Contents

1 Introduction ....................................................................................................................................1
  1.1 Background ................................................................................................................................1
  1.2 Scope ...................................................................................................................................... 1
  1.3 Document information ............................................................................................................. 2
  1.4 Responsibility and authority for installation ........................................................................... 2
  1.5 Referenced documents ............................................................................................................. 2

2 Speed limits and speed zones ......................................................................................................4
  2.1 General ..................................................................................................................................... 4
  2.2 Principles ................................................................................................................................... 4
  2.3 Default speed limits ................................................................................................................... 4
  2.4 Speed zones .............................................................................................................................. 4
  2.5 Variable speed limits ............................................................................................................... 4
  2.6 Glossary of terms ....................................................................................................................... 5

3 Speed limit setting process ..........................................................................................................8
  3.1 Introduction ................................................................................................................................8
  3.2 Roles and responsibilities ........................................................................................................ 8
  3.3 Homogeneity of road ................................................................................................................ 9
  3.4 Length of speed zones ............................................................................................................. 9
  3.5 Overview of Speed Limit Review process ................................................................................ 10

4 Criteria Based Speed Limits ......................................................................................................14
  4.1 General .................................................................................................................................... 14
  4.2 Criteria Based Speed Limit process ....................................................................................... 15
  4.3 Types of Criteria Based Speed Limit ....................................................................................... 15

5 Risk Assessed Speed Limit / Speed Data Speed Limit ...............................................................19
  5.1 Risk Assessed Speed Limit ..................................................................................................... 19
  5.2 Speed Data Speed Limit .......................................................................................................... 24

6 Option Selection ......................................................................................................................... 27

7 Engineer recommendation ........................................................................................................ 28
  7.1 Responsible officer review ..................................................................................................... 29
  7.2 Other circumstances ................................................................................................................. 29

8 Approve and Implement ............................................................................................................. 36
  8.1 Speed Management Committee ........................................................................................... 36
  8.2 Review of endorsement by Speed Management Committee .............................................. 37
  8.3 Speed Limit Review Panel ..................................................................................................... 37
  8.4 Approval .................................................................................................................................. 38
  8.5 Implementation ......................................................................................................................... 38

9 Monitor and evaluate ................................................................................................................ 39
Table 5.1.5(A) – Environmental context classification ................................................................. 22
Table 5.1.5(B) – Risk Assessed Speed Limits: Roads in an urban environment ......................... 23
Table 5.1.5(C) – Risk Assessed Speed Limits: Roads in a semi-urban environment .................... 23
Table 5.1.5(D) – Risk Assessed Speed Limits: Roads in a rural environment ............................. 24
Table 5.2.2 – Speed data test ranges ............................................................................................. 26
Table 5.2.3 – Suggested speed limit from speed data analysis ..................................................... 26
Table 10.1 – Speed control signs: size table .................................................................................. 40
Table 10.1.6 – Spacing of speed limit repeater signs .................................................................... 45
Table 10.2 – Recommended sizes of speed restriction (R4-1) signs ............................................ 46
Table 12.3 – Sign size and location ................................................................................................. 54
Table 12.3.1 – Length of Black Links speed zones ........................................................................ 56
Table A1 – Minimum sample sizes .............................................................................................. 64
Table A2 – Recommended bin ranges: Upper limit of bin range .................................................. 65
Table C1 – Definitions for Coding Accidents Code Groups and crash risk scores ..................... 71
Table C2 – Crash Risk Rating Bands ............................................................................................ 72

Figures

Figure 3.5 – Speed Limit Review process ..................................................................................... 11
Figure 4.1 – Flowchart for Criteria Based Speed Limits ................................................................. 14
Figure 5.1 – Risk Assessed Speed Limit flowchart ...................................................................... 19
Figure 5.2 – Flowchart for determining Speed Data Speed Limit .................................................. 25
Figure 6 – Comparison of Risk Assessed Speed Limit and Speed Data Speed Limit .................. 27
Figure 10.4 – Application of speed limit signs at default limits and linear speed zones ............... 48
Figure 12.2 – Typical signage layout for a shared zone ................................................................. 53
Figure 12.3.1 – Typical signage layout for high crash zones (Black Links) .................................... 55
Figure 12.5.2(A) – Preferred application of a 50 km/h speed zone for a shopping or commercial area – Example 1 ............................................................................................................. 58
Figure 12.5.2(B) – Preferred application of a 50 km/h speed zone for a shopping or commercial area – Example 2 ............................................................................................................. 58
Figure 12.5.3 – Alternative application of a 50 km/h speed zone for a shopping/commercial area in small rural towns only ........................................................................................................ 59
Figure 12.9 – Typical speed limit signing on ramps ..................................................................... 61
Figure B1 – Typical plan and data sheet for determination of speed zones .................................... 66
Figure B2 – Sample speed survey field sheet .............................................................................. 67
Figure B3 – Sample speed survey calculation

Figure B4 – Sample frequency distribution curves sheet
Part 4: Speed controls

1 Introduction

1.1 Background

Control of speed is an important aspect in effective management of traffic. Involvement of speed-related factors in road crashes is well established and generally understood by road users. It should not be assumed that the provision of a lower speed limit will address all perceived road safety problems or even alter travel speeds. Experience and research in Australia and overseas has demonstrated that arbitrarily imposed limits that are too low attract poor levels of compliance. Actual speeds may remain at the same levels as before unless the road environment is changed to support the lower speed, road users understand and accept the reasons for the lower speed, or substantial and continued enforcement is undertaken.

Authorities need to ensure that the method of setting speed limits can be justified as being appropriate for the environment, the function of the road and the safety of all road users.

The Transport Operations (Road Use Management) Act 1995 states that, while it may be possible to regulate to achieve the highest level of safety, doing so would ignore the impact of the regulation on the efficiency of road use and that there is a need to achieve an appropriate balance between safety and the cost that regulation imposes on road users and the community.

The methods described in this Part of the Manual aim to achieve such a balance through setting speed limits that are realistic and consistent and consequently encourage voluntary compliance.

1.2 Scope

This Part of the Manual:

- provides guidance on the process for determination and setting of appropriate speed limits on Queensland roads
- outlines traffic control devices to be used in Queensland for the regulatory control of traffic speed, and prescribes requirements on the way in which these devices should be applied in various situations.

This Part of the Manual does not cover the following:

- advisory speed signing, such as that used at sub-optimal alignments (refer to Manual of Uniform Traffic Control Devices (MUTCD) Part 2: Traffic Control Devices for General Use)
- temporary speed limit zoning for roadworks (refer to MUTCD Part 3: Works on Roads)
- speed control in Local Area Traffic Management (LATM) areas (refer to MUTCD Part 13: Local Area Traffic Management)
- speed limit setting in school zones (refer to Traffic and Road Use Management (TRUM) manual Volume 2 Guide to Road Safety Part 3 Speed Limits and Speed Management).
1.3 **Document information**

This Part of the Manual, within the meaning of the *Transport Operations (Road Use Management) Act 1995*, contains the design of and the methods, standards and procedures in relation to the speed limit sign, signal, marking, light or device, installed on a road or road-related area. These devices are erected by the Department of Transport and Main Roads and local governments for the purpose of regulating traffic speed on the road system in Queensland, and are considered as Official Traffic Signs under and within the meaning of the Act.

Transport and Main Roads may, from time to time, issue technical notes and guidelines to supplement the implementation of this Manual under the authority of Section 166 of the *Transport Operations (Road Use Management) Act 1995*. These technical notes and guidelines are considered as Approved Notices under Section 166(2) of the Act.

1.3.1 **Professional engineering service**

Road authorities are advised that speed limit setting is a professional engineering service pursuant to the *Professional Engineers Act 2002*.

In using this document, or when acquiring engineering services to undertake a speed limit setting process, road authorities have obligations under the *Professional Engineers Act 2002*.

The Act provides that a person who is not a Registered Professional Engineer of Queensland (RPEQ) must not carry out professional engineering services, except that a person who is not an RPEQ may carry out professional engineering services while under the direct supervision of an RPEQ who is responsible for the engineering services being undertaken.

1.4 **Responsibility and authority for installation**

The Act provides that official traffic signs must be installed only by the authority of the Director-General of Transport and Main Roads or a local government. The Act also provides that any such sign must be installed in accordance with the methods, standards and procedures prescribed in this Part of the Manual.

Where a regulatory speed limit sign is erected, removed or changed, for example, alteration to the speed limit or the sign size, it is necessary to record the circumstances for use in any prosecutions or litigation. Form M994 (available at [https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Manual-of-uniform-traffic-control-devices](https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Manual-of-uniform-traffic-control-devices)) is used by Transport and Main Roads for this purpose for declared roads. Procedures for the recording of regulatory signs on roads controlled by Transport and Main Roads are given in MUTCD Part 1 Appendix B. Local governments should have in place an internal procedure for recording this information. The procedures developed by the local government should be followed when a regulatory sign is erected, removed or changed; for example, alteration to the speed limit or the sign size.

1.5 **Referenced documents**

This Manual makes reference to the following documents / publications:

- *Professional Engineers Act 2002*
- *Transport Operations (Road Use Management) Act 1995*
- *Coastal Protection and Management Act 1995*
- Transport and Main Roads TRUM Volume 2 Part 3 Section 3.2-1 *School zones*
Part 4: Speed controls

- Transport and Main Roads Queensland MUTCD (other parts)
- Transport and Main Roads *Road Planning and Design Manual*
- Transport and Main Roads *Guidelines for Road Design on Brownfields Sites*
- Transport and Main Roads *Routine Maintenance Guidelines*
- Transport and Main Roads Technical Note TN155 *Wide Centre Line Treatment – Interim Advice*
- Transport and Main Roads *Infrastructure Risk Rating Manual*
- Australian Standard AS1428 *Design for access and mobility*
- Australian Standard AS1742 *Manual of uniform traffic control devices*
- Austroads *Guide to Traffic Management Part 4: Network Management*
2 Speed limits and speed zones

2.1 General

The purpose of this chapter is to provide context for the rest of the document.

2.2 Principles

The following principles must be observed when determining speed limits:

(a) Speed limits must be capable of being practically and equitably enforced.

(b) Speed limits should be set at credible levels, such that they are not ignored by a significant number of road users.

(c) Speed limits must not be applied specifically for the purpose of compensating for isolated geometric deficiencies.

(d) All sign posted speed limits must be in multiples of 10 km/h.

(e) The lowest speed limit that can be applied is 10 km/h (at a shared zone, refer Section 4.3.2). The maximum speed limit that can be applied is 110 km/h, subject to the provisions described at Section 7.2.7.

2.3 Default speed limits

Since 1 February 2003 in Queensland:

- the default speed limit for a road in a built-up area is 50 km/h, and
- the default speed limit for a road that is not in a built-up area is 100 km/h.

These speed limits are legally enforceable with or without posted signs, which avoids the need for extensive signing.

A default speed limit is not an appropriate process for selecting a speed limit. A default speed limit is a method of applying an appropriately determined speed limit.

2.4 Speed zones

The process of establishing appropriate speed limits requires that discrete sections of roads are considered separately based on function, prevailing traffic speed and speed environment. These homogeneous, discrete sections are referred to as speed zones.

Speed zoning is the first step in the establishment of a speed limit.

2.5 Variable speed limits

Speed limits are generally fixed, that is, they apply at all times; however it may be appropriate in some circumstances to establish a Variable Speed Limit (VSL) – see Section 7.2.2.
### 2.6 Glossary of terms

**Table 2.6 – Glossary of terms**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADT</td>
<td>Average Daily Traffic: the total volume along a length of road divided by the number of days recorded</td>
</tr>
<tr>
<td>Bin</td>
<td>A bin is a discrete range of values into which all measurements within that range are accumulated (for example, 41–45 km/h or 56–60 km/h)</td>
</tr>
<tr>
<td>Buffer zone</td>
<td>A speed zone, of minimal length, used for an incremental or a decremental speed change between two speed limit zones, buffer zones are generally not used in Queensland, except at road works zones or on roads with VSL signs</td>
</tr>
</tbody>
</table>
| Built-up area      | In relation to a length of road, built-up area means an area in which either of the following is present for a distance of at least 500 m or, if the length of road is shorter than 500 m, for the whole road:  
  a) buildings, not over 100 m apart, on land next to the road  
  b) street lights not over 100 m apart |
| Casualty crash     | A road traffic crash where at least one person is injured, does not include property damage-only crashes                                                                                             |
| CBSL               | Criteria Based Speed Limit: A speed limit that is determined in accordance with specific criteria relevant to that speed zone                                                                             |
| Controlled approach| A controlled approach of an intersection is the approach controlled with traffic control devices such as traffic signals, GIVE WAY signs / GIVE WAY lines or STOP signs / STOP lines or ROUNDABOUT GIVE WAY or similar other regulatory devices (or right-of-way rule) used to control traffic |
| CRR                | Crash Risk Rating: A risk classification determined by a quantitative measure of personal crash risk based on frequency of occurrence of casualty crashes along the speed zone; CRR is a historic measure of crashes that have occurred |
| DCA                | Definitions for Coding Accidents (DCA) is a system of classifying crashes, using ‘collision diagrams’, based on the traffic movements leading up to the crash                                                                 |
| Design standard (road) | The design standard relates to the level of service, mobility and safety provided by design elements such as:  
  • horizontal and vertical curvature  
  • sight distance  
  • superelevation  
  • pavement, shoulder and lane width  
  • gradients  
  • degree of access restriction                                                                                                                                 |
| EDD                | Extended Design Domain                                                                                                                                                                                   |
| Foreshore          | The land lying between high-water mark and low-water mark as is ordinarily covered and uncovered by the flow and ebb of the tide at spring tides                                                                    |
| FSI crashes        | Fatal and serious injury crashes                                                                                                                                                                          |
| HATUA              | High Active Transport User Areas (HATUAs) are areas that encourage social activity and are considered to have a significant value to the community by being a ‘place’ for people to gather – roads and streets that are considered to be within HATUAs have land uses and developments that generate or attract levels of pedestrians and cyclists that are considered higher than typical (refer Section 4.3.4) |
### Part 4: Speed controls

