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Speed Zoning

Policy and Application Guidelines

Network Operations Directorate

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Speed Zoning: Policy and Application Guidelines

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Authorisation

As Executive Director Network Operations, I authorise the issue and use of these Speed Zoning: Policy and Application Guidelines.

EXECUTIVE DIRECTOR NETWORK OPERATIONS

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Amendments

Revision Number	Revision Date	Description of Key Changes	Section / Page No.
0	May 2020	New Policy developed (previous policy superseded)	
1	May 2021	“Remember 50 in Built-Up Areas” Signs included	5.13/ p31
2	June 2022	School Zone criteria amended	5.4/ p26

1 POLICY STATEMENT

This policy provides guidance on the principles and objectives applied in setting regulatory speed limits for all public roads in Western Australia. The Policy shall provide Main Roads WA and stakeholders with a strong basis for making decisions based on evidence, experience, and specific factors that apply to a site.

Roadways are an integral element of our environment, and they have different functions and settings. This policy sets out a movement and place framework to provide initial speed zone guidance. This initial setting should then be tested against a measure of individual risk and adjusted as necessary with consideration of other relevant factors.

The policy also provides guidance for specific use cases, signage of speed zones, and other measures that may be undertaken to manage road user speeds.

2 POLICY AIM AND CONTEXT

2.1 Definitions

Refer to Main Roads Glossary of Terms guidelines that provide the most commonly used terminology used by Main Roads and unless otherwise indicated in the text of this Guideline:

SPEED TERMS:

Advisory Speed means any speed information provided to road users which is for general information and is not legally enforceable.

Area Speed Limit means a Regulatory Speed Limit which applies across a specific locality as defined in the *Road Traffic Code 2000*.

Built-Up Area Speed Limit means the 50 km/h speed limit applicable to a built up area as defined in the *Road Traffic Code 2000*.

Design Speed means the speed which is adopted for geometric design of either new roadways, or upgrades to existing roadways

Default Speed Limit means the maximum speed limit applicable to a non-speed zoned road as defined in the *Road Traffic Code 2000*.

Impact Speed means the speed at which a road user or vehicle collides with another object in a crash.

KSI means Killed or Serious Injury

Operating Speed means the speed at which most road users feel comfortable travelling. The operating speed is generally measured as the 85th Percentile Speed. This may be different to the Target Speed.

Posted Speed Limit means the speed zone as indicated by compliant regulatory signage.

Regulatory Speed Limit means a speed limit which can be enforced by the WA Police Service, including default speed zones, posted speed zones, vehicle type maximum speeds, etc.

Speed Zone means the speed indicated by the numerals on the speed limit sign.

Target Speed means the vehicle speed considered to be in line with this policy, and which should be the basis for setting a regulatory speed, supported by other roadway treatments, where appropriate.

85th Percentile Speed means the speed at or below which 85% of all vehicles are observed to travel under free-flowing conditions past a nominated point.

95th Percentile Speed means the speed at or below which 95% of all vehicles are observed to travel under free-flowing conditions past a nominated point.

ROAD FUNCTION TERMS:

Access Road means a road providing access to abutting properties.

Primary Distributor means a road that provides for major regional and inter-regional traffic movement and carries large volumes of generally fast-moving traffic. These roads can be strategic freight routes.

District Distributor A means a road that carries traffic between industrial, commercial and residential areas and generally connects to Primary Distributor roads.

District Distributor B means a road that has a similar function to a District Distributor A road but with reduced capacity due to flow restrictions caused by frequent property accesses and roadside parking.

Regional Distributor means roads that are not Primary Distributors, but which link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by local government.

Local Distributor means a road that carries local traffic, typically linking local areas to higher-order distributor roads.

Non Traffic Route means a road that does not provide a connection between localities. These include car parks, cul-de-sacs, and local roadways designed primarily to provide for local access to properties or destinations.

