Safe Routes to Schools

Processes and templates
for local councils

August 2020

Contents

1 Council SRTS responsibilities and processes

This document describes council's responsibilities for SRTS. It also includes the processes for data collection and provides templates to support the surveys and local area observations. The last section focuses on the range of engineering improvements that council may consider to address the road safety and access issues identified in Stage 2 of SRTS.

1.1 Council SRTS coordinator responsibilities

The responsibilities for the council officer leading SRTS are:

- Lead the overall SRTS process and manage school engagement and partnership.
- Liaise between council and the relevant school(s) to establish the SRTS program and confirm council's and each school's commitment to proceed.
- Report regularly to council on SRTS progress.
- Participate in meetings with the school communities.
- Lead the data collection including:
    o School profile and context
    o Student catchment map
    o Online student and parent surveys
    o On-site investigation
- Following the data collection, prepare a map of the local area highlighting key problem areas, pedestrian facilities, priority active travel routes to school.
- Lead development of the SRTS action plan, in collaboration with school SRTS coordinator.
- Report to Council on the overall SRTS action plan and council commitments.
- Liaise with other organisations, such as the Department of Transport (VicRoads), public transport operators, local by-laws officers, and Victoria Police, where necessary.
- Liaise with residents concerning works in the local area.
- Participate in monitoring and evaluation activities and on-going liaison with schools to address new issues.

1.2 Council traffic engineer responsibilities

The responsibilities for the council traffic engineer

- Identify potential engineering improvements based on outcomes of Stage 2.
- Agree priority engineering improvements
- Report to council on engineering recommendations in the SRTS action plan.
- Seek funding for engineering improvements (within council capital works budget or through external grants).
- Lead the design, installation, maintenance and monitoring of engineering improvements associated with the local road network.
- Liaise with the Department of Transport for approval, funding, design and installation of engineering improvements on state roads.
- Liaise with residents concerning works in the local area.
- Liaise with other organisations, such as the Department of Transport, public transport operators, local by-laws officers, and Victoria Police, where necessary.
- Participate in monitoring and evaluation activities and on-going liaison with schools to address new issues.

2 Processes and templates for SRTS data collection

Council is responsible for leading the data collection in Stage 2. This section outlines the processes and templates needed for data collection, which are listed in the following table.

Data collection	Components
Local context	• School profile • Analysis of CrashStats • Other local data
Student catchment	• De-identified student address data • GIS mapping of data
Student and parent travel patterns	• Online student survey (delivered in-class) • Online parent survey (link shared via school communications)
Observations about travel routes, behaviours and road safety issues	• Parent/student local observations survey • Site investigation

2.1 School profile

Collect information from the school community to understand their context, travel patterns, and influences. Request information from each school on the following:

School information
• Contact information for: principal, SRTS coordinator • Total number of students • Number of students in each year level • Number of families • Growth/change in student numbers in recent years and projected?
Road safety education resources
• Does the school own or use any road safety education resources? What year levels? • Kids on the Move, or other in-class resources • Road safety incursions • Bike Ed • Are any teachers trained to deliver Bike Ed?
Travel patterns and school community

• How do children usually travel to school? (estimate proportion travelling by car)
• How many access gates are there into school?
• Is there a dedicated car park for staff?
• Are there any travel and access issues around the school?
    o Parent parking, drop-off/pick-up of children
    o Staff parking
    o Local area traffic congestion
    o School crossings and access for students walking, scooting and cycling
• Has the school participated in/is participating in any active travel to school programs such as Ride2School, Healthy Schools Achievement Program?
• Does the school have secure bike parking?
• Languages other than English spoken at home

| • Socio-demographic mix of the school community |
| • Parent engagement in school: does the school have a parents association? |

2.2 Analysis of CrashStats and other local data

Use CrashStats to find municipal crash data in the local school area and on pedestrians and cyclists in the target age group. CrashStats is an online database containing Victorian Road Crash Statistics from 1991 onwards for crashes where at least 1 person was injured.

Assess other local data to help identify any barriers or opportunities around road safety and active travel to school. This could include customer complaints to council, new development information etc.