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRR</td>
<td>Infrastructure Risk Rating: A measure of the expected risk associated with the road infrastructure based on an objective assessment of the road attribute data</td>
</tr>
<tr>
<td>Local area</td>
<td>An urban area containing only local and collector roads which is bounded by arterial and sub-arterial roads or features such as rivers, railway lines or the limit of urban development – a local area may comprise a suburb, or part of a suburb</td>
</tr>
<tr>
<td>May</td>
<td>A permissive condition: where the word ‘may’ is used, it indicates that provision is conditional, or optional – usually, no specific requirement for design or application is intended</td>
</tr>
<tr>
<td>Must</td>
<td>A mandatory condition: stipulation of a ‘must’ (or ‘shall’) condition indicate that the requirements stipulated are to be met</td>
</tr>
<tr>
<td>Pace</td>
<td>A nominated speed range in which the greatest number of vehicles in traffic is observed to travel under free-flowing conditions past a nominated point; for example, the 15 km/h pace is the 15 km/h speed range in which the largest percentage of vehicles is observed to travel</td>
</tr>
<tr>
<td>Pavement bars</td>
<td>Road pavement bars are raised blocks that may be used to augment painted islands and painted median strips to discourage, but not prohibit, traffic movements across the islands or median strips</td>
</tr>
<tr>
<td>RASL</td>
<td>Risk Assessed Speed Limit: A speed limit that is determined through consideration of a combination of crash risk, infrastructure risk, environment context class and road functional class</td>
</tr>
<tr>
<td>RPEQ</td>
<td>Registered Professional Engineer, Queensland as defined by the Professional Engineers Act 2002</td>
</tr>
<tr>
<td>RRM</td>
<td>Road Risk Metric: a descriptive risk classification that is a combination of the CRR and the IRR</td>
</tr>
<tr>
<td>SDSL</td>
<td>Speed Data Speed Limit: a speed limit that is based on analysis of speed data within a speed zone where the speed limit is under review</td>
</tr>
<tr>
<td>Shall</td>
<td>Refer to definition of ‘must’</td>
</tr>
<tr>
<td>Should</td>
<td>Indicates a recommendation: Where the word ‘should’ is used, it is considered to be recommended usage, but not mandatory – any recommendation that is not applied must be based on sound traffic engineering judgement and documented</td>
</tr>
<tr>
<td>SLRP</td>
<td>Speed Limit Review Panel</td>
</tr>
<tr>
<td>Speed environment</td>
<td>The elements of the road and traffic environment that collectively influence a road user's determination of an appropriate travel speed</td>
</tr>
<tr>
<td>Speed limit</td>
<td>The maximum speed at which a vehicle is legally permitted to travel on a particular section of road</td>
</tr>
<tr>
<td>SMC</td>
<td>Speed Management Committee</td>
</tr>
<tr>
<td>Speed transition</td>
<td>In relation to VSLs, a term which describes the change of speed limit at a single VSL site: the speed transition creates a new speed zone, which may function as a VSL buffer zone</td>
</tr>
<tr>
<td>Speed zone</td>
<td>A length of road or a network of roads (area) to which a single speed limit applies</td>
</tr>
<tr>
<td>TAC</td>
<td>Traffic Advisory Committee</td>
</tr>
<tr>
<td>TORUM</td>
<td>Transport Operations (Road Use Management) Act 1995</td>
</tr>
</tbody>
</table>
### Term

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic carrying road</td>
<td>A road which carries traffic and which primarily has trip origins and destinations outside a local area</td>
</tr>
<tr>
<td>Traffic control device</td>
<td>Any sign, signal, pavement marking or other installation placed or erected under authority of the TORUM for the purpose of regulating, warning or guiding road users</td>
</tr>
<tr>
<td>Traffic route</td>
<td>A road or street which primarily serves trips originating and terminating to enable travel between localities, typically arterial, sub-arterial and major collector roads</td>
</tr>
<tr>
<td>Uncontrolled approach</td>
<td>An uncontrolled approach of an intersection is the approach which runs on priority against another approach (on side roads) controlled by right-of-way rule or by signs (for example, GIVE WAY, STOP) or even signals</td>
</tr>
</tbody>
</table>
3 Speed limit setting process

3.1 Introduction

The procedure for determining a speed limit for a speed zone is outlined in this section of this Part of the Manual.

The use of a standard procedure to determine speed limits is necessary to provide:

(a) guidance for engineers regarding the sequence of data collection and analysis, and the relative importance of the various criteria used in determining speed limits

(b) consistent methodologies between jurisdictions and engineers

(c) consistent application of speed limits that take account of road function, speed environment, safety performance requirements and the needs of all road users

(d) standardised documentation which assists in satisfying accountability, quality management requirements and transparency of governance

(e) preservation of the integrity and credibility of speed limits.

3.2 Roles and responsibilities

The Speed Limit Review process described in this Part of the Manual involves a number of roles. The responsibilities associated with each of these roles is as follows:

- **Engineer** – the Speed Limit Review process is considered a professional engineering service under the *Professional Engineers Act 2002*. Accordingly, the engineer responsible for undertaking a Speed Limit Review must be a certified Registered Professional Engineer of Queensland (RPEQ) (refer Section 1.3.1). The engineer is responsible for undertaking, or for directly supervising others who are undertaking, the technical components within stages 1–6, and stage 8 of the Speed Limit Review process and providing additional support to the responsible officer, Speed Management Committee and/or Speed Limit Review Panel where required. It is the responsibility of the engineer to ensure that the technical elements of the Speed Limit Review process are undertaken in accordance with the procedures outlined within this Part of the Manual.

- **Responsible officer** – the responsible officer has the ultimate authority to approve the implementation of any recommendations from a Speed Limit Review. The responsible officer must ensure that the engineer is appropriately certified and adheres to the process described within this Part of the Manual. The responsible officer must also ensure that the recommendations have been fully understood and considered by the Speed Management Committee. In the event that endorsement of the recommendations by the Speed Management Committee cannot be obtained, the responsible officer must refer the recommendations of the Speed Limit Review back to the engineer to reconsider along. Additionally, the responsible officer must ensure that any Speed Limit Reviews and all related decisions are appropriately documented and stored for future reference.

For speed limit reviews conducted on state-controlled roads, the role of responsible officer is assigned to the appropriate Department of Transport and Main Roads’ District Director, or Regional Director if there is no District Director. For speed limit reviews conducted on local government roads, the role of responsible officer is assigned to the Chief Executive Officer or his or her delegate.
• **Speed Management Committee** – the Speed Management Committee is to deliberate thoroughly on all issues in relation to the speed limit review recommendations that are presented to them by a road authority. The Speed Management Committee will also come to a decision to either endorse, reject or request further information about the recommendations of each speed limit review that are presented to them.

• **Speed Limit Review Panel** – it is the responsibility of the Speed Limit Review Panel to independently review, assess and provide feedback on any referred Speed Limit Reviews.

### 3.3 Homogeneity of road

The Speed Limit Review process must be applied only to speed zones which are considered homogeneous in terms of characteristics and speed environment (refer to Section 2.4). Accordingly, it is necessary to determine whether the road is or roads are homogeneous for the entire length. If not, the road should be divided into homogeneous segments and the review process applied to each segment.

Determination of separate homogeneous segments will require a subjective assessment of the continuity of a road, based on the density of driveways (accesses) and intersections, horizontal and vertical alignment, general speed environment, and traffic volume. Each length will ultimately need to meet the minimum length requirements of Section 3.4.

The homogeneity of a road should be reassessed following completion of the Speed Limit Review process described in Section 3.5. Compromise may be needed in some areas to avoid frequent and continual changes in the speed limit; however, this must be balanced with the overall aim of aligning speed limits with the speed environment and the function of the road.

### 3.4 Length of speed zones

Except where specified elsewhere in this document, the minimum length of a speed zone is defined by the speed limit, as specified in Table 3.4.

The ‘absolute minimum lengths’ specified in Table 3.4 are to be limited to the following situations:

- school zone speed limits (see Section 7.2.1)
- traffic carrying roads through strip-shopping centres and commercial areas (see Section 7.2.3)
- speed limits on approaches to rural intersections (see Section 7.2.6), and
- other speed limits identified in sections 7.2.4, 7.2.5, 7.2.8, and 7.2.9.

In all other situations, unless specifically specified elsewhere in this document, speed zones are to be as long as possible but not less than the ‘normal minimum lengths’ in Table 3.4.

Where development density varies along a roadway, it is desirable to keep the frequency of speed limit changes to a minimum. A zone should, therefore, bridge any length of road for which a higher limit would otherwise be indicated, but where the length is shorter than indicated in Table 3.4.
Table 3.4 – Minimum lengths of speed zones

<table>
<thead>
<tr>
<th>Speed Limit (km/h)</th>
<th>Normal Minimum Length (km)</th>
<th>Absolute Minimum Length (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40: General</td>
<td>0.4</td>
<td>Not applicable</td>
</tr>
<tr>
<td>40: School zone only</td>
<td>Not applicable</td>
<td>0.2</td>
</tr>
<tr>
<td>40: HATUA</td>
<td>Not applicable</td>
<td>0.2</td>
</tr>
<tr>
<td>50</td>
<td>0.5¹</td>
<td>Not applicable</td>
</tr>
<tr>
<td>60</td>
<td>0.6</td>
<td>Not applicable</td>
</tr>
<tr>
<td>70</td>
<td>2.0</td>
<td>0.7</td>
</tr>
<tr>
<td>80</td>
<td>2.0</td>
<td>0.8</td>
</tr>
<tr>
<td>90</td>
<td>2.0</td>
<td>0.9</td>
</tr>
<tr>
<td>100</td>
<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td>110</td>
<td>Not applicable</td>
<td>20.0 (see Section 7.2.7.3)</td>
</tr>
</tbody>
</table>

Notes:
1. Minimum length provisions do not apply where default speed limit for a road in a built-up area is 50 km/h is in operation

3.5 Overview of Speed Limit Review process

The process described in this Part of the Manual is applicable to existing roads. This process should also be applied to new roads as soon as possible after these are opened to traffic, taking into account the need to allow sufficient time for traffic patterns and flows to stabilise and normalise.

Broadly, the aim of a Speed Limit Review is to determine and implement an appropriate speed limit. The specific objectives of a Speed Limit Review are to undertake a staged technical assessment, and to make a recommendation for endorsement, approval and implementation.

The Speed Limit Review process comprises eight stages, as indicated in the flowchart at Figure 3.5.

Once a speed limit is approved and implemented, it should be evaluated and monitored and reviewed; hence, the process is iterative and cyclical. The process described here also makes provision where there is not agreement on a recommended speed limit.
Figure 3.5 – Speed Limit Review process

The text following describes each of the stages and indicates where in this Part of the Manual more detail about each stage is provided.

3.5.1 Stage 1: Need for Speed Limit Review

Stage 1 is simply the decision to undertake a Speed Limit Review. Additionally, speed limits should be reviewed regularly to determine whether they are still appropriate, as well as in response to identified circumstances. Circumstances that may lead to a review of a speed limit include:

(a) the existing speed limit may no longer be appropriate, due to factors such as:
   (i) changed traffic or land use patterns, or
   (ii) the road safety performance of the speed zone

(b) the completion of various works over time has resulted in a range of speed environments within a road section

(c) community requests, or other enquiries, have prompted a review of a particular speed limit

(d) existing speed zone lengths are less than the absolute minimum lengths specified in Section 3.4.

Road authorities should develop a forward work program for undertaking Speed Limit Reviews on roads in their jurisdictions to demonstrate the currency of the existing speed limit.
3.5.2 Stage 2: Criteria Based Speed Limit assessment

Stage 2 requires the undertaking of a Criteria Based Speed Limit (CBSL) assessment.

A CBSL is a speed limit determined in accordance with specific criteria relevant to that speed zone. Detail of CBSLs that exist are provided at Section 4 of this Part of the Manual.

The aim of the CBSL assessment stage is to identify whether or not a CBSL is applicable to the speed zone under review.

If a speed zone satisfies the criteria for application of a CBSL, it is possible to go directly to Stage 6 of the Speed Limit Review process, which is to make a recommendation for application of a speed limit.

If no CBSL applies, then it is necessary to proceed to stages 3 and 4.

3.5.3 Stage 3: Determination of the Risk Assessed Speed Limit

Stage 3 is determination of the Risk Assessed Speed Limit (RASL).

A RASL is a speed limit that is determined through consideration of a combination of crash risk, infrastructure risk, environment context class and road functional class.

More detail on how to derive the RASL for a speed zone is provided at Section 5.1 of this Part of the Manual.

Stages 3 and 4 may be completed concurrently but both must be completed prior to commencement of Stage 5.

3.5.4 Stage 4: Determination of the Speed Data Speed Limit

Stage 4 is determination of the Speed Data Speed Limit (SDSL).

A SDSL is a speed limit that is based on analysis of speed data within a speed zone where the speed limit is under review.

More detail on how to derive the SDSL for a speed zone is provided at Section 5.2 of this Part of the Manual.

Stages 3 and 4 may be completed concurrently but both must be completed prior to commencement of Stage 5.

3.5.5 Stage 5: Option Selection

Stage 5 is Option Selection.

The objective of Stage 5 is to use the information derived from both Stage 3 and Stage 4 to select an appropriate speed limit.

The process of Option Selection is described at Section 6 of this Part of the Manual.

Upon completion of Stage 5 it is necessary to proceed to Stage 6.

3.5.6 Stage 6: Engineer recommendation

Stage 6 is the process of making a recommendation based on the preceding stages.

The process of making a recommendation is described at Section 7 of this Part of the Manual.

Upon completion of Stage 6 it is necessary to proceed to Stage 7.
3.5.7  **Stage 7: Approve and implement**

Stage 7 is the process of approval and implementation.

The process of approval and recommendation is described at Section 8 of this Part of the Manual.

Upon completion of Stage 7 it is necessary to proceed to Stage 8.

3.5.8  **Stage 8: Monitor and evaluate**

Stage 8 is the process of monitoring and evaluation.

The process of monitoring and evaluation is described at Section 9 of this Part of the Manual.
4 Criteria Based Speed Limits

4.1 General

A CBSL is a speed limit that is determined in accordance with specific criteria relevant to that speed zone. This section describes the process that must be used to determine whether a CBSL applies. The process is depicted in Figure 4.1, which must be read in conjunction with the relevant sections following.

Figure 4.1 – Flowchart for Criteria Based Speed Limits

In the context of the flowchart at Figure 4.1 and Stage 2 of the Speed Limit Review process described at Section 3.5, engineers must decide whether or not one of these CBSLs is applicable for the speed zone that is under review.
Stages 3, 4 and 5 of the Speed Limit Review process may be omitted if it is determined that a CBSL applies.

4.2 Criteria Based Speed Limit process

The CBSL process comprises seven steps, the last of which is that a CBSL does not apply. With reference to Figure 4.1, this section describes briefly each of the steps where a decision is to be made about application of a CBSL, with reference to where in this Part of the Manual more information about each CBSL is located.

Step 1  Is the speed zone a foreshore?
If so, guidance for speed limits in a foreshore speed zone is provided at Section 4.3.1.

Step 2  Is the speed zone considered to be a car-park or access driveway?
If the speed zone being considered is a car-park or access driveway, then it is usual to apply a 10 km/h speed limit if there are traffic calming devices present and a 20 km/h speed limit if there are not traffic calming devices present.

Step 4  Is the speed zone a shared zone?
The criteria for a shared zone are described at Section 4.3.2. If the speed zone being considered is a shared zone, then a 10 km/h speed limit typically applies.

Step 5  Is the road segment unsealed or have a narrow seal?
If so, guidance for speed limits is provided at Section 4.3.3.

Step 6  Does the speed zone satisfy HATUA zone requirements?
If so, guidance for speed limit is provided at Section 4.3.4.

Step 7  Is the speed zone an urban (or semi-urban) local access street?
The criteria and speed limits for a local / access street are described at Section 4.3.5.

While the selection of a CBSL may appear at face value to be a prescriptive process, application of engineering judgement (see Section 1.3.1) is expected when determining whether a CBSL is appropriate.

4.3 Types of Criteria Based Speed Limit

The types of CBSL that may apply are described in more detail in the following sections.

4.3.1 Foreshore speed zone

The foreshore is defined (in the Coastal Protection and Management Act 1995) as the land lying between high-water mark and low-water mark as is ordinarily covered and uncovered by the flow and ebb of the tide at spring tides.

There are many variables on the foreshore that may change over time of day or year. Tidal flows influence the width of the foreshore that is available for driving or for conducting other beach activities. Similarly, seasonal factors determine the volume of both pedestrian and traffic activity on a foreshore. Other environmental factors, such as washouts and so on, also influence driving speeds on the foreshore as well as activities such as camping, hang-gliding, and the preservation of native and endangered species.

This section of this Part of the Manual applies to foreshores where vehicles may be driven on the foreshore and where the default speed limit for a road that is not in a built-up area (that is, 100 km/h) is considered to be inappropriate due to the level of pedestrian and other activities on the foreshore.
If there is no posted speed limit on the foreshore, the default speed limit for a road that is not in a built-up area (that is, 100 km/h) will apply and drivers will choose a speed with which they are comfortable, depending on the variables.