Route means a continuous road or set of roads which provides a clear and legible connection between destinations. Routes may or may not be designated State Routes. Routes may be a continuous carriageway with different common names for individual segments (for example, State Route 53 - Barrack Street, Beaufort Street, Broun Avenue, and Beechboro Road North.)

COMMON TERMS:

AADT means Annual Average Daily Traffic (the typical number of vehicles traveling along both directions of a road across a 24-hour period).

Activity Centre means an Activity Centre consistent with the definition and intent of *State Planning Policy 4.2: Activity Centres for Perth and Peel*.

AS means Australian Standard.

GVM means Gross Vehicle Mass.

ISO means International Standards Organization.

LATM means Local Area Traffic Management.

Main Roads means Main Roads Western Australia.

Regulatory Speed Signage means any speed signage that is enforceable under the *Road Traffic Code 2000*.

Road means any highway, road, or street open to, or used by, the public and includes every carriageway, footway, reservation, median strip and traffic island thereon.

Roadway means Road per the above.

School Zone means a carriageway subject to school zone signage as defined in the *Road Traffic Code 2000*.

School Frontage Road means any road directly adjacent to any part of a school including playing fields.

Speed Limit Signage means any sign or marking erected or approved by Main Roads to communicate information about regulatory speeds.

Threshold Treatment means a treatment that is placed at a perimeter or entry of a local area to inform motorists that they are entering a different speed environment.

VPD means vehicles per day (typically expressed as the sum of vehicles travelling in both directions for two-way roads).

2.2 Policy Context

Speed Limits are an essential mechanism to ensure the safe and efficient operation of road networks. Travel speeds on Western Australian roads must address a broad range of objectives. The application of appropriate speed limits and other traffic management measures is a key mechanism in managing vehicle speeds to achieve desired safety, mobility, traffic management, local amenity, and road user expectations.

Speed limits in Western Australia take the form of:

- Default Speed Limits (which apply in the absence of signage)
- Posted Speed Limits (where a specific maximum speed limit is applied to a road, road section, defined area, either permanently or temporarily)
- Advisory Speed Limits (which provide the driver with a recommended travel speed at a known hazard)
- Specific vehicle limits (where certain kinds of vehicles, including vehicles towing, are subject to an absolute maximum speed limit even where posted regulatory speed limits may be higher)

This policy provides overarching guidance on the principles and objectives applied in setting speed limits and shall be read in conjunction with other relevant policy and technical guidance documents.

All road users in Western Australia are responsible for driving safely in accordance with conditions, irrespective of any signage (see regulation 18 of the *Road Traffic Code 2000*).

2.3 Application of Speed Signage

In order to be effective, speed zones must be both appropriate for the road environment and aligned with both the perceived and actual risks for individual road users.

Many factors are relevant to the assessment of appropriate speed zones. This policy document applies three key concepts to guide the selection of appropriate traffic management measures:

- *Movement and Place*, which describes the Form and Function of road and street environments (see sections 3.1 and 3.2). 'Movement and Place' is used to identify a potential range for the appropriate Target Speed.
- *Target Speed*, the maximum Operating speed which is generally appropriate or desirable for vehicles to travel (see sections 2.5 and 3.3). This is used as the basis for all regulatory speed zone selection.
- *Individual Road User Risk and Safe Systems Principles* (see section 3.4.1); various risk factors are also considered in the selection of Target Speeds.

Regulatory and Posted speed limits are only one measure in a range of approaches to managing vehicle speed and road user behaviour. Sections 4 and 5 of this policy provide guidance on a range of additional measures and treatments that can be considered to support compliance to Regulatory Speed Zones.

Speed limits and corresponding signage must also be set in accordance with legislation (including the *Road Traffic Act* and *Road Traffic Code 2000*), and applicable reference documents including Australian Standards (including AS 1742.4), Austroads Guidance (including the Austroads Guides to Traffic Management and Road Safety), International Standards, and other Main Roads Policies, Supplements and Operational Documents.

