Current infrastructure and level of safety built into the road; and
- Road geometry and road environment.

The latter is particularly important since these factors influence the motorists perception of an appropriate speed along a road, ultimately determining the 85<sup>th</sup> percentile speed. We cite some of the research in this field in our 2014 AITPM Conference Paper – [Developing an Approach to Speed Management on the Rural Road Network](#). In terms of 40km/h zones, we only support such reductions in heavily pedestrianised areas, where there are a high number of vulnerable road users and there is clear definition of the risks by way of the road environment, for example shared zones, dense shopping centre or café precinct.

**Risks of Introducing Lower Speed Limits on Local Streets**

If speed limits are not consistent with the road geometry and environment, they will not be self-enforcing. Speed limits are then only as good as the level of police enforcement available, or the Local Area Traffic Management (LATM) installed. Simply erecting speed limit signs in isolation is unlikely to achieve the desired outcome. Since police enforcement only provides benefit for defined and usually short periods of time, it is recommended that if speed limits are to be lowered, the road environment is altered, either by LATM, or other means, to achieve self-enforcement.

Further research can be found on the following AITPM conference paper:

Presenter(s): **Brett McClurg**  
Organisation: Cardno  
State: QLD

Paper: [Residential Street Cross Sections - How Wide?](#)

### **Educational Tools**

In a study undertaken by Brisbane City Council, radar activated speed signs were proven to reduce speeds on residential streets. The signs have optimal effect when rotated around sites and they can also collect valuable data for analysis. For further information, please refer to the following 2015 AITPM conference paper:

Presenter(s): **Anthony Burke**  
Organisation: Brisbane City Council  
State: QLD

2015 Paper: [Effectives of Portable Speed Warning Signs](#)

### **General Comments**

RAA understand from your letter that there have been 32 serious injury and 226 minor injury crashes in the study area, a number of which occur on streets that already have LATM installed. We have undertaken an analysis in the Department for Planning, Transport and Infrastructure's (DPTI) crash database of the serious injury crashes that have occurred in the study area over the past 5 years and have noted the following:

- 6 of the serious injury crashes occurred on roads on which the speed limit is already 40 km/h, in such cases a speed reduction on other streets would not have prevented these from occurring;
- A further 6 crashes involved a vehicle entering or leaving a private driveway and hitting a pedestrian and would not have been avoided by lowering the speed limit;
- Of the 32 crashes that occurred, we estimate that approximately 5 crashes might have been prevented if the speed limit had been reduced and all motorists strictly adhered to the limit; and
- For 9 of the crashes, there is insufficient data to determine whether speed was a factor in the crash.

Based on RAA's analysis of the crash data, we do not believe that there is sufficient evidence to warrant a reduction of speed limits in the area. The crash statistics suggest that it would be more appropriate to review the current arrangement of intersections at which crashes have occurred and also focus on driver education to address the pedestrian driveway crashes. It is also recommended that the council consider an assessment of footpaths to determine if roadside vegetation or furniture could be restricting sight distance and resulting in the relatively high number of driveway crashes.

Traffic calming can be effective at reducing speed in residential streets however the devices must be tailored to the individual road environment. RAA understand however that some measures may reduce parking and are therefore unable to be adopted due to opposition. There are a number of traffic calming measures which have proven to be effective in Europe and have only started to be trialed in South Australia. One example is the raised table at the intersection of Rundle Street and The Parade West in Kent Town. RAA has undertaken preliminary speed measurements before and after construction which have indicated very encouraging results. Further details on this project may be sought from DPTI. We would not recommend completely discounting LATM as a tool to assist in reducing speeds where there is a proven speed problem and would recommend that Council conduct further assessment into the various LATM options available.

Should you have any queries about our comments, please feel free to contact me on 8202 4703.



Ian Bishop  
**Traffic Engineer**