Where a posted speed limit is to apply on the foreshore, the speed limit should be based on a consideration of the peak pedestrian volume and activity on the foreshore. Setting a speed limit based on pedestrian volume and activity that happens only at certain times of the year, or where the activity or foreshore conditions vary significantly, may not suit some motorists during non-peak periods and may result in non-compliance with the speed limit during these periods.

The speed limit permitted on the foreshore should be based on the assumption that the conditions on the foreshore are ideal for driving: for example, it is free of washouts and the sand is well-compacted. This may not always be the case but the speed limit represents the maximum safe speed under these ideal conditions. The local government must consult with representatives from Transport and Main Roads and Queensland Police Service. It may also consult with representatives from Transport and Main Roads responsible for managing environment, natural resources, parks and wildlife, marine parks and any other stakeholder. Consultation with other agencies that may have an interest is also encouraged.

4.3.2 Shared zone

This is a zone with the speed limit applied to an area or length of road that is shared by vehicles, cyclists and pedestrians.

Shared zones are generally constructed in areas where the competing demands of pedestrians, cyclists, motorised vehicles and parking require a form of control which allows complete pedestrian mobility whilst at the same time enhancing pedestrian safety. A speed limit of 10 km/h applies.

In the design of a shared zone, the most important single element is to alter the environment to make it obviously different from other streets. This can be achieved by the use of different coloured and textured paving, by the use of full width paving between property lines and by judicious and aesthetic placement of planters and other landscaping. In considering the needs of people with disabilities in a shared zone, reference should be made to MUTCD Part 10 and AS1428.1.

Shared zones are provided on roads in commercial or shopping areas. They are appropriate where all of the following conditions exist:

(a) the road is not used as a through route
(b) pedestrian movement predominates
(c) reasonable vehicle movements (for example, parking, loading / unloading, and so on) are required, and
(d) it is desired to clearly establish the priority of pedestrian movement.

Entry to a shared zone is not restricted (that is, it is not controlled by permit) although particular classes of vehicle may be prohibited (for example, large trucks).

Parking bays are marked to control parking of vehicles within the shared zone.

Guidance for signing a Shared Zone is provided at Section 12.2. Textured pavements or other perimeter treatments should be considered (refer MUTCD Part 13).
4.3.3 Unsealed roads and roads with narrow seals

Speed limits, other than default built-up area, default outside built-up area or school zone speed limits (refer to Section 7.2.1) should not be applied to unsealed road or roads with narrow seals: that is, seals of insufficient width for two vehicles to pass without use of the shoulder or verge.

4.3.4 High Active Transport User Area zone

The process of establishing an appropriate speed limit for a linear section or network of roads may be influenced by other road user activity alongside or on the road. The Movement and Place framework outlined in Austroads’ *Guide to Traffic Management* Part 4: Network Management acknowledges that roads serve two primary roles for the users:

(a) movement – facilitate the movement of people and goods, and
(b) place – act as a place for people.

The Movement and Place framework considers that roads serve a certain level of each of these roles as opposed to the traditional view that considered roads serve a balance between Movement and Access. High Active Transport User Areas (HATUAs) are areas that encourage social activity and are considered to have a significant value to the community by being a ’place’ for people to gather. Roads and streets that are considered to be within HATUAs have land uses and developments that generate or attract levels of pedestrians and cyclists that are considered higher than typical.

The following presents a number of characteristics that should be considered when identifying HATUA sites:

- there is a significant number of pedestrians travelling adjacent the road corridor for key periods of the day, or
- there is a high demand for pedestrians to cross the road corridor for key periods of the day, or
- there is a significant number of cyclists that travel along the road corridor during key periods of the day, or
- it is expected that any of these would increase in the near future, or
- any combination of these.

Examples of activity centres that might be expected to be considered a HATUA are:

- recreational areas, such as shorefronts and esplanades
- hospital zones (refer Section 12.6)
- entertainment areas (refer Section 7.2.2)
- Central Business Districts.

The speed limit to be adopted must be governed by the upper limit of the 15km/h pace. Where the upper limit of 15 km/h pace is less than 39 km/h, a speed limit of 30 km/h may be adopted. Otherwise a speed limit of 40 km/h should be adopted. If the upper limit of 15 km/h pace speed is higher than 49 km/h, the engineer must consider whether additional controls are required to ensure greater levels of compliance. Measures including road infrastructure enhancements (for example, signage or traffic calming devices), enforcement or community engagement may be needed to influence vehicle speeds, should the reduced speed limit not be considered appropriate.
4.3.5 Local access street

The function of a local access street is to provide for direct property access and/or for limited local neighbourhood movement. Local streets are generally characterised by having the trip start or end within the local area and are typically classified as access, local streets or collector streets (refer to Table 5.1.5(B) for functional descriptions) in an urban environment (refer to Table 5.1.5(A) for environmental context classification descriptions).

Local streets typically have some or all of the following additional characteristics:

- a roadway width of 6–10 metres (or less)
- absence of centre-line markings
- located in built-up areas which typically have maximum block sizes up to 2000 m², and
- have a maximum average daily traffic volume of 3000 vehicles (or service up to 300 dwellings).

Note: These typical characteristics are given for guidance only. Depending on the nature and extent of the local road network, there may be significant variation on the traffic volume and road features in the local road hierarchy.

The default speed limit for a road in a built-up area of 50 km/h should be adopted; however, where the upper limit of 15 km/h pace is less than 49 km/h, a speed limit of 40 km/h may be adopted.

Where it is considered desirable to implement a 40 km/h speed limit, and the upper limit of 15 km/h pace speed is not less than 49 km/h, the engineer must consider whether additional controls are required to ensure greater levels of compliance. Measures including road infrastructure enhancements (for example, signage or traffic calming devices), enforcement or community engagement may be needed to influence vehicle speeds, should the lower speed limit not be considered appropriate (see MUTCD Part 13).

Engineers are reminded that speed restriction signs (refer to Section 10) are generally not installed on local streets where the default speed limit for a road in a built-up area of 50 km/h applies. There are instances, however, when 50 km/h speed restriction signs will need to be installed. These include, for example, at the termination of school zones on local streets or when the function of a road changes from traffic carrying to local access.
5 Risk Assessed Speed Limit / Speed Data Speed Limit

This section describes the standard technical procedure to be applied for establishing speed limits on roads that are not subjected to the application of the CBSL provided in Section 4.

This section provides guidance to engineers required to determine the RASL and the SDSL that are required respectively at Stages 3 and 4 of the Speed Limit Review process described in Section 3 of this Part of the Manual.

5.1 Risk Assessed Speed Limit

The RASL is the speed limit that is determined through consideration of a combination of crash risk, infrastructure risk, environmental context class and road functional class.

The broad process, which comprises six steps, for determining the RASL is depicted in Figure 5.1.

Figure 5.1 – Risk Assessed Speed Limit flowchart
5.1.1  Risk Assessed Speed Limit Step 1 – Obtain relevant infrastructure and crash data

Eight road attributes have been identified as having key impacts on safety risk. These are:

(a) road stereotype
(b) alignment
(c) carriageway (lane and shoulder) width
(d) roadside hazards
(e) land use
(f) intersection density
(g) access density
(h) traffic volume.

Guidance for selection of the appropriate category for each road attribute is provided in the Transport and Main Roads Infrastructure Risk Rating Manual.

In addition, the process requires collection of crash data for the speed zone under review, collected over the most recent five-year period, disaggregated by Definitions for Coding Accidents (DCA) Code Group (see Appendix C).

5.1.2  Risk Assessed Speed Limit Step 2 – Determination of the Crash Risk Rating

Step 2 of determination of the RASL requires the determination of the CRR.

CRR is a risk classification determined by a quantitative measure of personal crash risk based on frequency of occurrence of casualty crashes along the speed zone. CRR is a historic measure of crashes that have occurred.

CRR is determined in accordance with the process at Appendix C. The output is in terms of a numerical score which translates to a descriptive CRR classification.

5.1.3  Risk Assessed Speed Limit Step 3 – Determination of the Infrastructure Risk Rating

Step 3 of the determination of the RASL requires the determination of the IRR.

IRR is a measure of the expected risk associated with the road infrastructure based on an objective assessment of the road attribute data collected at Section 5.1.1. IRR is determined in accordance with the process described in the Transport and Main Roads Infrastructure Risk Rating Manual.

The output is in terms of a numerical score which translates to a descriptive IRR classification.

5.1.4  Risk Assessed Speed Limit Step 4 – Computation of Road Risk Metric

Step 4 of the determination of the RASL is the computation of the RRM, which is a descriptive risk classification that is a combination of the CRR determined in Section 5.1.2 and the IRR determined in Section 5.1.3.

Speed limit reviews undertaken on roads with divided carriageways require calculation of the IRR, CRR and RRM separately for each direction. The resultant RRM for the speed zone should be the higher RRM of the two.

This is undertaken using the RRM matrix (Table 5.1.4).
Table 5.1.4 – Road Risk Metric matrix

<table>
<thead>
<tr>
<th>Crash Risk Rating</th>
<th>Infrastructure Risk Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

If the RRM is determined to be high, program infrastructure to improve road safety in the future, although this is not part of the speed limit setting process.

5.1.5 Risk Assessed Speed Limit Step 5 – Determination of environmental context and functional classification

Step 5 of the determination of the RASL is the determination of the environment context classification and the road functional classification for the section of road that is being studied.

Environmental context classification is one of the following:

- urban
- semi-urban
- rural.

Guidance for selecting the correct environmental context classification is provided at Table 5.1.5(A).
### Table 5.1.5(A) – Environmental context classification

<table>
<thead>
<tr>
<th>Road in environmental context classification</th>
<th>Description</th>
<th>Typical land uses¹</th>
</tr>
</thead>
</table>
| Urban environment                           | A road in which either of the following is present for a distance of at least 500 m or, if the length of road is shorter than 500 m for the whole road:  
  a) average lot sizes of less than 0.5 Ha in size and have an average frontage of less than 40 m, or  
  b) street lights not over 100 m apart. | Typical land uses may include:  
  - commercial strip shopping  
  - commercial big box  
  - industrial  
  - urban residential  
  - rural town; and  
  - highway / arterial roads with controlled access. |
| Semi-urban environment                      | If a road section does not meet the criteria for ‘Urban’ and typically buildings on adjacent lots, not over 100 m apart, on land next to the road for a distance of at least 500 m or, if the length of road is shorter than 500 m for the whole road. | Typical land uses may include:  
  - urban residential  
  - rural residential  
  - rural town, and  
  - highway / arterial roads with controlled access. |
| Rural environment                            | All other roads. | Typical land uses may include:  
  - rural residential  
  - remote rural, and  
  - no-access freeways with at-grade intersections. |

1. Land uses have been provided as a guide only. The components listed in the Description must be used for Identification of the appropriate environmental context class.

Roads are classified in terms of their function as part of the development of a road hierarchy plan. In the context of this process, road functional classification is one of the following:

- local / access
- collector street
- trunk collector road
- sub-arterial or arterial road (urban and rural only)
- motorway / freeway / expressway (urban only).

Guidance for selecting road functional classification for each of the three environmental context classes described previously is provided in tables 5.1.5(B), 5.1.5(C) and 5.1.5(D).

Note: The road must be classified according to these tables and not other road classification systems such as those that may be maintained by some road authorities. Comparisons have shown significant variation between existing road classification systems. Use of these tables is necessary for consistency in speed limit setting across the state.
### Table 5.1.5(B) – Risk Assessed Speed Limits: Roads in an urban environment

<table>
<thead>
<tr>
<th>Road class</th>
<th>Functional description</th>
<th>Indicative traffic volumes¹</th>
<th>Road Risk Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access / local street</td>
<td>Access to property</td>
<td>&lt;1000 vpd</td>
<td>Refer to CBSL process</td>
</tr>
<tr>
<td>Collector street</td>
<td>Access to property and other streets; local neighbourhood access</td>
<td>1000–3000 vpd</td>
<td>60 km/h</td>
</tr>
<tr>
<td>Trunk collector road</td>
<td>Transport of people and goods within suburbs; district movement</td>
<td>2500–15,000 vpd</td>
<td>60 km/h</td>
</tr>
<tr>
<td>Sub-arterial, arterial road</td>
<td>Transport of people and goods across suburbs and between metropolitan areas, typical intersection spacing 0.3–1.0 km</td>
<td>&gt;10,000 vpd</td>
<td>70 km/h²</td>
</tr>
<tr>
<td>Motorway, freeway, expressway</td>
<td>Direct access is generally prohibited, transport of people and goods through and around metropolitan centres</td>
<td>&gt;45,000 vpd</td>
<td>100 km/h</td>
</tr>
</tbody>
</table>

1. Maximum traffic flows are indicative only because typical traffic flows for some functional classifications will differ significantly between major south-east Queensland urban areas and regional urban areas. Maximum traffic flow should not be the deciding factor for the functional classification of urban roads.

2. RASL of 80 km/h may be adopted on road segments with divided carriageways, fewer than two accesses per km and fewer than two intersections per km.

### Table 5.1.5(C) – Risk Assessed Speed Limits: Roads in a semi-urban environment

<table>
<thead>
<tr>
<th>Road class</th>
<th>Functional description</th>
<th>Road Risk Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access / local street</td>
<td>Access to property</td>
<td>60 km/h</td>
</tr>
<tr>
<td>Collector street</td>
<td>Access to property and other streets; neighbourhood access</td>
<td>70 km/h</td>
</tr>
<tr>
<td>Trunk collector road</td>
<td>Transport of people and goods within suburbs; district movement</td>
<td>80 km/h</td>
</tr>
</tbody>
</table>
Table 5.1.5(D) – Risk Assessed Speed Limits: Roads in a rural environment

<table>
<thead>
<tr>
<th>Road class</th>
<th>Functional description</th>
<th>Road Risk Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Access / local street</td>
<td>Only for roads that provide direct access to property</td>
<td>80 km/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70 km/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 km/h</td>
</tr>
<tr>
<td>Collector road</td>
<td>Used for access to properties and other roads and for local neighbourhood access within the rural residential areas, generally used only by owners of properties along those roads and by other people living within the rural areas</td>
<td>80 km/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70 km/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 km/h</td>
</tr>
<tr>
<td>Trunk collector road</td>
<td>Used to travel through an area or as a major connector into an area, significant use by motorists from outside the area</td>
<td>100 km/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 km/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80 km/h</td>
</tr>
<tr>
<td>Arterial road</td>
<td>These roads form the principal avenues for communications between major regions including direct connections between cities, between a capital city and adjoining states and their capital cities, between a capital city and key towns and between key towns</td>
<td>100 km/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 km/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90 / 80¹ km/h</td>
</tr>
</tbody>
</table>

1. 80 km/h should be applied where the road segment is in a residential land use or where the speed limit is already 90 km/h; however, the RRM is still High.

5.1.6 Risk Assessment Speed Limit Step 6 – Determination of the Risk Assessed Speed Limit

Step 6 is the determination of the RASL.

The RASL is determined with reference to tables 5.1.5(B), 5.1.5(C) and 5.1.5(D), by following this procedure:

1. Identify RRM as determined in Section 5.1.4
2. Identify environmental context classification determined in Table 5.1.5(A) of Section 5.1.5.
3. Identify road functional classification determined in Section 5.1.5.
4. Read off the suggested speed limit from the appropriate table.

This suggested speed limit is the RASL.