2.4 Applicable Roads

This Policy applies to all roads in Western Australia. Main Roads reviews and approves all proposed changes to speed zones. Local Governments are responsible for monitoring and reviewing posted speed limits on their roads and must seek formal approval to change speed limits. Main Roads also reviews all proposed changes to signage and pavement marking on roads. For information on speed zone reviews and application processes, please refer to section 6.

The application of speed zones shall be consistent across Western Australia, reflecting the key principles outlined in this document.

2.5 Objectives and Guiding Principles – Target Speed

A key concept adopted in this policy is *Target Speed*. This is the speed considered appropriate for a roadway in light of its form, function, environment, and risk profile.

The Target Speed is the maximum desired Operating Speed of traffic during periods of free flow. The Target Speed is a proactively determined value, and is not obtained solely through observing current or historical Operating Speeds. The Target Speed should match the form and function of the roadway to ensure that all speed controls and speed management measures are appropriate for the road type, and can be readily understood by road users.

Speed limits and speed management treatments are key measures to prevent and mitigate outcomes of severe crashes, and therefore in the prevention of road trauma. Target Speeds should also reflect consideration of the risk to individual road users.

The Target Speed should be the basis upon which any Posted Speed Limit, or other road treatment, is established. Most road users travel at or near the regulatory speed limit. Therefore, the Target Speed (for ideal conditions) shall not be greater than the Regulatory Speed Limit.

The road environment should clearly match and reinforce the Target Speed. Target Speed on a section of road may vary if operational conditions are significantly different over time.

On many roads, variation in Operating Speeds will occur during different times of day, as patterns of activity, traffic volumes, or congestion may result in road conditions matching Target Speeds. Due consideration needs to be given to patterns of Operating Speeds against the Target Speed identified through the process outlined in this policy.

The Target Speed should be assessed following the procedure outlined in Figure 1 shown overleaf.