2.3 Map student catchment

Ask the school to provide de-identified home address data of students. This means address information only, without any names or other identifiers. A school principal usually seeks permission from school council. Local council ensures that address data is kept secure and the catchment map is shared only with the project working group to inform the SRTS.

Council maps the address locations to produce a 'student catchment' around the school, which shows the distribution of students living locally. Council is usually able to map the approximate location of individual addresses to ensure privacy. The catchment mapping helps to:

- Assess the distances students are travelling (how many live within and beyond walking and cycling distance)
- Identify significant clusters of students and likely main travel corridors and road crossing points, which will inform priority travel routes.

2.4 Online student and parent surveys

These surveys help to understand current travel patterns and barriers and opportunities for road safety and active travel. It is kept very simple so that all students, Prep to Grade 6 can complete the survey. Survey questions are included in the following table. The steps involved are:

- Set up the two surveys (parent and student) using an online survey platform such as SurveyGizmo or SurveyMonkey.
- Brief teachers (or ask school coordinator) to explain the survey purpose
- Create a simple 'how to' guide for teachers to answer any questions they may have from students about the survey
- Students should complete the survey in-class. Teachers will need to guide younger students to complete the survey. Share the student survey link with the school for teachers to access
- Share the survey link for parents through usual school communications. Prepare an article explaining the survey purpose and encourage parents to complete one survey for their family
- Keep the survey open for two weeks to give the teachers and parents time to respond
- Send a reminder to complete the survey if response numbers are low (to teachers via the school coordinator, and to parents via an email from the school)
- Create simple summary reports on the survey results. Use diagrams and tables to keep information easy to read. Group individual responses into themes and highlight specific actions suggested by students and parents/carers.

2.4.1 Example article for parent/carer survey

Here is an example article to distribute to parents/carers asking them to complete the online survey:

"Our school is participating in a survey to understand how our students usually travel to school and to identify any road safety issues or concerns in the local.

The survey will take just a few minutes to complete. Click on the link below and answer a few short questions about your child's travel to and from school.

[insert survey link]

I strongly encourage you to complete the survey once for your household. The survey will be open until [insert date two weeks from article]. All data collected is anonymous and your participation is voluntary (and appreciated!).

This survey is part of our school's Safe Routes to Schools program. This is a partnership with [insert council] and aims to build improve road safety and encourage more walking, scooting and cycling to school through a shared program of reengineering improvements by council, and school-led actions including road safety education, encouragement events and activities.

We will be sharing the results of the survey and more information about SRTS in coming weeks."

Student survey questions
- What grade are you in? (multiple choice)   - Prep   - Grade 1   - Grade 2   - Grade 3   - Grade 4   - Grade 5   - Grade 6   - How do you get to school most of the time? (3 or more days a week) (multiple choice)   - Walk (all the way from home)   - Ride a scooter   - Ride a bike   - Car   - Bus   - Tram, train (if applicable, leave out if not)   - If answer is "car" insert follow on question (as skip logic) (multiple choice)   - Do you sometimes walk, scoot or ride a bike to school?"   - Yes – at least once a week   - Yes – once or twice a month   - No – not this year   - If answer is "walk, scoot, ride a bike, public transport" insert follow on question (as skip logic) (multiple choice)   - Do you sometimes come to school by car?"   - Yes – at least once a week   - Yes – once or twice a month   - No – not this year   - How would you like to travel to school most of the time? (asked to all students)   - Walk (all the way from home)   - Ride a scooter   - Ride a bike   - Car   - Bus   - Tram, train (if applicable, leave out if not)   - Other – please answer (may include skateboard etc)   - For Grades 3-6 include an open question "What is one thing that would make it easier for you to walk, scoot or ride to school more often?"