5.2 Speed Data Speed Limit

The SDSL is the speed limit that is determined through analysis of speed data for the speed zone that is under consideration. This speed is representative of the general perception of a reasonable travel speed on a particular section of road or network of roads.

The broad process for determining the SDSL, which comprises two steps resulting in a decision point, is depicted in Figure 5.2.
5.2.1 Speed Data Speed Limit Step 1 – Collect and analyse speed data

**Speed data collection**

Speed data collection sites (stations) should be located within homogeneous segments of the speed zone under consideration. Each segment should contain a uniform road environment and/or be a logical segment between significant nodes (for example, major intersection, bridge, commercial centre, railway crossing, and so on). The location of stations should be representative of the general road environment and traffic conditions within the particular segment.

For manual speed surveys, vehicle speeds should be recorded on a *Speed Survey Field Sheet* (see Figure B2 in Appendix B). Guidelines for conducting speed surveys are included in Appendix A.

**Speed data processing**

The mean speed, upper limit of the 15 km/h pace, and percentage within the pace are to be determined. For a manual analysis, this is done using a standard *Speed Survey Calculation Sheet* (see Figure B3 in Appendix B). Cumulative speed curves and speed frequency distribution curves for each direction of travel at each station can be plotted to assess the normality of the speed distribution (see Figure B4 in Appendix B).

Various speed data management software packages are available to assist engineers to process and analyse speed data collected using automated methods. Care must be taken when using automated methods to ensure adherence to the guidelines in Appendix A.

5.2.2 Speed Data Speed Limit Step 2 – Do speed data correlate with speed limit

An ideal speed distribution is considered to have the following characteristics:

(a) vehicle speeds are in a compressed band width (comparable with a normal distribution)

(b) a low percentage of recorded speeds are below the lower limit of the 15 km/h pace, with greater than 60% within the 15 km/h pace, and

(c) the upper limit of the 15 km/h pace is approximately the same value as the speed limit.

The speed distribution obtained from the data processing (Section 5.2.1) is tested against the criteria in Table 5.2.2 to determine whether it conforms to an acceptable speed distribution for the existing speed limit.
Table 5.2.2 – Speed data test ranges

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Existing Speed Limit (km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Percentage within pace</td>
<td>&gt;60</td>
</tr>
</tbody>
</table>

5.2.3 Decision

If the speed distribution conforms to the acceptable distribution for the existing speed limit (at Section 5.2.2 and Table 5.2.2), the existing speed limit is accepted as the SDSL.

If the speed distribution does not conform to the acceptable distribution for the existing speed limit, the upper limit of the 15 km/h pace (measured in Section 5.2.1) is used to determine the suggested SDSL using Table 5.2.3.

Table 5.2.3 – Suggested speed limit from speed data analysis

<table>
<thead>
<tr>
<th>Upper limit of the 15 km/h pace</th>
<th>59</th>
<th>60–66</th>
<th>67–76</th>
<th>77–86</th>
<th>87–96</th>
<th>97–105</th>
<th>&gt;105</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suggested SDSL</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>90</td>
<td>100</td>
<td>110</td>
</tr>
</tbody>
</table>
6 Option Selection

Stage 5 of the process is Option Selection.

At this point in the process, which implies that a CBSL does not apply to the subject site, the engineers undertaking the Speed Limit Review should have both a RASL (from Section 5.1) and a SDSL (from Section 5.2).

The process for selection of a speed limit to consider for recommendation is depicted at Figure 6. This flowchart must be read in conjunction with the text following.

**Figure 6 – Comparison of Risk Assessed Speed Limit and Speed Data Speed Limit**

If the SDSL corresponds with the RASL, this is the speed limit that should be chosen. Otherwise:

- If the SDSL is lower than the RASL it is considered that the road environment is constrained due to either road infrastructure measures or traffic capacity restrictions. In this scenario, while the SDSL is lower than the speed limit typical of the function of the road, the SDSL should be chosen to encourage more uniform vehicle speeds along the road corridor.

- If the SDSL is higher than the RASL, it is the RASL that should be chosen. This outcome indicates that drivers are travelling faster than the speed that is appropriate for the road. This can be related to drivers' perceptions of road function or road environment. Accordingly, increased enforcement measures are recommended to reduce vehicle speeds to be more appropriate for the roads' function and/or infrastructure elements. Alternatively, minor road infrastructure improvements can be provided to support the RASL.
7 Engineer recommendation

Stage 6 of the Speed Limit Review process (Figure 3.5) is the process of making a recommendation. At this stage, the engineer undertaking the Speed Limit Review must have derived an assessed speed limit, which is either:

- a Criteria Based Speed Limit, or
- the lower of the RASL and SDSL.

Engineering judgement is required to consider whether the recommendation is suitable for the context, for example, consideration should be given to:

- adjacent speed limits
- length of speed zones (refer to Section 3.4)
- route consistency (refer to section 3.3)
- road infrastructure elements not previously considered
- specific safety risks not fully accounted for in the IRR component
- history of Speed Limit Reviews at the subject location
- other circumstances (refer to Section 7.2).

If the engineer, on considering these and other relevant factors, considers the assessed speed limit unsuitable for the context, he or she must recommend what they judge to be the most appropriate speed limit, based on all factors considered. If the engineer considers the assessed speed limit to be suitable for the context, that must be the recommended speed limit.

The reasons for the recommendation are to be documented.

Additionally, the recommendation may include:

- programming of works to improve the overall safety of the speed zone
- undertaking speed management activities to reduce prevailing vehicle speeds.

Once a Speed Limit Review has been completed, the engineer undertaking the Speed Limit Review must forward the recommendation to the road authority’s responsible officer. This requirement applies equally to reviews where the recommendation is to ‘do nothing’, that is, the recommendation is to retain an existing speed limit and undertake no additional works.
A recommendation from the engineer must contain a checklist (refer to Appendix D) completed to a stage required to support a recommendation, and the following documents, where relevant:

(a) a plan showing physical features of the road, existing development, traffic control devices present and existing speed limits
(b) details of crashes
(c) traffic volumes
(d) results of a speed survey
(e) pedestrian movements, and
(f) a copy of relevant portion of the road hierarchy plan.

Note: A complete file may not always contain all of these documents listed.

7.1 Responsible officer review

The responsible officer must forward the engineer’s recommendation and relevant documentation to the Speed Management Committee (SMC), if the responsible officer is satisfied that:

• the Speed Limit Review has been conducted by a suitably qualified engineer, and
• the Speed Limit Review has been conducted in accordance with the procedure described in this Part of the Manual.

If the responsible officer needs clarification or has reason to believe the engineer may not have followed the process set out in this Part of the Manual, the responsible officer may seek further advice from the engineer.

7.2 Other circumstances

This section describes criteria that may be used to determine when an existing speed limit can be modified.

7.2.1 School zone speed limit

This is a speed limit that is associated with a school. Governance for speed limits at school zones is provided in TRUM Volume 2 Guide to Road Safety Part 3 Speed Limits and Speed Management Section 3.2-1 School zones.

7.2.2 Variable speed limits

VSLs are applied when the need for periodic changes in the speed limit of a speed zone arise, typically for reasons such as:

(a) changes in weather conditions that affect the safe speeds at which all vehicles can be driven on a particular speed zone: for example, occasional fog, rainfall or crosswinds on a bridge, which can significantly affect vehicle control
(b) sites or events that generate high traffic volumes
(c) periodic activity, for example, opening and closing heavy vehicle inspection stations on a highway, which may warrant a reduction in general traffic speeds past the site due to heavy vehicles leaving or entering the traffic stream
(d) at school zones (refer to Section 7.2.1)
(e) to regulate traffic flow and ease traffic congestion or for incident management as part of an adaptive speed control system

(f) at entertainment areas, near sporting complexes, commercial precincts, and other high active transport user areas where the presence of active transport users is consistent at certain times of the day or days of the week

(g) during special events.

Separate requirements apply to the VSL zone implementation for roads operating in motorway, long bridge or tunnel environments. VSL requirements for these environments are specified in TRUM Volume 1 Guide to Traffic Management Part 10 Traffic Control and Communication Devices Section 5.7-1 Guidelines for the permanent placement of variable speed limit and lane control signs for motorways, long bridges and tunnels.

VSL signs must comply with the provisions of Section 10.4.

7.2.3 Traffic carrying roads through strip-shopping centres and commercial areas

A 50 km/h speed limit may be erected on traffic carrying roads as follows:

(a) Traffic carrying roads that have constrained or changed physical environments to support the lower limit. A typical circumstance is where nodal traffic calming scheme has been introduced or where a constrained speed environment exists on roads through strip shopping areas and commercial areas. The restriction of vehicle speeds in these situations is considered as part of an integrated scheme that aims to balance land use, parking and traffic management, safety, and amenity.

(b) Notwithstanding the requirement as stipulated in Item 7.2.3(a) for traffic carrying roads to have constrained physical environment to support the implementation of speed limit lower than 60 km/h, local governments, in agreement with the local Traffic Advisory Committee (TAC) and Speed Management Committee (SMC) may implement a lower speed limit on traffic carrying roads if it believes that the implementation of such lower speed limits would improve safety and amenity. Local governments need to demonstrate that the implementation of a reduced speed limit would be credible and self-compliant and that no additional speed compliance or enforcement measures would generally be required.

(c) Foreshore esplanades which are not major traffic routes and where significant recreational activity indicate that a speed limit lower than 60 km/h is appropriate.

The nodal approach to traffic calming or speed management aims to improve levels of safety on traffic carrying roads in areas which support higher levels of mixed land use, while retaining suitable levels of mobility on the overall route.

A constrained environment on a traffic carrying road would generally result in the upper limit of 15 km/h pace speeds typically less than 59 km/h without the need for any traffic calming.
7.2.4 Speed zones on state-controlled roads through rural towns

State-controlled roads through rural towns may generally be signed at 60 km/h; however, the increased pedestrian activity and the speed environment through some rural towns suggest that a speed limit lower than 60 km/h should be established to increase the safety for pedestrians while still maintaining mobility for through traffic and amenity for adjacent land users. Speed zones of 40 km/h or 50 km/h may be applied to state-controlled roads through rural towns with strip-shopping centres, commercial areas, and activity centres. A lower speed limit should only be considered for roads with an existing speed limit of 60 km/h.

Roads considered for a reduced speed limit must satisfy the following criteria:

- the speed environment through the town supports the reduced speed limit, and
- there is an increased pedestrian activity throughout the length of the speed zone, or
- there is a history of pedestrian-related crashes which cannot be addressed by other feasible engineering treatments.

To encourage maximum voluntary compliance with the speed limit, it is highly desirable that the speed environment is compatible with the speed limit. Where the speed environment is not compatible with the speed limit, the speed environment through the town should be physically changed. The following physical treatments should be considered to change the speed environment through the town:

- provide narrow traffic lanes for through traffic
- provide kerbside parking and/or centre parking
- installation of kerb extensions at the start of the speed zone and within the speed zone
- modify existing pedestrian facilities to elevated (wombat) crossings, or install new wombat crossings
- provide adequate landscaping
- installing threshold treatments to identify the start of the speed zone.

Where there are only scattered / isolated shopping / commercial premises along a road, a 50 km/h speed limit is not likely to be applicable.

Implementation of 50 km/h speed zones at state-controlled roads through rural towns should be carried out in accordance with the guidelines described in Section 12.5.

Lengths of speed zones given in Table 3.4 do not apply where isolated hamlets or townships require a 50 km/h speed limit as per the provision of this section. For 50 km/h speed zones on state-controlled roads through rural towns, separate guidelines apply (see Section 12.5.2).

Traffic volume is generally not a criterion for determining the suitability of a 50 km/h speed limit through a town; however, on lower-volume roads through small towns in more remote areas, a significant percentage of the vehicles will be using the road to access the town facilities – that is, the road will be providing more of a local traffic function. In such cases, a 50 km/h speed limit could be considered if it does not adversely affect the performance of the state road network and the road environment could be altered.
Circumstances in which a 50 km/h speed limit would generally not be appropriate include:

- roads with an existing speed limit greater than 60 km/h
- roads with an existing speed limit less than 50 km/h
- roads with isolated shops or commercial properties
- where the speed environment is not compatible with the 50 km/h speed environment, and
- where shops and commercial properties are located on service roads and there is no parking on the through route.

7.2.5 Speed limit reductions in high crash zones (Black Links)

Following a Speed Limit Review, a Black Links solution shall be considered on a road section if:

1. the crash rate for the road section as determined by the procedure outlined in Appendix C (see Section C3 Calculating the crash rate) is significantly higher (at least three times higher) than the crash rate threshold for a High CRR (Table C2 in Appendix C) or if the rate of fatal and serious injury (FSI) crashes is very high when compared to the rest of the road network, and
2. a road safety review has been completed that recommends road infrastructure improvement works to reduce FSI crash risk but these works will not be implemented in the short term (less than 12 months).

The road safety review can be any engineering investigation and development activity that is undertaken to identify remedial engineering treatments that are known to reduce the risk of FSI crashes. Examples are safety-focused planning studies and options analyses, road safety audits and treatments of crash locations processes outlined in Austroads Guide to Road Safety.

Where Black Links Solutions are implemented, speed data shall be collected prior to implementation and analysed to that of post-implementation data collected at six-monthly intervals to ensure the effectiveness of the speed reduction measure implemented in accordance with this Part of the Manual.

Black Links Solutions shall be removed once the road infrastructure improvement works identified in the road safety review have been implemented. The new speed limits should be determined by a Speed Limit Review.

Signs for Black Links Solutions must be installed in accordance with the signage requirements given in Section 12.3.

7.2.6 Speed limits on approaches to rural intersections

Speed limits may be reduced on the approaches to intersections with speed limits of 80 km/h or greater, which have either a high crash history or high potential of crash risk (as assessed using tools such as AusRAP or road safety audit) as follows:

(a) controlled approach – speed limit may be reduced to 60 km/h
(b) uncontrolled approach – the speed limit may be reduced by up to 30 km/h.

Lengths of speed zones with reduced speed limit and signage requirements shall be as described in Section 12.4.
7.2.7 110 km/h speed limit

7.2.7.1 General

The 110 km/h speed limit must only be applied to a National or State Highway of an appropriate standard for the expected operating speed. This section does not apply to a declared motorway or a road built to a motorway standard.

The 110 km/h speed limit may be applied to either divided or undivided roads which meet the criteria listed following.

Note: Approval for 110 km/h speed zones which satisfy the selection criteria listed must be obtained from Transport and Main Roads General Manager (Program Delivery and Operations).

7.2.7.2 Criteria for the application of 110 km/h speed zones

A 110 km/h speed zone may only be established when the section of road under consideration complies with the criteria listed following:

(a) an existing 100 km/h speed limit applies

(b) traffic not likely to exceed 2500 vehicles per lane per day on long-term projected volume

(c) the abutting land is undeveloped and, as such, there is minimal movement of pedestrians, cyclists and slow-moving vehicles onto or across the road

(d) major intersections are spaced not less than 10 km apart with low-volume side road intersections spaced not less than 1 km apart

(e) low density of access is present (generally fewer than two access points/km in total on both sides of carriageway)

(f) the crash rate, calculated over a period of not less than five years, must not exceed those rates outlined in Table C2 in Appendix C

Note: The crash profile should be examined to identify crash clusters, and consideration should be given to implementing countermeasures which address the crash history.

(g) the road must be constructed to a geometric standard for a speed no less than the actual or predicted operating speed for the whole road section being considered; the standard must be in accordance with the Road Planning and Design Manual and Guidelines for Road Design on Brownfields Sites

Note: Use of Extended Design Domain (EDD) and/or occasional design exception may be allowed if suitable justification can be provided.