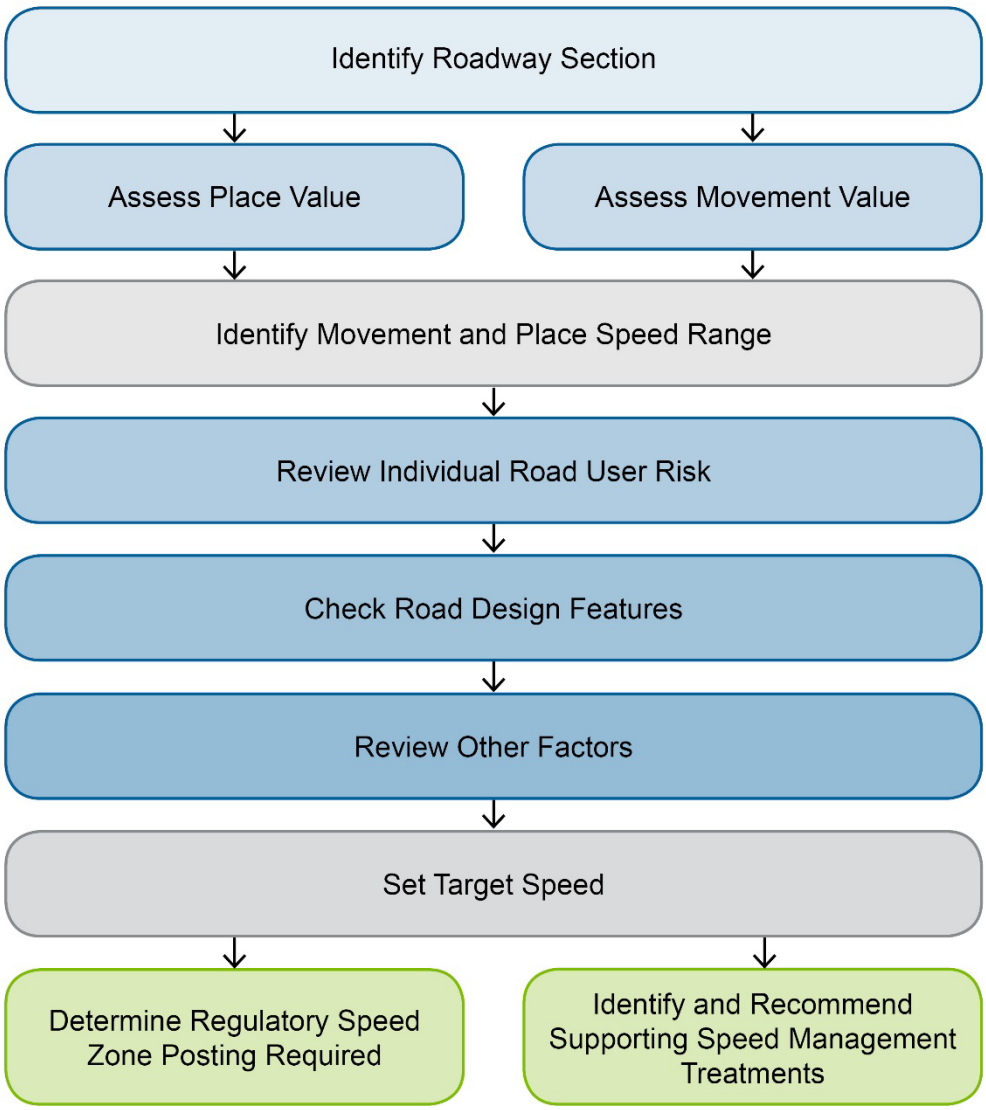

Figure 1: Procedure for setting a speed zone

Once a Target Speed is set for the applicable roadway section, the application of regulatory and advisory signage can be undertaken. This policy also provides guidance for road asset owners with respect to other measures that can be adopted to support the Target Speed.

The following section defines the guiding principles used to determine a Target Speed. The application of the principles in typical road environments is outlined in section 4 of this policy.

3 MOVEMENT AND PLACE (ROAD FORM AND FUNCTION)

Speed limits must be consistent with the purpose and physical environment of the roadway.

Each roadway provides a movement function within the road network. Movement describes the use of the roadway for travel (including traffic, freight, public transport, pedestrian and cycling movements). Generally, the higher the road hierarchy classification, the greater the movement value of the roadway.

Every road is surrounded by various land uses, from residential or commercial activity, to pastoral or remote. The degree to which a roadway forms an integral part of the place it travels through can indicate its Place value. Place values describe the significance of the destination value of the roadway and adjacent land uses.

The Movement and Place Framework (Figure 2) provides a basis for considering a road against key characteristics associated with movement (otherwise known as transport, link or similar) and place (otherwise known as location, land use, or similar) and promotes a strategic, integrated approach to guide corridor planning across the planning and transport portfolios. Operationally, the Movement and Place Framework can be used for identifying appropriate Target Speed(s). The Movement and Place Framework can also be used to assess the factors that may influence a driver's perception of risk which in turn may influence driver behaviour and naturalistic Operational Speed. Currently, a whole of WA Government approach to a 'Movement and Place' framework is being developed in consultation with a number of key stakeholders. Once developed, this framework shall be incorporated within the speed zoning policy which will be updated accordingly. Until such time, it is important to acknowledge the basis of movement and place characteristics

Further explanatory information about the Movement and Place framework is outlined in the *Austroads Guide to Traffic Management Part 4: Network Management*.