Parent survey questions

What grade is your child/children in? (multiple choice)
- o Prep
- o Grade 1
- o Grade 2
- o Grade 3
- o Grade 4
- o Grade 5
- o Grade 6

How does your child/children get to school most of the time? (3 or more days a week) (multiple choice)
- o Walk (all the way from home)
- o Ride a scooter
- o Ride a bike
- o Car
- o Bus
- o Tram, train (if applicable, leave out if not)

If answer is "car" insert follow on question (as skip logic) (multiple choice)
- o Does your child/children sometimes walk, scoot or ride a bike to school?"
  - ▪ Yes – at least once a week
  - ▪ Yes – once or twice a month
  - ▪ No – not this year

If answer is "walk, scoot, ride a bike, public transport" insert follow on question (as skip logic) (multiple choice)
- o Does your child/children sometimes come to school by car?"
  - ▪ Yes – at least once a week
  - ▪ Yes – once or twice a month
  - ▪ No – not this year

What are the 3 main reasons your child/children are usually driven to school? [Select the 3 reasons that apply most to you.] (as skip logic for people who answer 'car'. Use checkboxes)
- o It's quicker to drive and park than it is to travel another way
- o It is on the way to or from my other activities, such as travel to work
- o There are other children in the family to drop off
- o The school is too far away for them to travel another way
- o There are road safety dangers between home and school
- o They are too young to travel independently
- o I am worried about other personal dangers to them
- o Other – please tell us

What are the 3 main reasons your child/children usually walk, scoot, ride or catch public transport to school? [Select the 3 reasons that apply most to you.] (as skip logic for people who answer not car. Use checkboxes)
- o It is a short distance from school
- o I do not have a car available
- o No one is available to drive them at that time
- o My child is ready to travel independently
- o I like my children to be independent
- o It is healthy for my child to be active
- o The area is quite safe
- o Other – please tell us

What is one thing that could make it easier or safer for your child/children to more often walk, scoot or ride their bike to school?

2.5 Parent/students local observations guide

Prepare a simple local observations survey for students and parents/carers to complete.

- Include instructions and suggested observation checklist on one side of an A4 or A3 sheet.
- Insert an easy-to-read map of the local area on the other side with the school at the centre. It should cover the whole school zone and up to 2km travel distance from school.
- Ask parents/students to mark on the map their usual travel route (by walking, cycling or driving)
- Distribute surveys to families for completion (alternatively have a large map available at a school event for families to complete at a 'pop-up' stall)
- Collect all responses, collate answers to specific issues and create a summary map that identifies the most popular routes to school and mark any identified location-specific issues.

Local observations questions

Page 1: Include survey instructions, list of things to consider and space to provide more details about these considerations and location-specific issues marked on the map.

This survey is to help identify common travel routes to school any road safety problems or access issues in the local area. Please complete one survey for a family. All information collected is anonymous and will be kept in confidence and only used to help identify Safe Routes to School improvements and actions. Please provide explanation of "X" locations you have marked on the map in the comments space below.

Please consider the following:

- Crossing roads
    - Limited visibility
    - No safe crossing
    - Lack of crossing facilities
    - Not enough time to cross with lights at signalised crossing
- Footpaths, line marking, sign
    - Lack of footpaths, gaps along walking routes
    - Footpath damaged
    - No easy access for prams and wheelchairs (e.g. ramp from footpath onto road)
    - No lines marked or faded
    - Faded or damaged signs
- School entry/exit gates
    - Congestion around gate
    - Limited access
- Traffic and parking
    - Traffic congestion
    - Speeding traffic
    - Drivers not giving way to other road users
    - Unsafe or illegal driving behaviours outside school during drop off/pick up (e.g. double parking)
- Public transport
    - Bus stop location
    - Limited visibility

Page 2: Include map. Include space to nominate usual travel to school

- Mark on the map your usual travel route to school. Please state how you travel this route (walk, cycle, by car etc)
- Mark with an "O" the school gate or entrance you most often use
- Mark with an "X" any location along your travel route that is a concern or issue for access or road safety.

2.6 Site investigation checklist

The focus of the site-investigation is the safety and ease of access to school for students when walking, riding bikes and as passengers. Include a map, the same as for the local observations survey, for the site-investigation team to mark down site-specific issues or concerns. The site-investigation covers the same issues as listed for the local observations survey. The team reviews and discusses their observations and perceptions.

The team would include the school SRTS coordinator and preferably two or more adult representatives from the school (e.g. the principal, one or more parent volunteers.) The Department of Transport (VicRoads) regional road safety coordinator may also want to help out.