(h) for divided roads, median barrier requirements must apply as well as adequate provision for safe accessibility for maintenance operations to and from the median

(i) except as provided in Section 7.2.7.3, the candidate road segment must be not shorter than the minimum length given in Table 3.4 unbroken by lower speed limits

(j) the limit must have an obvious start and finish which will typically coincide with a town or settlement or a change in road environment (that is, it will not start or finish where there is no obvious change in land use and/or speed environment)
(k) at approval stage, average pavement roughness should not exceed IRI 4, with not more than 20% of the route exceeding IRI 4 and absolute maximum pavement roughness being IRI 6; however, where there are sections of road with crossfall that exceeds 5% on straight sections of road or 7% on curves absolute maximum roughness should not exceed IRI 4 – pavement roughness should be maintained in accordance with roughness standards for National Highways in the *Routine Maintenance Guidelines*.

(l) centreline and edgeline pavement markings must be provided on roads with AADT of greater than 500; for roads with an AADT lower than 500, centreline marking must be provided and edgelines should be provided.

(m) before a 110 km/h zone is approved, a road safety audit must be undertaken to identify any potential hazards, with particular attention being paid to the provision of adequate protection at embankments and the provision of bridge barriers. In addition to this, attention should be given to elements that may be contrary to motorists’ expectation and these should be appropriately treated (for example, signing).

### 7.2.7.3 Exceptional circumstances

There may be circumstances where a candidate 110 km/h zone is fragmented by a speed zone that does not meet all of the criteria listed previously. Such a segment shall be permitted only where:

(a) the overall zone length of the 110 km/h zone under consideration is greater than 40 km

(b) there are no more than two such segments over a 40 km zone

(c) the segment does not exceed a length of approximately 4 km.

Where such a segment is permitted, the following arrangements must be made:

(a) for a short segment up to 0.5 km in length (for example, isolated curves, narrower sections of road, short segments of rough pavement), larger warning signs and/or additional warning signs must be installed to ensure that the driver is aware of changed conditions (for example, road narrowing, floodway), or

(b) for a longer segment, between 0.5 km and 4 km, a speed limit of 100 km/h must be implemented and larger and/or additional warning signs provided.

Where a road between two settlements / towns satisfies the criteria for a 110 km/h speed zone, a minimum segment length of 15 km is acceptable.

### 7.2.7.4 Audits of 110 km/h speed zones

It is essential that all 110 km/h speed zones are maintained to the standards as required in the *Routine Maintenance Guidelines* and comply with these *Guidelines* throughout the life of the speed zone. All 110 km/h speed zones must be audited for compliance with the criteria in Section 7.2.7.2 and *Routine Maintenance Guidelines* every three to five years.

Where it is found that the 110 km/h speed zone does not comply with the criteria in this section of this Part of the Manual, the speed limit must be reduced.
7.2.8 Treatment for rough surfaces

Where pavement surface deterioration, measured by its roughness index, is likely to contribute to an increased risk of crashes, the following measures should be considered:

(a) If the section of road with poor pavement condition is short (1 km or less), temporary reduce speed advisory signs indicating the nature of hazard (ROUGH SURFACE) may be installed. These signs shall be removed after the roughness issue is addressed.

(b) If the section of road with poor pavement condition is long (more than 1 km), the speed limit should be temporarily reduced and drivers advised of the reason for the reduction (by implementing a treatment using a similar approach to that outlined in Section 7.2.5). The previous speed limit shall be reinstated after the roughness issue is addressed.

7.2.9 Temporary speed limit

Temporary speed limits may be imposed on a bridge if temporary or permanent structural deficiencies exist. Provisions for establishing a temporary speed limit on bridge or floodway due to structural deficiencies are described at Section 12.8 of this Part of the Manual.

Temporary speed limits may also be imposed during special events or at road works sites as a temporary measure to protect the road user from unexpected hazards, to safeguard workers and plant, or to protect works from damage. As stated at Section 1.2, temporary speed limit zoning for roadworks are not covered in this Part of the Manual.
8 Approve and Implement

Stage 7 of the Speed Limit Review process is approval and implementation of the Speed Limit Review findings, including those that recommend no change.

8.1 Speed Management Committee

All Speed Limit Reviews conducted by all road authorities must be submitted to the local Speed Management Committee (SMC) for endorsement. This is intended to ensure that the interests of all road users are considered before a speed zone is established and to ensure that speed zones throughout Queensland are consistent and credible. A speed zone can be established only after the SMC endorses the recommendation of the road authority.

8.1.1 Role of the Speed Management Committee

The role of the SMC is to deliberate thoroughly on all issues in relation to the recommendation of the road authority including but not necessarily limited to safety, uniformity, and credibility. The SMC must also be satisfied that the Speed Limit Review process was followed in accordance with this Part of the Manual.

8.1.2 Membership of Speed Management Committee

SMCs are expected to draw relevant membership from the local TAC, including members from other local government authorities or regional councils. In urban area, SMCs are based on a single local government while, in rural areas, SMCs could be based on a group of local governments. Committees are formed exclusively with the following membership:

(a) representative from the local government or representing local government
(b) representative from the relevant Transport and Main Roads District office
(c) Queensland Police Service representative, and
(d) Transport and Main Roads, Road Safety Advisor.

8.1.3 Meetings of Speed Management Committee

SMC meetings shall generally be held after the TAC meeting. Meetings may be called only if there are Speed Limit Reviews to discuss. SMC meetings may be chaired by the responsible officer of the road authority that has conducted the Speed Limit Review.

In some instances, it may not be necessary for the SMC to meet formally and members of the SMC may forward their endorsement / comments to the road authority. In this case, the road authority must collate and summarise all feedback and circulate to all members of the SMC prior to endorsement of a recommendation.

The road authority is responsible for recording, collating and summarising all relevant documentation associated with deliberations of the SMC.

8.1.4 Endorsement by Speed Management Committee

Endorsement by the SMC requires a majority decision by the SMC members.

The majority decision of the SMC, which may be to endorse the recommendation of the engineer or otherwise, must be returned in writing, together with the minutes of all relevant SMC meetings, to the responsible officer for action.
Where the SMC has endorsed the recommendation, the responsible officer shall implement the recommendation.

Where the SMC has not endorsed the recommendation of the engineer, the responsible officer must require the engineer to reconsider the recommendation, together with documentation from the SMC that explains its reasons for not endorsing the recommendation (refer to Section 8.2).

8.2 Review of endorsement by Speed Management Committee

The engineer must review the SMC’s reasons for not endorsing the recommendation and either:

- amend the Speed Limit Review recommendation in response to the SMC feedback, or
- provide further information to the SMC that addresses the SMC feedback and justifies the original recommendation.

The responsible officer shall submit the engineer’s recommendation and any supporting information to the SMC again. Where the SMC endorses the recommendation, the responsible officer shall implement the recommendation.

If the SMC continues to not endorse the recommendation, all relevant documentation must be referred to the Speed Limit Review Panel (SLRP) for its review, investigation and advice (refer to Section 8.3).

8.3 Speed Limit Review Panel

The SLRP will undertake independent assessment of any referred recommendations by the responsible officer and will make appropriate recommendation back to the responsible officer for determination. The SLRP will be chaired by Transport and Main Roads’ Director (Safer Roads).

8.3.1 Membership of Speed Limit Review Panel

The SLRP is composed of the following Transport and Main Roads officers:

1. Director (Safer Roads) – Chairperson
2. Senior Engineering Manager (Safer Roads)
3. Manager (Road Engineering Standards)
4. Principal Engineer (Traffic Engineering)
5. Principal Engineer (Safer Roads).

The Chairperson may invite relevant experts or officers from Transport and Main Roads and/or local government to participate in the independent assessment of the Speed Limit Review.

8.3.2 Meetings of Speed Limit Review Panel

Meetings of the SLRP shall be called only when there are referrals to discuss. Each member of the Panel will be provided with the report and other information required for review and decision at least 10 working days in advance of the meeting. At the meeting, the SLRP will either:

- draft advice on the matter for the responsible officer to make a final decision, or
- identify additional actions and further information and schedule a second meeting to complete the independent assessment.
8.3.3 Time for Speed Limit Review assessment

Depending on the nature of the issues to be considered (for example, technical complexity, community’s involvement, local or regional significance), the SLRP will endeavour to complete its assessment within one month of referral by the responsible officer. Additional information from the responsible officer may be requested in the process of the independent assessment. The assessment period may be extended if further information is requested.

8.3.4 Obligations of road authorities

Road authorities are obliged to supply additional information to the SLRP when requested within a reasonable timeframe as deemed appropriate. The SLRP will not be obliged to provide its independent assessment if the road authorities do not supply requested information in a timely manner. Transport and Main Roads Districts and/or local governments are expected to cooperate fully with requests for any additional information for an independent assessment.

8.3.5 Speed Limit Review assessment report

The SLRP Chairperson will submit a brief report with its findings and recommended actions to the relevant road authority’s responsible officer.

8.4 Approval

The ultimate authority to approve any recommendation lies with the responsible officer. It is also the responsibility of the responsible officer to maintain a Speed Limit Review file which may contain:

- documentation prepared by the engineer (refer to Section 7)
- documentation generated by the SMC (refer to Section 8.1)
- documentation generated by the SLRP (refer to Section 8.3).

8.5 Implementation

Ultimate recommendation may be implemented once approved by the responsible officer.
9 Monitor and evaluate

Speed limits should be programmed for review on a regular basis. Where a speed limit has been altered, the outcome must be assessed – ideally, three months after the physical implementation.

Speed limits should desirably be programmed for desktop review every five years. This is to ensure that any changes in traffic conditions, speed environment including land use or increase in casualty crashes which may influence the speed limit can be determined.

Where the desktop review shows that there is a change in traffic characteristics or the speed environment, including land use, or an increase in casualty crashes, a full Speed Limit Review, in accordance with the process described in this Part of the Manual must be conducted.

Where the desktop review shows that there is negligible change in traffic characteristics or the speed environment and there is no increase in casualty crash rates, a full Speed Limit Review may not be required; however, a record of the desktop review must be retained for future reference.
10 Speed limit signs

10.1 General

Signs used in the application of various types of speed control are listed in Table 10.1.

Such signs are reflectorised in accordance with MUTCD Part 1 General introduction and sign illustration.

The way in which these signs are used is specified in sections 10.1.1–10.1.6. For the installation and location of signs, see MUTCD Part 1 and Section 12 of this Part of the Manual respectively.

Table 10.1 – Speed control signs: size table

<table>
<thead>
<tr>
<th>Sign</th>
<th>Sign number</th>
<th>Size mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Restriction</td>
<td>R4-1A</td>
<td>450 x 600</td>
</tr>
<tr>
<td></td>
<td>R4-1B</td>
<td>600 x 800</td>
</tr>
<tr>
<td></td>
<td>R4-1C</td>
<td>900 x 1200</td>
</tr>
<tr>
<td></td>
<td>R4-1D</td>
<td>1200 x 1600</td>
</tr>
<tr>
<td>Shared zone</td>
<td>R4-4A</td>
<td>450 x 750</td>
</tr>
<tr>
<td>End shared zone</td>
<td>R4-5A</td>
<td>450 x 750</td>
</tr>
<tr>
<td>END Speed Limit</td>
<td>R4-12B</td>
<td>600 x 800</td>
</tr>
<tr>
<td></td>
<td>R4-12C</td>
<td>900 x 1200</td>
</tr>
<tr>
<td>Speed Limit AREA</td>
<td>R4-10A</td>
<td>450 x 750</td>
</tr>
<tr>
<td></td>
<td>R4-10B</td>
<td>600 x 1000</td>
</tr>
<tr>
<td>END Speed Limit AREA</td>
<td>R4-11A</td>
<td>450 x 750</td>
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<tr>
<td></td>
<td>R4-11B</td>
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<tr>
<td>School zone speed limit</td>
<td>R4-Q01A</td>
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</tr>
<tr>
<td></td>
<td>R4-Q01B</td>
<td>600 x 1900</td>
</tr>
<tr>
<td></td>
<td>R4-Q01C</td>
<td>900 x 2800</td>
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<tr>
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<td>450 x 1100</td>
</tr>
<tr>
<td></td>
<td>R4-Q05B</td>
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<tr>
<td></td>
<td>R4-Q05C</td>
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<td></td>
<td>R4-Q05D</td>
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<td></td>
<td>R4-Q06C</td>
<td>900 x 2200</td>
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<tr>
<td></td>
<td>R4-Q06D</td>
<td>1200 x 3000</td>
</tr>
<tr>
<td>ON BRIDGE</td>
<td>G9-49B</td>
<td>600 x 400</td>
</tr>
<tr>
<td></td>
<td>G9-49C</td>
<td>900 x 600</td>
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<tr>
<td>Speed Limit AHEAD</td>
<td>G9-79A</td>
<td>450 x 750</td>
</tr>
<tr>
<td></td>
<td>G9-79B</td>
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<td></td>
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<td></td>
<td>G9-81B</td>
<td>600 x 400</td>
</tr>
</tbody>
</table>
10.1.1 Signs for linear speed zones and general speed limits

The following signs must be used:

(a) **Speed Restriction (R4-1)**

![Speed Restriction (R4-1)](image)

The Speed Restriction (R4-1) sign shall be used to indicate the speed limit that applies in the linear speed zone about to be entered, and should be used at the beginning of a built-up area or general rural speed limit except where the requirements of Item (b) apply.

The sign shall also be used:

(i) as a repeater sign where indicated in Section 10.1.6.

(ii) in conjunction with other signs at school zones (see TRUM Volume 2 Guide to Road Safety Part 3 Speed Limits and Speed Management Section 3.2.1 School zones).

For the sign posting of variable speed limits, see Section 10.4.

The Speed Restriction sign may be used as part of sign assemblies at the boundaries of area speed zones.

(b) **END Speed Limit (R4-12)**

![END Speed Limit (R4-12)](image)

The END Speed Limit (R4-12) sign shall be used at the start point of a section of road covered by the general rural speed limit where it is not practicable or desirable to indicate the speed limit applying beyond the point by means of a Speed Restriction (R4-1) sign.

This would be the case where the speed value of the alignment beyond the start point is substantially lower than the general rural speed limit or the road beyond the start point is unsealed and it is not appropriate to extend a lower speed limit into this area.

The use of this sign is the exception rather than the rule.
10.1.2 Signs for area speed zones

Signs at the entry and exit points to and from area speed zones shall be used as follows:

(a) Speed Limit AREA (R4-10)

The Speed Limit AREA (R4-10) sign shall be used to indicate the speed limit within the area about to be entered. Where repeater signs are required within the area speed zone, these shall be Speed Limit AREA (R4-10) signs (see also Section 10.1.6).

(b) END Speed Limit AREA (R4-11)

The END Speed Limit AREA (R4-11) sign shall be used when leaving the area covered by the area speed limit.

10.1.3 Signs for school zone speed limits

See TRUM Volume 2 Guide to Road Safety Part 3 Speed Limits and Speed Management Section 3.2 1 School zones for information on school zone signs.
10.1.4 Signs for speed limits for particular classes of vehicles

The following sign shall be used at the start of a reduced speed limit zone applying to a particular class of vehicles:

(a) *Road Train Speed Limit (R4-Q05)*

The Road Train Speed Limit (R4-Q05) sign shall be used to indicate the speed limit that applies to road trains on a section of road. This sign is generally used where a reduced speed limit is considered necessary for safety reasons such as limited visibility in advance of a hazard or conflict. This sign may also be used to regulate the speed of road trains through towns for amenity reasons.