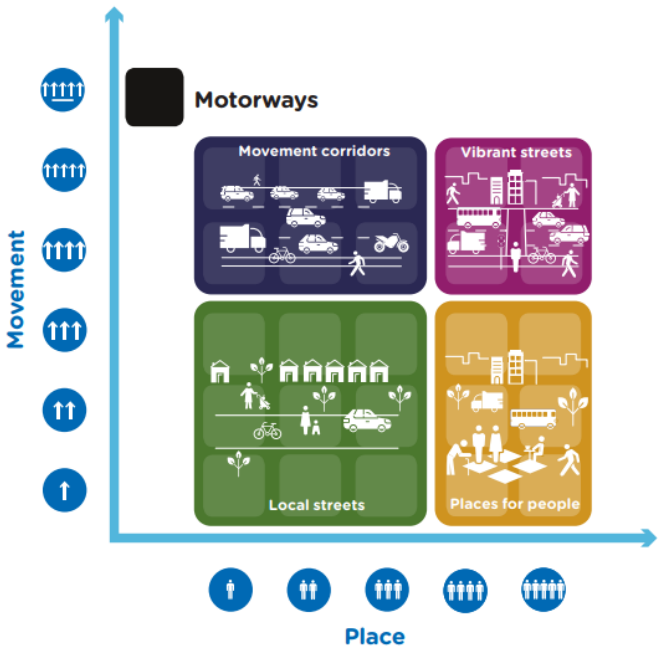

Figure 2: Movement and Place Framework (Source: Roads and Maritime Services, NSW)

3.1 Movement

Movement describes both the demand and profile of road user movements, and the form and function of the roadway to facilitate movements. Variation in movement patterns at different times should always be considered.

Movement information includes:

- The typical volume of traffic (such as AADT or peak hour movements).
- Profile of traffic, types of vehicles, purpose of road use.
- Design standard of the roadway (including control of access, intersection types, pavement or surface type and standard, separation from adjacent land uses, width of the road corridor, geometric layout, etc.). Note that specific roadway design standards and limiting features are also reviewed in setting of the Target Speed – refer to section 3.5.
- Public transport facilities and service intensity along the roadway.
- Use of the roadway for pedestrian and cyclist movement.
- Use of the road reserve for other infrastructure, such as power lines or utility corridors.

The road network in Western Australia is presently defined according to a road hierarchy rating. These categories generally follow the Movement Function of the roadway. Listed from highest Movement value to lowest, the classifications are as follows:

- Primary Distributor
- Regional Distributor
- District Distributor A
- District Distributor B
- Local Distributor
- Access Road

When commencing a speed zone evaluation exercise, the road hierarchy rating should be considered as the starting point for defining the Movement value in the Framework, and adjusted to suit the current and planned road function (refer to Main Roads *Road Hierarchy of Western Australia*).

Even where Movement values are very high, certain road features outlined in section 5 (e.g., traffic signals, roundabouts or single-lane bridges) may determine the maximum appropriate Target Speed for a road section.

3.2 Place

Place describes the form and function of land uses and activity beside or along the roadway corridor. Place values influence the activity pattern along the roadway, and have a significant bearing on naturalistic Operational Speed. Many Place values are also strong indicators of potential road user risks, and may highlight other considerations for appropriate Target Speed selection. Variation in place functions and activities at different times should always be considered (see section 3.4.3).

A number of environmental, land use and context factors must be considered when assessing a roadway's Place value. Important considerations include:

- The role of the roadway for supporting activity (including retail, commercial, civic, entertainment, and recreation uses).
- Importance of the roadway as part of a destination or destinations.
- Intensity of land uses surrounding the roadway.
- Volume of pedestrians and cyclists moving *within* the precinct (rather than making through movements).
- Presence of land uses that may increase crash risk, e.g., licensed venues, medical facilities, recreational reserves, educational facilities, activity centres public transport interchanges, and different forms of residential use.

- Views, features or roadside locations that may distract driver attention.
- Type and profile of traffic accessing roadside locations, such as proportion of tourists, sightseers, or people making purely recreational trips.
- Type and quantity of parking along the roadway (including on-street parking, verge parking, etc.).
- Likelihood or potential for pick-up, drop-offs, stopping, and parking to occur along or aside the roadway.
- Number of accesses onto the roadway.

3.3 Target Speeds based on Movement and Place framework

The Movement and Place Framework provides a basis for identifying a range for the Target Speed with reference to the form and function of a roadway. The matrix presented in Table 1 provides a high-level overview of suitable Target Speeds for different categories of roads within the broader WA network.