The team should also involve a few student representatives, preferably in Grades 3-6. These students may participate along with the adults or as a separate group with support from the council and school SRTS coordinators.

Include the following instructions:

- Fill in observer name, date and time
- Note the locations and routes you have observed and walked
- Mark on the map with an "X" any location that is a concern or issue for access or road safety. Clearly note comments and suggestions
- Note any observed issues relating to behaviour and provide comments
- Emphasise that people are not providing technically accurate comments but are providing notes of their own experience and observations, which may vary from person to person.
- Consider potential responses to address the road safety or access issues

Observed behaviours

Pedestrians	Any issue	Comments/suggestions:
Using pedestrian/school crossing facilities provided.		
Children/young people using "Stop, Look, Listen, Think (SLLT)" when crossing the road.		
Unsafe road crossing e.g. between parked cars.		

Cyclists	Any issue	Comments/suggestions:
Wearing of bicycle helmets		
Safety when riding		
Riding locations		

Drivers	Any issue	Comments/suggestions:
Parking too close to the crossings.		
Parking across driveways.		
Parking in "No Standing" or "No Parking" zones.		
Double parking		
Failing to stop at signals/crossings to give way to pedestrians.		
Speeding.		
Failing to signal their intention to turn.		
Cutting corners.		
Other		

Passengers	Any issue	Comments/suggestions:
Children entering vehicles from the left-hand passenger side at the kerb.		
Common use of seat belts and child restraints.		

Bus travel	Any issue	Comments/suggestions:
Location of bus stops, close crossing points, etc.		
Getting on/off buses.		
Students crossing the road immediately in front of or behind the bus.		
Cars stopping or parking in bus zone.		
Other safety concerns (please note).		

Tram travel	Any issue	Comments/suggestions:
Students waiting at the kerb until the tram has stopped.		
Children/young people checking to see all traffic has stopped before they step on to the road.		
Children/young people looking for approaching traffic before they get off the tram.		
Other safety concerns (please note).		

Train travel	Any issue	Comments/suggestions:
Students waiting on the station behind the yellow line until the train has stopped.		
Students using rail crossings correctly.		
Other safety concerns (please note).		

Local area observations

Crossing Facilities	Any issue	Comments/suggestions:
Available crossing facilities – location, standard		
Use by pedestrians.		
Pedestrians having time to clear the crossing.		
Vehicles giving way to pedestrians at the crossing.		
Sightlines		

Footpaths	Any issue	Comments/suggestions:
Condition of footpaths.		
Footpath available along the whole walking route.		
Pram ramps at kerbs at crossing locations.		

Visibility/Sightlines *	Any issue	Comments/suggestions:
Parked cars causing obstruction for line of sight between students and drivers.		
Overhanging trees or shrubs causing obstruction for line of sight between students and drivers.		
Other obstructions for line of sight between students and drivers (please note).		
Cars parked too close to intersection.		

* Note: Remember that the height of children around 7 years of age ranges between 1.3 to 1.5 metres and so observations should allow for this in determining line of sight between younger children and drivers.

Signs	Any issue	Comments/suggestions:
Parking restriction signs.		
Other signs, such as warning signs to school (please note).		
Condition of signs.		
Signs needing maintenance.		

Road Conditions	Any issue	Comments/suggestions:
Condition of road surface, such as pot-holes or gravel.		
Road too wide for children/young people to cross safely.		
Other road conditions (please note).		

3 Engineering improvements options

The following information is provided to help council to decide what engineering improvements may be made around a local school area in response to the issues and road safety concerns identified in Stage 2.

3.1 Pedestrian refuges

Pedestrian refuges are useful when pedestrian activity is not concentrated to a few popular crossing points along a road, or where numerical warrants for a formal crossing are not met. The pedestrian refuge enables people to store safely in the middle of the road and concentrate on crossing one direction of traffic at a time. This is particularly beneficial for children/young people, the elderly and those with mobility impairments.