![Road Train Speed Limit (R4-Q05)](image1)

(b) *END Road Train Speed Limit (R4-Q06)*

The END Road Train Speed Limit (R4-Q06) sign shall be installed at the end of the speed zone where the reduced speed limit for road trains applies.

The Speed Restriction sign (R4-1) shall not be used to indicate the end of the Road Train Speed Limit zone.

![END Road Train Speed Limit (R4-Q06)](image2)

(c) *Truck Speed Limit (TC2255)*

The Truck Speed Limit (TC2255) sign in conjunction with the Speed Limit Restriction (R4-1) sign shall be used to indicate the speed limit that applies to trucks on a section of road. This sign is generally used where a reduced speed limit is considered necessary for safety reasons such as limited visibility in advance of a hazard or conflict. This sign may also be used to regulate the speed of trucks through towns for amenity reasons.

The END (R7-4) sign, Truck Speed Limit (TC2255) and Speed Limit Restriction (R4-1) sign shall be installed at the end of the speed zone where the reduced speed limit for trucks applies.

![Truck Speed Limit (TC2255)](image3)
### 10.1.5 Speed Limit AHEAD sign (G9-79)

The Speed Limit AHEAD sign (G9-79) shall be used to inform drivers of the speed limit they are about to enter where there is a reduction in speed limit of more than 20 km/h.

Where the Speed Limit AHEAD sign is used, signs shall be installed as follows:

| a) | The Speed Limit AHEAD (G9-79) sign shall be installed generally along linear speed zones only and not for speed limit areas. |
| b) | The Speed Limit AHEAD (G9-79) sign shall be installed generally 300 m in advance of the start of the lower speed zone. |
| c) | Where installed on a divided road, the Speed Limit AHEAD (G9-79) sign and the Speed Limit (R4-1) sign shall be duplicated on the central median. |
| d) | The size of the signs shall comply with the requirements of Table 10.2. |

The Speed Limit AHEAD (G9 79) sign may also be installed where:

i. there is insufficient sight distance to the speed limit sign demarcating the start of a lower speed zone

ii. the start of the lower speed zone is on a downhill approach

iii. under normal driving expectations, the change in speed zone may not be apparent to the motorist

iv. a speed limit has been established on a speed zone with a High RRM as identified in Stage 3 of the Speed Limit Review process described in Section 5.1.4.

### 10.1.6 Repeater signs

Repeater signs are provided to reinforce speed limits. These signs are typically positioned on the left-hand side of the road (except for divided and one-way roadways) as follows:

| a) | in all linear speed zones, except for the general urban speed limit and 50 km/h local streets where the default speed limit applies, as per Table 10.1.6 |
| b) | within area speed zones, where required, to remind road users of the area speed limit |
| c) | at intersections of major traffic carrying roads, for the benefit of traffic which has turned, these signs should be placed at a suitable distance (refer to Section 10.3) beyond the intersection or beyond the end of the taper if merge lanes exist |
| d) | repeater signs should be placed on both sides of the roadway on divided roads and one-way roadways; while they are usually located in pairs, the repeater signs may be separated longitudinally by up to 200 m |
| e) | consideration should also be given to installing repeater signs past each rest area. |
In linear speed zones, repeater signs shall be Speed Restriction (R4-1B) signs except in the following situations:

(a) expressways, freeways and motorways where sign R4-1C are generally used: R4-1D-type signs may be used where greater need exists for sign prominence due either to competing visual stimuli or the need to emphasise the message, or where there is excessive lateral displacement of the sign

(b) in urban areas with a 70 km/h or less speed limit, sign R4-1B should generally be used, but sign R4-1A may also be used, provided it is sufficiently conspicuous against the urban visual background

(c) in local, low-speed environment roads with 50 km/h or less, R4-1A sign may be used.

Table 10.1.6 – Spacing of speed limit repeater signs

<table>
<thead>
<tr>
<th>Speed Limit (km/h)</th>
<th>Spacing of repeater signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>300 m¹</td>
</tr>
<tr>
<td>50</td>
<td>300 m</td>
</tr>
<tr>
<td>60</td>
<td>1.0 km</td>
</tr>
<tr>
<td>70</td>
<td>1.5 km</td>
</tr>
<tr>
<td>80</td>
<td>3.0 km</td>
</tr>
<tr>
<td>90</td>
<td>3.0 km</td>
</tr>
<tr>
<td>100</td>
<td>17.0 km</td>
</tr>
<tr>
<td>110</td>
<td>18.5 km</td>
</tr>
</tbody>
</table>

Notes
1. Length of speed zones in this speed environment is generally too short (for example, school zone), where repeater signs are rarely needed.

Where the zoned speed may be different from that which drivers might expect by virtue of street lighting or roadside environment, consideration should be given to more frequent installation of repeater signs. The first repeater sign in the lower speed zone should be installed 300 m into the speed zone.

In area speed zones, repeater signs shall be Speed Limit AREA signs (R4-10).

Where variable speed limit signs have been used at the start of the speed zone, repeater signs shall also be variable speed limit signs.

10.2 Sign size

The recommended size of the basic Speed Restriction (R4-1) sign to be used in various situations is given in Table 10.2. Differentials in the posted speed limit, type of road, road environment and purpose of use are considered in the recommended sign size.
### Table 10.2 – Recommended sizes of speed restriction (R4-1) signs

<table>
<thead>
<tr>
<th>Application</th>
<th>Recommended sign size* for static signs*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start or end of general rural limit or built-up area:</strong></td>
<td></td>
</tr>
<tr>
<td>Reduction in speed limit of more than 40 km/h</td>
<td>C</td>
</tr>
<tr>
<td>All other cases (except expressways, freeways and motorways)</td>
<td>B</td>
</tr>
<tr>
<td><strong>Start or end of a linear speed zone:</strong></td>
<td></td>
</tr>
<tr>
<td>Reduction in speed limit of more than 40 km/h</td>
<td>C</td>
</tr>
<tr>
<td>All other cases (except expressways, freeways and motorways)</td>
<td>B</td>
</tr>
<tr>
<td>Start or end of an area speed zone (R4-10 and R4-11 signs)</td>
<td>B</td>
</tr>
<tr>
<td>Repeater signs</td>
<td>A or B**</td>
</tr>
<tr>
<td><strong>Expressway, freeway and motorway applications:</strong></td>
<td></td>
</tr>
<tr>
<td>Repeater signs</td>
<td>C</td>
</tr>
<tr>
<td>Signs on ramps</td>
<td>C</td>
</tr>
<tr>
<td>All other cases</td>
<td>C or D**</td>
</tr>
</tbody>
</table>

Notes:

* Sign dimensions are given in Table 10.1.

** Also see Section 10.1.6.

### 10.3 Uniformity of location

It is important that speed restriction signs are installed at locations where they are not obstructed by other signage, roadside furniture, overhanging branches or vegetation and are visible to drivers. Distance from intersections, mounting height and lateral displacement of signs are all very important as correct placement of signs assists in maintaining uniformity in travel speeds and greater compliance with the posted speed limit. Speed Restriction (R4-1) signs should be installed 30–50 m from intersections in urban areas and 80–100 m from intersections in rural areas. The distance is from the intersection or if merge lanes exist from the end of the taper. For further information regarding the placement and mounting height of signs, see MUTCD Part 1.

### 10.4 Means of displaying Variable Speed Limits

VSLs are displayed in one of the following ways:

(a) Static variable speed limit signs – Use of the Times of Operation supplementary plate (R9-1 Series) in conjunction with a Speed Restriction (R4-1) sign and any other supplementary plate required to inform road users of the reason for the changed speed limit. The speed limit sign displays shall be limited to a display which is identical in design and colour to the Speed Restriction (R4-1) sign.
Part 4: Speed controls

(b) Changing message VSL signs – Use of speed limit signs displaying a limit that can be changed manually, mechanically, or electrically. This method is suitable for changes that are likely to be required at either regular or irregular times. Times at which the speed limit was changed should be logged. The speed limit sign shall be restricted to a display which is identical in design and colour to the Speed Restriction (R4-1) sign.

If the reduced limit is not likely to be immediately apparent to an approaching road user, the changing message speed limit sign should be equipped with a single flashing component or twin alternately flashing yellow lights which operate when a reduced limit is being displayed.

Changing message speed limit signs shall be located in exactly the same position as fixed signs, as set out for linear speed zones in Section 12.1.3.

(c) Electronic variable speed limit signs – Use of speed limit signs displaying a limit that can be changed electronically. This method is suitable for changes that are likely to be required at either regular or irregular times. Times at which the speed limit was changed should be logged. The speed limit sign shall be restricted to a display which is identical in layout to the Speed Restriction (R4-1) sign but has illuminated white numerals within an illuminated red annulus on a black background.

The electronic VSL sign shall incorporate a flashing annulus that shall meet the specific traffic management and safety requirements (such as triggers for displaying reduced speed limit signs in advance in response to changes in traffic and/or road environment conditions ahead). For signage installation details for electronic VSLs for roads operating in motorway, long bridge and tunnel environments, see TRUM Volume 1 Guide to Traffic Management Part 10 Traffic Control and Communication Devices Section 5.7-1 Guidelines for the permanent placement of variable speed limit and lane control signs for motorways, long bridges and tunnels.

(d) Variable speed limit signs installed in accordance with TRUM Volume 1 Guide to Traffic Management Part 10 Traffic Control and Communication Devices Section 5.7-1 Guidelines for the permanent placement of variable speed limit and lane control signs for motorways, long bridges and tunnels are not required to conform with the provisions of this Part of the Manual in Section 12.1.3 Linear speed zones (lengths of linear speed zones) and Section 12.1.5 Buffer zones (which recommends Speed Limit AHEAD signs for speed reductions in excess of 20 km/h). The operation of VSL signs result from Traffic Management Centre operator actions or control algorithms responding to prevailing traffic conditions. Such actions are part of managing safety and efficiency of the motorway network, with the characteristics of the algorithm responses documented separately. Changes to speed limits are made in response to hazards or traffic conditions. These changes include speed changes of 10–70 km/h in a single speed transition at an individual variable speed limit site. These speed transitions create changed speed zones or VSL buffer zones downstream of the VSL site. Speed transitions shall not result in a speed display of lower than 40 km/h at an individual VSL site.

(e) All electronic variable speed limit signs shall comply with AS 5156:2010 Electronic speed limit signs.
Figure 10.4 – Application of speed limit signs at default limits and linear speed zones

Notes to Figure 10.4:

1. These signs advise drivers that they are entering or leaving the area covered by the default urban speed limit of 50 km/h.
2. Poor alignment (or poor surface or unsealed road) beyond this point necessitates the use of the R4-12 END sign rather than the R4-1 100 speed restriction sign indicating the default rural limit.
3. A Speed Limit AHEAD sign may be required here if the reduction in speed limit exceeds 20 km/h.
4. Where there is no change in the speed environment and the casualty crash rate through the intersection is low, the higher limit applying to the state highway (80 km/h) may be continued through the intersection.

5. The Speed Restriction (R4-1) sign is installed to indicate the start of the general rural speed zone.

6. Signs advising of the default rural and urban limit should be installed where minor roads enter the town, even if the start of the urban development or street lighting provides an adequate indication of the speed limit change.

7. Repeater signs may be required within a speed zone on both departure sides of an intersection of two or more major traffic carrying roads and should generally be placed 30–50 m from the intersection in urban areas and approximately 80–100 m from the intersection in rural areas.

8. A sign advising drivers that the default urban limit of 50 km/h (or other special limit) applies in the service road may be required if the speed limit differs from that on the through road. The supplementary plate SERVICE ROAD (G9-81) should be used in conjunction if the sign is visible from the through road and might be misread as applying to the through road.

9. The Speed Limit AHEAD (G9-79) is not required here as the speed limit reduction is not more than 20 km/h.

10. The Speed Limit AHEAD (G9-79) sign is required here as the reduction in speed limit exceeds 20 km/h.

10.5 Offset speed zones

Speed zones on a particular length of roadway, which have different speed limits for each direction of travel may be permitted under the following conditions:

(a) on a divided road where the roadside development adjacent each roadway is different to the extent that a different speed limit is clearly warranted for each

(b) on a divided or undivided road where it is not safe to increase the speed limit to that which applies in the opposite direction of travel. This could be due to geometric or road features or where there is a part-time speed zone, such as a school zone, and it is not practical to align the permanent speed zones. On an undivided road where the Speed Limit AHEAD (G9-79) sign is installed, offset speed zone may be installed.

Where offset speed zones are installed, these should be kept to a minimum. On an uncontrolled approach, offset speed zones should not exceed 500 m.

A repeater sign should be installed if offset speed zones have permitted U-turns.
11 Pavement markings

11.1 General

Where the pavement surface is suitable, painting of elongated numerals adjacent to the speed restriction sign (R4-1) may be used in the following circumstances:

- at the start of a lower speed zone where the difference in adjacent speed zones is 20 km/h or higher, with the exception of the start of a school zone or other variable speed zone
- at repeater signs at major intersections only
- on undivided multilane roads, at the start of the speed zone.

Such markings shall only be used to supplement speed restriction (R4-1) signs and shall not be used alone. Their use is generally restricted to locations where the provision of signs alone is not adequate: for example, where the impact of the sign is reduced by the nature of the roadside environment, and it is considered that the sign needs to be augmented to increase road user perception.

With the exception of school zones and other time-based speed zones, the use of pavement markings is encouraged at the start of HATUAs (see Section 4.3.4). Painted numerals shall not be used to indicate the speed limit on local streets.

11.2 Marking details

A separate set of numerals shall be painted in each traffic lane and no additional words or symbols shall be used.

The dimensions of the numerals shall be as prescribed in Part 2 of this Manual.
12 Guidance for implementing speed limits

This section provides guidance for implementing speed limits.

12.1 Sign application

12.1.1 General

At the boundaries of non-built-up areas, built-up areas and at all changes in speed zones, speed restriction signs (R4-1) must be provided. Speed signs are normally erected on the left side of the roadway, except on a divided road where the signs may be duplicated on the median. In special circumstances, signs may be duplicated on the right-hand side of the roadway on two-lane roads where specified herein.

Typical applications of speed limit signs to indicate speed limits in built-up areas and general rural limits and speed zones are illustrated in Figure 10.4.

12.1.2 Built-up area and non-built-up area limit areas

Start and end points of speed limits applicable in built-up areas and non-built-up areas shall be signposted in one of the following ways:

(a) Start of non-built up areas – Signs shall be placed to face traffic entering the non-built up area:

   (i) Speed Restriction 100 km/h (R4-1) sign where the road beyond the start of the limit is of an appropriate geometric standard, or

   (ii) END Speed Limit (R4-12) sign where the road beyond the start of the limit is not of an appropriate geometric standard or physical condition or is unsealed. See Section 10.1.1(b).

Note: Any significant traffic route which passes through a built-up area in which the lower speed limit applies should have speed limit signs provided at each boundary to clearly show road users where the lower speed limit starts and finishes.

(b) Start of speed limit in built-up area – Speed Restriction (R4-1) signs or Speed Limit AREA (R4-10) signs are placed to face traffic entering the built-up area.

12.1.3 Linear speed zones

Start and end points of linear speed zones shall be signposted in one of the following ways:

(a) Start of linear speed zone – The start of a speed zone shall be indicated by a Speed Restriction (R4-1) sign indicating the speed limit.

(b) End of linear speed zone – The end of a speed zone shall be indicated by either:

   (i) Speed Restriction (R4-1) sign to indicate the start of a new speed zone, or the speed limit in built-up area / rural speed limit which applies beyond the end of the zone, or

   (ii) END Speed Limit (R4-12) sign where the conditions in Section 10.1.1(b) apply.