Table 1: Movement and Place Framework and Target Speed Range

Level of Movement Function		Level of Place Value				
		Highest	High	Moderate	Low	Lowest
	Increasing significance	Indicative Target Speed (in km/h):				
	Primary/Regional Distributor*	50-60	50-70	60-80	80-100	100-110
	District Distributor A/B	40-50	50-60	60-80	80-100	100-110
	Local Distributor	30-50	40-60	60-70	80-100	100-110
	Access Roads	10-50	30-50	50-70	80-100	100-110

*Except for School Zones, which are 40 km/h.

The Movement and Place framework illustrated in Table 1 contains a wide range of actual roadway types. Table 2 overleaf provides indicative Target Speed values for specific types of roads that exist within the Movement and Place Framework. This Table is intended to supplement the Movement and Place Framework (Table 1), and is to be used in place of AS 1742.4-2008 Table 2.1.

Table 2: Typical Target Speeds Range for Road Types

Movement Function	Place Value	Typical Road Application	Key Features	Indicative Target Speed
Access and Local Distributor Roadways				
Access	Highest	Pedestrian mall, extremely narrow urban thoroughfares, Shared Zones	Confined area where movement of pedestrians and cyclists has priority over motor vehicles. Generally the volume of traffic is very low.	10
Access	Highest (within destination)	Shared Spaces/ Pedestrian Priority Areas	Areas where pedestrians and cyclists intermingle with motor vehicles.	20
Access	Highest to High	Recreational Precincts, Safe Active Streets	Confined areas where pedestrians and cyclists intermingle with motor vehicles.	30
Access and Local Distributors	Highest	Town Centre / Commercial streets or areas	Areas with high pedestrian activity or very strong existing place functions including extensive on-street activity. Must have traffic calming infrastructure to reinforce a low speed environment. Pedestrians and vehicles separated.	30-50
Access and Local Distributors	High	Neighbourhood Streets	Narrow streets with significant residential development, on street parking, adjacent neighbourhood parks and playgrounds, etc.	40-50
Access and Local Distributor	Moderate	Industrial precincts	Wider/unmarked carriageways, mix of heavy and light vehicle traffic, limited pedestrian activity.	50-70
Access and Local Distributors	Moderate to Low	Low standard roads in rural/ semi-developed areas	Minor roads in partially built-up areas	60-80
Access and Local Distributors	Low	Rural or remote roads	Low standard/higher risk roads in rural/regional environments	80-100
Access and Local Distributors	Lowest	Rural or remote roads	Rural roads with limited development and roadside hazards	110
District Distributor Roadways				
District Distributors A or B	Highest to High	Town Centre street and areas	Distributor roads in Activity Centres/Town centres with high Place values	30-60
Movement Function	**Place Value**	**Typical Road Application**	**Key Features**	**Indicative Target Speed**

District Distributor A or B	High to Moderate	Typical Undivided Arterial within Urbanised Area	Speed limit for most undivided district and primary distributor roads in built-up areas with direct access from abutting development.	50-60
District Distributor A or B	Moderate	Typical Divided Arterial within Urbanised Area	High standard urban Distributor roads, generally divided carriageways having provision to safely store turning or crossing vehicles. May have some direct access to the road from abutting development.	60-70
District Distributor A or B	Moderate	Local Roads in Semi-Rural/Rural Residential Areas	Undivided roads having low levels of direct access from abutting development.	60-80
District Distributor A or B	Low to Lowest	High Standard Divided Urban Arterial Roads	High standard urban roads, divided roads having provision to safely store turning or crossing vehicles and minimal access from abutting development directly to the main carriageways.	80
District Distributor A or B	Low	Rural Roads	Undivided rural roads having low levels of direct access from abutting development.	110
Primary and Regional Distributor Roadways				
Primary /Regional Distributor	Highest	Town Centre street and areas	Distributor Roads in Activity Centres/Town centres with high Place values	40-60
Primary /Regional Distributor	High	Urbanised areas	Primary Distributors with direct access in urban areas	50-70
Primary /Regional Distributor	Moderate	Urbanised areas	Primary Distributors in urban or semi-urban areas	60-80
Primary /Regional Distributor	Low	Rural Roads	Rural roads not compliant with current design standards (e.g. winding roads, rural roads with high demonstrated risk factors)	80-100
Primary /Regional Distributor	Low to Lowest	Urban Freeways/ Highways and Rural Roads	High standard urban freeways and highways. May be applied on undivided rural roads.	80-110
Primary /Regional Distributor	Lowest	High Standard Freeways/Highways and Rural Highways	Default speed limit for roads in non built-up areas.	110