Provision of refuges should also be considered, provided that there is adequate road width, where roundabouts are installed at locations with high pedestrian usage. This measure could incorporate relocation of pram crossings, realignment of footpaths away from the intersection, with landscaping or pedestrian fencing installed to channel pedestrians to the desired crossing point.

Where pedestrian refuges are installed, it is important to provide openings or pram crossings both on the refuge and on the footpaths approaching the refuge from either side of the road.

Crossing points should be sufficiently illuminated by street lighting or, where there is significant night time usage, by supplementary flood lighting.

Safety can be improved further through the provision of kerb outstands or extensions. Such modifications reduce the carriageway width at the crossing point, thereby reducing pedestrian exposure to potential conflict with vehicles. They also have the potential to improve sight distance, conspicuity of the crossing and reduce operational speeds of motorists by creating a tighter turning path for vehicles accessing the intersecting road.

3.2 Children's crossings

The guidelines for the provision of children's crossings, both supervised and unsupervised, are detailed in VicRoads Traffic Engineering Manual Volume 1. These take into account numeric and site warrants. Austroads has also developed a pedestrian facility selection tool, which can be accessed via the following link. https://austroads.com.au/network-operations/active-travel/pedestrian-facility-selection-tool. There is also additional guidance available in VicRoads Traffic Engineering Manual - Volume 2 – Part 2.10 around school crossings.

3.3 Existing children's crossings

The conspicuity of existing children's crossings can be improved with kerb outstands or extensions, refuges (refer 3.1), fresh line marking, delineators, more prominent signs and positioning. Approaches to crossings may incorporate road humps or slow points to reduce traffic speed. Section 4.3 illustrates the suitability of a range of devices on various road classifications.

Parking restrictions should be reviewed and enforced regularly to ensure that minimum sight lines are always maintained.

3.4 Unsupervised children's crossings (flags)

An important issue that concerns safety at unsupervised crossings is the display of crossing flags. Flags should only be displayed when the crossing is being used, they should be removed after use. The flags are intended to alert drivers by changing the immediate environment that drivers encounter. Displaying flags all day when the crossing is not in use detracts from this intention and can lead to complacency on behalf of drivers.

3.5 Pedestrians at signalised intersections

Most signalled intersections usually have provision for pedestrian crossings. The two common problems for children/young people when crossing at signalised intersections are:

a)   uncertainty about when to commence and/or cease crossing
b)   failure of turning vehicles to give way

The first problem can be overcome by the introduction of an audio-tactile device, which indicates by sound, the time to commence crossing.

There are two possible reasons for the second problem. These are:

a)   lack of regard for pedestrians by motorists
b)   the driver of the turning vehicle is unable to see a child/young person, who is about to step out on the crossing, or the driver is concentrating on finding gaps in opposing traffic

This can be minimised at most intersections with average densities by the introduction of an "early start" phase for pedestrians. This enables the pedestrian "walk" signal to appear before the vehicle green light appears, rather than simultaneously. This allows the child/young person to be clearly on the crossing before the turning vehicles can proceed. However, at intersections with heavy usage, this measure could cause considerable delays and queuing, since the green-time available to vehicles is decreased.

An additional measure that can be adopted to address this risk is the introduction of LED Give Way to Pedestrian signs, which provide a cue to right turning motorists to be aware of the potential for crossing pedestrians and the motorists' need to give way.

3.6 Pedestrian operated signals

Pedestrian operated signals may be the best solution at locations where pedestrian crossing activity is concentrated along a short section of road that carries heavy traffic volumes. However, high costs restrict their installation to sites with the greatest need. Where a significant number of school students are observed to cross a heavily trafficked road, the use of a pedestrian operated school signal can be considered. Numeric warrants are also listed in VicRoads Traffic Engineering Manual Volume 1.

Where children/young people are experiencing difficulty at an existing pedestrian operated signal, some minor adjustments, listed below, should be considered:

(i)   Modification to time/phase settings, either to increase or decrease "walk" (green) and clearance (flashing red) times, to suit the majority of users at a location.

Other measures such as double cycling, and/or isolated operation, during school hours may be used to enable introduction of the pedestrian "walk" sooner, thus minimising the incidence of pedestrians crossing against the red. The relevant Region or the Signals Services team within the Department of Transport should be consulted prior to any alteration.