Note: A speed zone also ends at a dead end and where the road terminates at a T-intersection. Speed Restriction (R4-1) sign to indicate the speed limit on a through road at a T-intersection shall not be installed on the terminating leg of the T-intersection.
At expressway, freeway and motorway ramps where the length and/or geometry of the ramp does not permit the installation of a Speed Limit AHEAD (G9-79) sign and the change in speed limit exceeds 40 km/h, Speed Restriction signs shall be ‘C’ size minimum.

A change from a lower to a higher zoned speed limit should not occur just in advance of a section of low speed value alignment or a hazard or other feature requiring a speed reduction. The lower limit should be carried through or past the section or feature.

On divided roads, Speed Restriction signs (R4-1) at the start and end of linear speed zones shall be provided on both sides of the roadway. While they are located in pairs, the signs may be separated by up to 200 m.

Where necessary on undivided roads, Speed Restriction signs (R4-1) at the start and end of linear speed zones should be provided on both sides of the roadway, particularly where there is a reduction in speed limit.

On expressways, freeways and motorways, only the largest Speed Restriction signs (R4-1C and R4-1D) appropriate to the application shall be used. The location of each sign is a matter for special consideration.

12.1.4 Area speed zones

Each entry and exit point to and from an area speed zone shall be signposted in the following way:

(a) Entry signs – A Speed Limit AREA (R4-10) sign shall be placed to face traffic entering the zone. It shall be positioned at a suitable distance from any intersection, to be readily seen and noticed by road users after they have turned from the intersecting street.

(b) Exit signs – An END Speed Limit AREA (R4-11) sign shall be placed to face traffic leaving the zone. This sign shall be positioned at the same location as the entry sign but facing the opposite direction. Speed Restriction (R4-1) signs may be required on the road about to be entered, to indicate the speed limit on the road immediately outside the zone.

It is recommended that both entry and exit signs are ‘B’ size minimum.

12.1.5 Buffer zones

Buffer zones are not recommended for use in Queensland. Where there is a reduction in speed limit exceeding 20 km/h and there is no change in the speed environment leading up to the lower speed zone, the Speed Limit AHEAD (G9-79) sign shall be installed at least 300 m in advance of the reduced speed zone.

12.2 Shared zone

The signs SHARED ZONE (R4-4) and END Shared Zone (R4-5) are required to establish a shared zone. A typical shared zone treatment is shown in Figure 12.2.
12.3 Black Links speed zone signage

This section describes special provisions that apply to implementation of a Black Links speed zone as described at Section 7.2.5.

The Speed Restriction (TC1797) sign at the start of the speed zone shall be a minimum 'B' size (refer Table 12.3).

Speed Restriction (TC1797) sign, including all repeater signs, will be on high visual impact (red / orange) target board.
In some instances it may be necessary to supplement the Speed Restriction (TC1797) sign at the start of the speed zone with pavement markings (numerals).

Advance warning of the change in speed limit shall be provided by installing a Speed Restriction AHEAD (G9-79) sign a minimum distance of 300 metres in advance of the start of the speed zone. At the start of the speed zone and at regular intervals, sign TC1559 should also be installed to inform motorists of the reason for the reduced speed limit.

On two-lane two-way roads, all signs shall be installed on the left-hand side of the roadway facing traffic in the direction of travel. On divided roads where the width of the median permits, signs shall be duplicated on the right-hand side in the median. Where there are intersections and junctions within the speed zone that have high traffic volumes, repeater speed limit signs shall be spaced so that they are installed close to the intersection for the benefit of turning traffic.

**Table 12.3 – Sign size and location**

<table>
<thead>
<tr>
<th>Speed limit</th>
<th>Equal to or greater than 70 km/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of speed limit AHEAD (G9-79) sign</td>
<td>B</td>
</tr>
<tr>
<td>Size of TC1797 sign at start of speed zone</td>
<td>B</td>
</tr>
<tr>
<td>Size of signs on on-ramps</td>
<td>B</td>
</tr>
<tr>
<td>Size of repeater speed limit signs</td>
<td>B</td>
</tr>
<tr>
<td>Location of first repeater sign within speed zone</td>
<td>300 m</td>
</tr>
<tr>
<td>Location of subsequent repeater signs</td>
<td>1 km</td>
</tr>
</tbody>
</table>

To ensure drivers are able to differentiate between the speed environment in the reduced speed zones and the speed environment in a regular speed zone, specific signage shall be installed to warn drivers that they are entering a speed zone where the speed limit has been reduced due to the poor safety performance of the section of road.

A typical signage treatment at high crash zone is shown in Figure 12.3.1.

**12.3.1 Lengths of Black Links speed zones**

The minimum length of Black Links speed zones where speed limits have been reduced shall meet the requirements given in Table 12.3.1.
Figure 12.3.1 – Typical signage layout for high crash zones (Black Links)
Table 12.3.1 – Length of Black Links speed zones

<table>
<thead>
<tr>
<th>Speed limit after reduction (km/h)</th>
<th>Minimum length of speed zone (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>5</td>
</tr>
<tr>
<td>80, 70</td>
<td>2</td>
</tr>
</tbody>
</table>

12.4 Speed reduction on approaches to controlled high speed rural intersections

Speed zones with speed limits reduced as per Section 7.2.6 of this Part of the Manual may be implemented on approaches to rural intersections, which have either a high crash history or high potential of crash risk.

To ensure compliance with the reduced speed limit the following is required:

- at least ‘B’ sized Speed Restriction signs shall be installed
- signs shall be duplicated on both sides of the roadway
- signs shall have a fluorescent red / orange target board
- the length of the speed zone shall not exceed 300 m
- Speed limit AHEAD signs shall be used in accordance with Section 10.1.5, and
- consideration to additional warning signs on the approaches has been given.

Pavement bars (see Section 12.4.1) can be used on side roads of such intersections to assist with greater compliance of the reduced speed. Appropriate road lighting in accordance with Transport and Main Roads Technical Specifications shall be considered.

12.4.1 Implementation on approaches to controlled high-speed rural intersections

The length of the speed zone shall not exceed 300 m and Speed Limit AHEAD signs shall be used in accordance with Section 10.1.5. Where adjacent sections will be left with shorter speed zones, the reduced speed limit determined in accordance with this section may be extended beyond 300 m to avoid frequent changes in speed zones.

To ensure maximum compliance with the reduced speed limit, at least ‘B’ sized speed restriction signs shall be installed. Where installed on an uncontrolled approach, these signs shall be duplicated on both sides of the roadway and shall have a fluorescent red / orange target board. Where installed on a controlled approach, the signs may be duplicated.

It may be necessary to install additional warning signs on the approaches to the reduced speed zones to warn drivers of the reason for the speed limit reduction (guidance on supplementary signs can be obtained from Transport and Main Roads’ Safer Roads Team at Land Transport Safety branch).

Pavement bars can be used on side roads of high-speed rural intersections to assist with greater compliance of the reduced speed.

The objectives of these pavement bars are to:

- act as a visual and tactile cue that different driving conditions apply
- discourage through traffic
- reduce speed and provide a traffic calming function, and
- improve safety.
Pavement bars serve both a controlling function and a calming function.

Where pavement bars are implemented to serve solely a traffic calming function, adequate measures must be implemented to ensure pedestrians do not perceive and use it as a zebra crossing.

These pavement bars must:

- not be located on a pedestrian desire line
- not include a pram ramp or pedestrian refuge
- have the pedestrian footpath physically separated by pedestrian barriers (use fences or landscaping as appropriate)
- include appropriate warning signs together with advisory speed signs as necessary to warn road users, and
- not have any perception of pedestrian priority.

Where pavement bars cannot meet these requirements, they must be treated as though they serve both traffic calming and a pedestrian crossing function in accordance with Transport and Main Roads Technical Specifications.

Use of pavements bars is as governed by MUTCD Part 2 (at Section 4.3).

12.5 State-controlled roads through rural towns

12.5.1 Signing requirements

Where a 40 km/h or 50 km/h speed limit is applied to state-controlled roads through rural towns, the following shall apply:

- ‘C’ size Speed Restriction (R4-1) signs shall be installed on the left-hand side of the carriageway at the start of the speed zone
- consideration is given to supplementary pavement markings
- the Speed Limit AHEAD (G9-79) sign shall be installed 300–500 m in advance of the start of the 50 km/h speed zone in accordance with the requirements of Section 10.1.5.

12.5.2 Length of speed zones

Notwithstanding the minimum length for a speed zone in accordance with the requirements of Table 3.4, wherever possible, a minimum length of 500 m should apply to 40 km/h or 50 km/h speed zones on roads through strip-shopping centres and commercial areas; however, if the length of a strip-shopping or commercial area is less than 500 m, the speed zone may be shortened accordingly. Permitting the use of 40 km/h or 50 km/h speed zones shorter than 500 m is intended to encourage maximum levels of voluntary compliance by motorists who are unlikely to comply with the lower speed limit unless the speed environment is compatible with the speed limit. The absolute minimum length shall be 200 m.

Figures 12.5.2(A) and 12.5.2(B) show examples of the preferred sites for the application of a 50 km/h speed zone in rural towns.
12.5.3 Alternative treatment for small towns

Where the following exists, it may be appropriate to extend the 40 km/h or 50 km/h speed zone to include the full length of the road within the town limits:

- there are no other 60 km/h speed zones within the town
- the shopping or commercial area extends to within 300 m of the town limits, and
- the 40 km/h or 50 km/h speed zone will be at least 500 m long.
Figure 12.5.3 shows the application example of a 50 km/h speed zone for small towns.

**Figure 12.5.3 – Alternative application of a 50 km/h speed zone for a shopping/commercial area in small rural towns only**

12.6 Hospital zone

A hospital zone is a HATUA zone, where the speed limit applied to a linear section of road or area is associated with the presence of a hospital. A hospital zone shall be indicated by use of the speed restriction (R4-1) sign indicating the speed limit with a supplementary sign (R4-Q07) with the words ‘Hospital Zone’.

12.7 110 km/h speed zones

Signing of 110 km/h speed zones shall comply with special requirements as specified in Section 7.2.7.

The Speed Restriction (R4-1) sign should be installed on the left-hand side of the carriageway to indicate the start of the 110 km/h speed zone. R4-1 repeater signs shall be installed at regular intervals not exceeding the distance given in Table 10.1.6 and past important intersections for the benefit of turning traffic.

At the end of the 110 km/h speed zone, Speed Restriction (R4-1) signs shall be installed on both sides of the roadway to indicate the start of the lower speed zone. In some instances, it may be necessary to supplement the Speed Restriction (R4-1) sign with pavement markings indicating the lower speed zone applying beyond that point.

Speed Limit AHEAD (G9-79) signs shall be installed 300–500 m in advance of the start of the lower speed zone and shall be duplicated on both sides of the roadway.
12.8 Speed limits at bridges or floodway due to structural deficiencies

Where it is necessary to limit vehicle speeds on a bridge or floodway due to structural deficiencies, a reduced speed zone shall be established as follows:

The Speed Restriction (R4-1) sign with a ‘BRIDGE DAMAGE CONTROL’ (TC2224) sign is used in accordance with MUTCD Part 2 Section 4.6.6.4. The signs shall be installed on a highly-visible fluorescent red / orange target board for increased conspicuity. The target board shall be the same shape as the traffic sign it highlights.

Advance warning of the change in speed limit shall be provided by installing a Speed Limit AHEAD (G9-79) sign at a minimum distance of 300 metres in advance of the start of the bridge speed restriction sign (TC2224) in accordance with Section 10.1.5.

On two-lane two-way roads, the TC2224 sign shall be duplicated on both sides of the road unless exceptional circumstances prevent installation on the right-hand side.

The minimum size of the sign shall be size ‘B’ unless there are footway / verge width constraints that only permit size ‘A’ signs.

The speed zone shall commence a minimum of 100 metres before the bridge on the approach side and extend to minimum of 100 metres on the departure side of the bridge to encourage compliance with the reduced speed limit by drivers. Compliance with the minimum length requirements of MUTCD Table 3.4 is not required.

In some instances, it may be necessary to install pavement markings; for example, Wide Centre Line Treatment to narrow the lane width and influence the speed changes. If the WCLT is required, it shall be installed in accordance with Technical Note TN155 Wide Centre Line Treatment – Interim Advice.

12.9 Motorway ramp zones

Speed limit signs should be provided only on the left-hand side of on- and off-ramps.

Where there is a requirement to duplicate speed signs on the right-hand side (for example, on multi-lane ramps) the supplementary sign plate (TC1331) should be provided on both signs on the ramp.

Any existing speed limit signs provided on the right-hand side should be relocated to the left-hand side and, in situations where these signs are duplicated, should be removed from the right-hand side.

Figure 12.9 shows the typical speed limit signing on ramps.
12.10 Placement of speed limit awareness signs on local streets

The speed of vehicles in local streets in a built-up area is often raised as a concern by communities. An initiative to combat speeding on local streets is the use of placing speed limit awareness signs on wheelie bins on local streets. This initiative was trialled successfully by Ipswich City Council in 2006.

The default speed limit in built-up areas is 50 km/h and this generally applies to streets with a local access function. The speed limit in these streets is not generally posted as the speed limit applies by default.

Some Councils have advised that residents often complain of drivers speeding on their local streets. Studies have shown that there is a greater compliance with the speed limit if the speed environment is compatible with the speed limit.

Local streets which have long unbroken sections and wide pavements often have a lower level of compliance with the speed limit. In such cases, engineering treatment, such as changing priority at intersections, kerb extensions, installing chicanes or threshold treatments to change the speed environment, should be considered.

In situations where other measures to reduce the speed of vehicles have previously been implemented without success and the speed of vehicles in local streets is raised as a concern by communities, the road authority may consider implementation of speed limit awareness signs on wheelie bins.
The following criteria apply to the installation of speed awareness signs on wheelie bins:

- signs shall only be installed on local streets with a speed limit of 50 km/h
- signs should only be used on streets that have an upper limit of 15 km/h pace in the range of 58–65 km/h, and
- the Average Daily Traffic on the street should not exceed 1000 vehicles per day.

Where these criteria are met, the TC1638 sign is approved for use on wheelie bins as a speed limit awareness sign. Installation of this sign is to be in accordance with the approved condition on TC1638 without variation.

The speed limit awareness signs are intended to remind drivers of the speed limit. It is not necessary to install signs on every wheelie bin in the street.

It is essential that the signs are not overused as this will reduce their effectiveness. It is recommended that the signs be installed on wheelie bins in selected local streets in a precinct that will have the largest impact on speed awareness. Where approved, following requirements apply for sign installation:

1. all signs shall be installed by a person authorised by the Council to install official traffic signs
2. only one sign shall be installed per wheelie bin
3. the sign shall be placed on the side of the bin facing oncoming traffic
4. signs shall not be installed on wheelie bins of houses that are at a junction or intersection
5. signs shall not be installed on wheelie bins of houses that are within a school zone or within a speed zone of less than 50 km/h.

If roadworks are being conducted on a local street with speed limit awareness signs and the speed limit has been reduced, it is the responsibility of the authority conducting the roadworks to minimise confusion of the speed limit.

To ensure that motorists are aware of the reduced roadwork speed limit, it may be necessary to install additional regulatory speed limit signs with roadworks signs along the length of the roadwork.

Speed surveys should be conducted prior to and after the use of the signs to monitor performance and effectiveness.

If, after a period of six months of installation, there is only minimal impact on driver compliance with the speed limit, other engineering solutions should be considered.
Appendix A: Guidelines for conducting speed surveys

A1 Objective

The objective of vehicle speed surveys is to determine the speed at which drivers generally prefer to travel under optimal conditions.