To reduce exposure of pedestrians to potential conflict with vehicles, the pavement width can be reduced by using kerb outstands or extensions, as outlined in Section 3.1.

(ii)   Mast arms can be installed to improve conspicuity of the crossing, especially at sites located below a crest or nearby a horizontal curve where motorists have little time to react after seeing the signals and tend to proceed without stopping.

Mast arms can also be used to supplement signal pedestals that are less obvious to the driver, especially on wide multi-lane carriageways.

Advance warning sign positioning, condition and size should also be reviewed to ensure they align with relevant Australian Standards.

(iii)   Parking restrictions need to be reviewed to alter the times and/or the number of parking spaces affected by restrictions to ensure that the sight lines of children/young people are not obstructed when crossing the road.

3.7   Pedestrian (zebra) crossings

Pedestrian crossings provide priority to all people crossing the roadway at any period of the day (i.e. they are not a time-based treatment).   Pedestrian crossings are extremely beneficial in improving crossing opportunities for children/young people, and are typically suited to low-speed, single lane (local) roads. Where such conditions are not met, or other less desirable traits are present (e.g. poor sight lines / visibility of the crossing), other treatments (such as pedestrian operated signals) may be more appropriate.

Minimum numerical warrants are indicated in the VicRoads Traffic Engineering Manual Vol 1. Existing sites should be reassessed to determine that minimum pedestrian-vehicle conflict still exists. If this is not the case, another type of crossing facility may be required.

It is important to ensure and maintain high skid resistance on the approach to pedestrian crossings.

3.8   Wombat crossings

Similar to pedestrian (zebra) crossings, wombat crossings provide priority to all people crossing the roadway at any period of the day, while also acting as a speed-calming device. This is achieved by placing the zebra crossing on top of a flat-top road hump, with the associated vertical deflection designed to make it less comfortable for motorists to traverse at speeds (generally aiming for ≤ 30km/h.

3.9   Raised threshold treatments

Raised threshold treatments involve the raising of a pedestrian crossing at the intersection of a minor road with a major road. These treatments advise motorists of changed driving conditions, raise awareness of crossing foot traffic and have the potential to reduce the operational speeds of vehicles entering/exiting minor roads. Similar to Section 3.8, priority can be provided to pedestrians where warranted, ideally with crossings slightly offset from the intersection to reduce the risk of vehicle conflict immediately at the intersection.

3.10 Pavement narrowing or width restriction using line marking

The reduction of pavement width using painted parking bays on either side of a carriageway has been shown to achieve a reduction in operating speeds. This is relatively cheap in comparison to devices that require civil works. The painted lines segregate the trafficable lane from the parking areas.

It is important to maintain sufficient clearance from parked vehicles to enable a child/young person to "prop" safely and observe the traffic before proceeding to cross the road. Other devices such as kerb outstands and refuges can be used in conjunction with this treatment to enhance its performance, provided sufficient widths are available.

## 3.11 Landscaping and/or pedestrian fencing

Landscaping and/or pedestrian fencing can be used in conjunction with other crossing facilities to channel children/young people to a particular location or device. However, it can be used on its own at minor school gates to encourage children/young people to stop and look for traffic rather than to cross straight across a road. This is particularly advantageous where access from a playground or recreation area abuts a roadway, and due to low installation cost, implementation should be considered wherever possible.

3.12 Signs

Signs warn motorists of hazards or particular activity in the area, such as "School Crossing Ahead" or "Pedestrian Signals Ahead". The size and placement of warning signs should be in accordance with VicRoads Traffic Engineering Manual 1 & 2, 1999.

3.13 Road humps

Road humps, platform or Watts profile, play a major role in making speed limits within the residential network largely self-enforcing. This device can also be used on approaches to crossing facilities to force
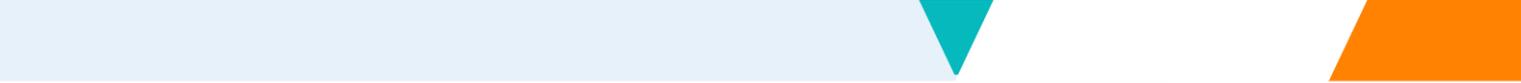
the motorist to reduce speed before reaching the crossing point. Reducing the speed of motorists results in a reduction in the distance required to bring vehicles to a stop, thereby reducing the likelihood of a crash occurring and the severity of a crash should one occur.

It is worth noting that the installation of road humps is not always well received by bus operators. Therefore, when being considered as a treatment on popular bus routes, consultation should be undertaken with relevant bus operators to gain relevant support.

3.14 Slow points or road narrowings

These devices cause the narrowing of road width to force drivers to reduce speed. They can be straight or placed at an angle and installed at approaches to crossing facilities. Further guidance can be found within Austroads Guide to Traffic Management Part 8: Local Area Traffic Management.

3.15 Bicycle lanes

Children under 12 years are permitted to ride on footpaths under the national road rules (introduced December 1999). However, bicycle lanes may be warranted on streets where a high number of cyclist crashes involving children/young people have occurred, provided adequate road width is available. Consideration should be given to promoting the use of existing off-road bike paths as new bike paths may be difficult to introduce. However, short new bike paths that act as links to permit cyclists to use less heavily trafficked roads, as an alternative to arterial roads, may be an option.

Where on-road bicycle lanes are being proposed, physical separation is the preferred arrangement wherever posted speeds of > 30km/h are present.

4 Guidelines for selection of countermeasures

This section describes road safety issues and potential engineering responses to them. The tables can be used to help identify potential engineering improvements for different road types to respond to the local issues identified in Stage 2.

As noted in the SRTS guide, all engineering improvements will be most effective if supported by road safety education, encouragement activities and enforcement, if required.

4.1 Midblock countermeasures

Problem encountered	Primary arterial options	Secondary arterial options	Collector options	Local street options
Sight distance restricted by vehicles	(i) provide kerb outstands and encourage their use by pedestrians. This creates indented parking. Since this may not always be possible, other types of crossing facilities, listed in Section 4.3, may be necessary.	as primary arterial	(i) kerb outstands at location where high pedestrian activity is observed (ii) indented parking (iii) parking restriction during morning and evening child/young person pedestrian peak especially in the vicinity of schools	as collector
Difficulty in crossing wide streets	(i) pedestrian refuge to enable pedestrians to stage their crossing (ii) other treatment available if current facilities are inadequate (Section 4.3). **Note:** There may not be any opportunity to narrow the road width further without affecting capacity of the road.	as primary arterial	(i) a series of pedestrian refuges with kerb outstands and indented parking will create a good environment for pedestrians without affecting capacity of this type of road (ii) pedestrian crossing (flashing lights)	as collector but pedestrian crossing is not applicable.
Drivers failing to give way at children's crossings	not applicable	(i) improve advance warning signs. (ii) improve conspicuity by constructing kerb outstands (iii) ensure line marking and delineation is to a good standard	As for secondary arterial, but can include speed reduction devices such as road hump, slow points.	as collector
No crossing facility	See Section 4.3 for appropriate treatment	See Section 4.3	See Section 4.3	See Section 4.3

Drivers failing to give way at pedestrian operated signals	(i) review location, size visibility, condition and the number of advance warning signs prior to the crossing (ii) install mast arm with additional lantern (iii) ensure adequate street lighting is provided (iv) paint pedestals and mast arm (if installed) (v) cut back surrounding vegetation	as for primary arterial	As per primary arterial except for installation of mast arm.	not applicable
Sight distance of pedestrians restricted by parked vehicles near crossings	(i) extend restricted parked zone (ii) provide kerb outstands to bring the pedestrian past the parked vehicles	as per primary arterial	as per primary arterial	as per primary arterial
Unsure of when to commence or complete the crossing at pedestrian operated signals.	(i) education regarding walk time (green) and clearance time (flashing red). There is sufficient time for most pedestrians to complete the crossing during the clearance time. (ii) introduction of audio-tactile devices. (iii) adjustments to walk and clearance times.	as per primary arterial	as per primary arterial	not applicable