The resulting distribution of observed speeds should be characteristic of the road function and its general environment. As far as possible, this distribution should be free of the influence of any external factors such as:

(a) roadworks
(b) adverse weather conditions, and
(c) special events or incidents.

Avoiding external factors will provide more reliable data, and enable comparisons of speed distributions between roads and between time periods on the same road.

A2 Site characteristics

Vehicle speed survey sites should be selected based on the following characteristics.

Geometry and alignment

Speed survey sites should be located on sections of road which are representative of the speed zone under investigation; for example, if the speed zone under consideration generally has restricted horizontal geometry, then it would not be appropriate to collect data at an isolated straight section of road. Similarly, if a road has an isolated section with substandard geometry, the survey site should be located away from the substandard section of road.

Intersections

Survey sites should not be in close proximity (for example, within 200 m) to major access / egress points, traffic signals and roundabouts, where acceleration or deceleration of vehicles is likely.

Position of measuring equipment

Drivers may tend to slow down upon sighting the use of radar devices to measure vehicle speeds. Consequently, speed surveys using radar or LIDAR detection devices should be conducted as unobtrusively as possible. Preference should be given to use of automatic tube count method. Presence of manual counter can bring bias on speed data. Tube counts provide a richer data set with less chance of human error.

Equipment limitations

Whilst the limitations of automated speed data collection (for example, VDAS, ARCHER and so on) equipment is generally well understood by speed zoning practitioners, the limitations and use of radar devices are less well understood; for example, significant metallic or highly-dense objects that can distort any readings of vehicles can reflect radar. For further advice on the use of radar or LIDAR devices, advice should be sought from the local Queensland Police Service Road Policing Command Branch.
Safety

When conducting speed surveys, the safety of survey staff should not be compromised by poor site selection; for example, sites with severely restricted sight distances or lateral clearances should be avoided.

A3 Survey conditions

Vehicle speed surveys should be designed as follows:

Day of week:
Monday to Friday (inclusive)

Time of day:
6:00am to 6:00pm

Environmental conditions:
Good weather, dry pavement

Non-typical events:
Avoid non-typical events such as roadworks, traffic congestion, major holidays, local happenings or incidents. Speed surveys with small samples should not be collected during traffic congested periods.

A4 Sample characteristics

A sample of vehicle speeds should be obtained with the following characteristics:

Travel direction:
Each direction of travel should be sampled individually.

Recommended sample size:
Speed surveys are desirably based on a minimum sample size of 200 observations; however, where it is difficult to achieve this sample size, the sample sizes shown in Table A1 may be adopted.

Table A1 – Minimum sample sizes

<table>
<thead>
<tr>
<th>Existing speed limit</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
<th>110</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum sample size</td>
<td>55</td>
<td>65</td>
<td>85</td>
<td>95</td>
<td>110</td>
<td>130</td>
<td>155</td>
<td>200</td>
</tr>
</tbody>
</table>

Sample vehicle type:
Include all vehicle types in the survey sample (for example, cars, trucks, and buses). As far as practicable, major vehicle types should be sampled in proportion to their relative numbers in the traffic stream.

Minimum headway:
A vehicle is considered to be operating under free-flowing conditions when the preceding vehicle has at least four seconds’ headway and there is no apparent attempt to overtake the vehicle ahead.
Data recording:

Ideally, individual speeds to the nearest 1 km/h should be collected and analysed to give an accurate representation of traffic behaviour; however, for convenience of subsequent analysis of data in bulk, it is acceptable to record speeds using the bin system.

It is recommended that 5 km/h bins be used. If automatic equipment restricts the total number of bins available, bin sizes at the extremes of the distribution of measurements may be increased. Table A2 gives a recommended distribution of bin sizes where the number of bins is limited to 12.

**Table A2 – Recommended bin ranges: Upper limit of bin range**

<table>
<thead>
<tr>
<th>Bin Number</th>
<th>Speed Limit (km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40 / 50</td>
</tr>
<tr>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>35</td>
</tr>
<tr>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>45</td>
</tr>
<tr>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>55</td>
</tr>
<tr>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>9</td>
<td>65</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>11</td>
<td>80</td>
</tr>
<tr>
<td>12</td>
<td>100</td>
</tr>
</tbody>
</table>
Appendix B: Speed data analysis

Figure B1 – Typical plan and data sheet for determination of speed zones
## Figure B2 – Sample speed survey field sheet

<table>
<thead>
<tr>
<th>SPEED, km/h</th>
<th>Passenger Cars</th>
<th>Total</th>
<th>Trucks</th>
<th>Total</th>
<th>Busses</th>
<th>Total</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>&gt; 30-40</td>
<td></td>
<td>2</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>&gt; 40-45</td>
<td></td>
<td>4</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>&gt; 50-55</td>
<td></td>
<td>34</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>&gt; 55-60</td>
<td></td>
<td>42</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>&gt; 60-65</td>
<td></td>
<td>36</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>&gt; 65-70</td>
<td></td>
<td>35</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>&gt; 70-75</td>
<td></td>
<td>10</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>&gt; 75-80</td>
<td></td>
<td>7</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>&gt; 80-90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 90-120</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOCAL GOVERNMENT:** WESTERN HILLS  
**DATE:** 9-6-2009  
**ROAD:** NORTH EASTERN HIGHWAY  
**WEATHER:** FINE  
**LOCATION:** BIRDWOOD AVE - BURNINGBAR RD  
**DURATION OF COUNT:** 10 AM - 10:30 AM  
**SPEED LIMIT:** 60 KM/H  
**DIRECTION OF TRAFFIC:** OUTBOUND  
**SIGNATURE:** 

---

**Part 4: Speed controls**

Manual of Uniform Traffic Control Devices, Transport and Main Roads, November 2019
### Figure B3 – Sample speed survey calculation

<table>
<thead>
<tr>
<th>Bin Range (km/h)</th>
<th>Mid Point of bin range (km/h)</th>
<th>No. of samples in bin (vehicles)</th>
<th>% of sample in bin (% of total)</th>
<th>3-bin moving sum (% of total)</th>
<th>Speed (Upper limit of bin ranges) (km/h)</th>
<th>% less than or equal to speed</th>
<th>(2) * (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 30</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>&gt;30 - 40</td>
<td>35</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>&gt;40 - 45</td>
<td>42.5</td>
<td>2</td>
<td>1.1</td>
<td>1.1</td>
<td>45</td>
<td>1.1</td>
<td>85</td>
</tr>
<tr>
<td>&gt;45 - 50</td>
<td>47.5</td>
<td>6</td>
<td>3.3</td>
<td>4.4</td>
<td>50</td>
<td>4.4</td>
<td>285</td>
</tr>
<tr>
<td>&gt;50 - 55</td>
<td>52.5</td>
<td>38</td>
<td>20.9</td>
<td>25.3</td>
<td>55</td>
<td>25.3</td>
<td>1995</td>
</tr>
<tr>
<td>&gt;55 - 60</td>
<td>57.5</td>
<td>46</td>
<td>25.3</td>
<td>49.5</td>
<td>60</td>
<td>50.6</td>
<td>2645</td>
</tr>
<tr>
<td>&gt;60 - 65</td>
<td>62.5</td>
<td>38</td>
<td>20.9</td>
<td>67.1</td>
<td>65</td>
<td>71.5</td>
<td>2375</td>
</tr>
<tr>
<td>&gt;65 - 70</td>
<td>67.5</td>
<td>35</td>
<td>19.2</td>
<td>65.4</td>
<td>70</td>
<td>90.7</td>
<td>2362.5</td>
</tr>
<tr>
<td>&gt;70 - 75</td>
<td>72.5</td>
<td>10</td>
<td>5.5</td>
<td>45.6</td>
<td>75</td>
<td>96.2</td>
<td>725</td>
</tr>
<tr>
<td>&gt;75 - 80</td>
<td>77.5</td>
<td>7</td>
<td>3.8</td>
<td>28.5</td>
<td>80</td>
<td>100</td>
<td>542.5</td>
</tr>
<tr>
<td>&gt;80 - 90</td>
<td>85</td>
<td>0</td>
<td>0</td>
<td>9.3</td>
<td>90</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>&gt;90 - 120</td>
<td>105</td>
<td>0</td>
<td>0</td>
<td>5.8</td>
<td>120</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>

**TOTALS**

| 182 | 100 | 11015 |

#### Mean Speed

\[
\bar{x} = \frac{\sum \text{column 8}}{\sum \text{column 3}} = \frac{11015}{182} = 60.5 \text{ km/h}
\]

**15 km/h Pace**

1. Calculate the three point moving sum of Column 4 in Column 5.
2. Percentage in Pace is the maximum value in Column 5 = 67.1 %
3. Upper limit of Pace is corresponding value in Column 6 = 65 km/h.

#### 85th percentile speed

1. Use values in columns 6 and 7 to plot a cumulative frequency graph - Figure C4.
2. The 85th percentile speed is the speed corresponding to a cumulative frequency of 85% = 68 km/h.
Figure B4 – Sample frequency distribution curves sheet

Legend

- Frequency
- Cumulative Frequency

LOCAL GOVERNMENT: WESTERN HILLS
ROAD: NORTH EASTERN HIGHWAY
LOCATION: BIRDWOOD AVE - BURRINGBAR RD
DIRECTION OF TRAFFIC: OUTBOUND
STATION: 

DATE: 9-6-2009
DAY OF WEEK: TUESDAY
DURATION OF COUNT: 10 AM - 10:30 AM

Signature: [Signature]
Appendix C: Analysis of crash data

C1 General

This appendix provides guidance on the analysis of crash data to determine the CRR (see Section 5.1.2).

Crash data should be collected for the preceding five-year period. These data should be plotted at the locations of occurrence by each severity category considered in the analysis.

C2 Evaluation of crashes

Crashes should be evaluated according to the following procedure:

- calculate the crash rate for the speed zone being reviewed (refer to Section C3)
- identify any crash concentrations (that is, black spots)
- compare the crash rate to the CRR thresholds in Table C2 (refer to Section C4) to determine the CRR band.

C3 Calculating the crash rate

For the purpose of speed zoning, it is recommended that the crash rate be computed from the following formula:

$$ Est. FSI = \frac{\sum_{t=1}^{21} (SI_t \times A_t)}{M} $$

where:

- $Est. FSI$ = Estimated Fatal and Serious Injury Casualty Rate
- $t =$ DCA Code Group (1–21) (see Table C1)
- $SI_t =$ Severity Index of an injury crash in a DCA Code Group (see Table C1)
- $A_t =$ Number of crashes in DCA Group $t$ over five-year period
- $M =$ Measure of crash exposure in vehicles kilometres travelled (expressed as $10^8$ VKT) and is calculated from the following formula:

$$ M = \frac{(S \times Y \times 5 \times 365)}{100,000,000} $$

where:

- $S =$ Length of road segment (km)
- $Y =$ ADT over segment
### Table C1 – Definitions for Coding Accidents Code Groups and crash risk scores

<table>
<thead>
<tr>
<th>DCA Code Group</th>
<th>DCA Codes</th>
<th>Description</th>
<th>FSI Index (&lt;80 km/h)</th>
<th>FSI Index (≥80 km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Two vehicle crashes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>100–109</td>
<td>Intersection, from adjacent approaches</td>
<td>0.46</td>
<td>0.73</td>
</tr>
<tr>
<td>2</td>
<td>201, 501</td>
<td>Head-on</td>
<td>0.85</td>
<td>1.44</td>
</tr>
<tr>
<td>3</td>
<td>202–206</td>
<td>Opposing vehicle turning</td>
<td>0.53</td>
<td>0.84</td>
</tr>
<tr>
<td>4</td>
<td>301–303</td>
<td>Rear-end</td>
<td>0.25</td>
<td>0.37</td>
</tr>
<tr>
<td>5</td>
<td>305–307, 504</td>
<td>Lane change</td>
<td>0.34</td>
<td>0.42</td>
</tr>
<tr>
<td>6</td>
<td>308, 309</td>
<td>Parallel lanes, turning</td>
<td>0.36</td>
<td>0.59</td>
</tr>
<tr>
<td>7</td>
<td>207, 304</td>
<td>U-turn</td>
<td>0.39</td>
<td>0.57</td>
</tr>
<tr>
<td>8</td>
<td>401, 406–408</td>
<td>Entering roadway</td>
<td>0.38</td>
<td>0.71</td>
</tr>
<tr>
<td>9</td>
<td>503, 505, 506</td>
<td>Overtaking, same direction</td>
<td>0.50</td>
<td>0.65</td>
</tr>
<tr>
<td>10</td>
<td>402, 404, 601, 602, 604, 608</td>
<td>Hit parked vehicle</td>
<td>0.43</td>
<td>0.81</td>
</tr>
<tr>
<td>11</td>
<td>903</td>
<td>Hit railway train</td>
<td>1.07</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>Single vehicle crashes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>001–009</td>
<td>Pedestrian</td>
<td>0.60</td>
<td>0.98</td>
</tr>
<tr>
<td>13</td>
<td>605</td>
<td>Permanent obstruction on carriageway</td>
<td>0.28</td>
<td>0.53</td>
</tr>
<tr>
<td>14</td>
<td>609, 905</td>
<td>Hit animal</td>
<td>0.53</td>
<td>0.55</td>
</tr>
<tr>
<td>15</td>
<td>502, 701, 702, 706, 707, 708</td>
<td>Off carriageway on straight</td>
<td>0.54</td>
<td>0.7</td>
</tr>
<tr>
<td>16</td>
<td>703, 704, 708, 904</td>
<td>Off carriageway on straight, hit object</td>
<td>0.60</td>
<td>0.66</td>
</tr>
<tr>
<td>17</td>
<td>705</td>
<td>Out-of-control on straight</td>
<td>0.55</td>
<td>0.73</td>
</tr>
<tr>
<td>18</td>
<td>801, 802</td>
<td>Off carriageway on curve</td>
<td>0.65</td>
<td>0.59</td>
</tr>
<tr>
<td>19</td>
<td>803, 804</td>
<td>Off carriageway on curve, hit object</td>
<td>0.65</td>
<td>0.71</td>
</tr>
<tr>
<td>20</td>
<td>805, 806, 807, 808</td>
<td>Out-of-control on curve</td>
<td>0.67</td>
<td>0.66</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>000, 200, 300, 400, 500, 600, 700, 800, 900, 901, 906, 907, 403, 405, 606, 607, 610</td>
<td>Other</td>
<td>0.51</td>
<td>0.63</td>
</tr>
</tbody>
</table>
C4  Determining Crash Risk Rating Bands

The crash rate (estimated in Section C3) is converted into a CRR band as identified in Table C2 following.

Table C2 – Crash Risk Rating Bands

<table>
<thead>
<tr>
<th>CRR Band</th>
<th>Urban (Est. FSI per 10⁸ VKT)</th>
<th>Rural (Est. FSI per 10⁸ VKT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td>&gt;31.3</td>
<td>&gt;22.0</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>14.5–31.3</td>
<td>9.2–22.0</td>
</tr>
<tr>
<td>Low Risk</td>
<td>&lt;14.5</td>
<td>&lt;9.2</td>
</tr>
</tbody>
</table>

NOTE: The definition of rural and urban as identified in Table C2 are based on the definitions supplied in Section 3.5 (specifically Table 8) of the Infrastructure Risk Rating Manual.
Appendix D: Speed Limit Review checklist

For a copy of the Speed Limit Review checklist, please refer to Technical guidance section under the department’s website.
Appendix E: Case studies

For copies of Speed Limit Review Case Studies 1, and 3, please refer to Technical guidance section under the department's website.