4.2 Intersection countermeasures

Problem encountered	Primary arterial	Secondary arterial	Collector	Local street
Vehicles not giving-way and corner cutting	(i) At intersection with collector roads and local roads the splitter islands can be installed in conjunction with thresh-hold treatments (in collector road only), (ii) Duplication of stop or give-way sign (Note - signs are no longer necessary at most "T" intersections). Intersections with other arterials in urban areas are usually signalised and hence provides pedestrian crossing facilities.	as per primary arterial	(i) splitter islands (ii) thresh-hold entry treatment (iii) kerb outstands	as per collector road

Crossing at a roundabout	(i) Provision of approach islands with pram crossing on each leg of intersection. Pedestrian fencing and pram crossing may have to be relocated further back. (ii) Pedestrian operated signals at the leg where most pedestrian/vehicle conflict occurs.	as per primary arterial	(i) Provision of central islands on each leg. (ii) Provision of pedestrian crossing on legs where most pedestrian/vehicle conflicts are observed. This could be on all legs of the intersection if necessary.	
Left turners not giving way to pedestrians at signalised intersections.	(i) Introduce early start phase for the conflicting pedestrian movement, thus enabling the pedestrians to be on the crossing before left turners are allowed to turn.	as per primary arterial	as per primary arterial	not applicable
Right turners not giving way to pedestrians at signalised intersections.	(i) Introduce early start phase for the conflicting pedestrian movement, thus enabling the pedestrians to be on the crossing before left turners are allowed to turn. (ii) Introduce LED Give Way to Pedestrian signs, providing an additional cue to motorists of the need to be wary of crossing pedestrians and their need to give way to such movements.	as per primary arterial	as per primary arterial	not applicable

4.3 Guidelines for selection of measures likely to be most useful according to road classification

Countermeasure	Primary arterial	Secondary arterial	Collector road	Local street
Pedestrian operated signals	+	+	0	X
Pedestrian crossing (flashing lights)	X	0	+	0
Supervised school crossing	X	0	+	+
School crossing	X	X	0	+
Pedestrian Refuge	0	0	+	+

Kerb outstand	0	0	+	+
Turn bans and road closures	+	+	+	+
Threshold entry treatment	X	X	0	0
Road humps	X	X	0	+
Slow points	X	X	+	+
Road narrowings - indented parking, kerb extension, line marking	X	0	+	+
Bicycle lanes	0	0	0	0
Parking restrictions	0	0	+	+
Advance warning signs	0	0	0	0
Lower part time school speed zone	+	+	0	X
Roundabout at intersection prior to pedestrian crossing activity	0	0	+	+

+	Most likely to be appropriate
0	May be appropriate treatment
X	Inappropriate treatment

5 Sample engineering improvement plan

This sample is not from an actual plan but acts as a useful guide to the types of engineering improvements that may be implemented under SRTS.

LOCATION	PROPOSED ACTION TO BE CARRIED OUT	RESPONSIBLE AUTHORITY	COMMENCEMENT DATE
Edgar Street and Susan Road	Repaint all approaches and regulatory blocks at roundabout	Council	First year
Pedestrian overpass on Dale Road	Install U-Bar treatment at the base of both sides	Council	First year
Pedestrian operated signals on Sutton Road near Eagle Street	Increase pedestrian walk (green) and clearance times (flashing red)	VicRoads	First year
On the pedestrian entrance/exits of the school	Erect STOP, LOOK, LISTEN and THINK signs	Council VicRoads	First year
On major routes students walk/ride to school	Erect "School Zone, Drive Carefully" signs Paint SLLT on the pram crossings to remind children to STOP, LOOK, LISTEN and THINK	Council VicRoads	First year
At or near key crossing locations along the major routes walked or cycled	Erect "Recommended Crossing Point" signs	Council VicRoads	First year
Dale Road pedestrian crossing in front of school	Convert to raised platform crossing. Erect "No Standing Any Time" signs	Council	Second year
Long Street at Henley Road	Narrow the intersection and install a pedestrian refuge	Council	Third year
Long Street outside the school	Consideration of additional parking in the wide nature strip	Council	Five years plus