3.4 Road User Risk

Following initial consideration of Movement and Place characteristics, the level of risks posed to road users must be a critical consideration in determining Target Speeds and appropriate treatment measures.

The level of risk posed to an individual road user may be used to vary the Target Speed, where treatments implemented to address the risks on that section of roadway have been unsuccessful in reducing the number of Killed or Serious Injury (KSI) crashes.

If a road section has a history of KSI crash events, it is critical to understand the nature and potential causes of crashes in order to identify and assess potential treatments. Where a pattern of crashes indicates the need for modification of the road environment, intersection types, improved advisory or warning signage, targeted enforcement, or other measures, these should be implemented as direct strategies to mitigate the underlying crash risk. Speed zoning should be considered as being one of many potential speed management measures that can be used to prevent road trauma.

Where treatments are unsuccessful at reducing KSI crashes, the Target Speed of the road section may be revised to reduce the severity of crashes.

3.4.1 Safe Systems Principles

The ultimate aim of the Safe Systems Approach is to ensure any crashes that may occur are of low severity, so that no road user is killed or seriously injured. The speed at which impacts occur (the Impact Speed) is a major determinant of the severity of road crashes. Therefore, a key principle of the Safe Systems approach to Road Safety is achieving impact speeds that reduce the likelihood of fatality or serious injury occurring as the result of a crash.

Different crash types have different survivable Impact Speeds that are likely to ensure no road user is killed or seriously injured. The *Main Roads' Road Safety Management System (ROSMA)* provides further guidance on the management of crash risks.

The likelihood of individual road users being exposed to a fatal or severe injury crash needs to be considered when evaluating appropriate Target Speeds. In some environments, Impact Speeds may generally be lower than Target Speeds, as road users react and brake to mitigate a potential collision, thereby reducing impact speed. The degree to which road users may react to potential collisions is an important consideration in assessing appropriate Target Speeds.

3.4.2 Crash History and Risk Evaluation

The history of crashes along a roadway can provide significant information to assist in both the consideration of an appropriate Target Speed and the identification of other potential treatment measures to ensure the speed limit matches the road environment.
The occurrence of KSI crashes is of critical concern for appropriate speed controls and treatments. The occurrence of low severity (Medical and Property Damage Only) crashes should also be reviewed as they may indicate specific risks or hazards for investigation. A high incidence of crashes (for the given volume of traffic) along a section of road may indicate a road hazard and/or poor traffic conditions. It is desirable to treat isolated hazards to reduce or remove risks rather than apply short regulatory speed zone sections, though the presence of many or untreatable hazards must be considered in the selection of an appropriate Target Speed.

Crash rate represents personal risk and is derived from the recorded KSI's per Million Vehicles Kilometres Travelled. Where crash rate is classified as medium – high OR high under the ROSMA framework, speed reduction measures should be considered. This analysis has been done for all State Roads.

Road Safety Assessments may assist both in the consideration of Target Speed and in the identification of risks and selection of treatments to ensure the road environment is appropriate for the Target Speed. Road Safety Assessments are one potential input to a range of considerations outlined in this policy, and should not be the sole mechanism through which a Target Speed is identified.

Evaluating the risk of crashes for roads where there is limited or no available evidence of crash history can be challenging, owing to the wide range of factors which may influence actual crash risk and crash outcomes. In cases where the risk of a road section is perceived to be high, but the recorded incidence of crashes is low, it is strongly encouraged that site surveys and data collection is undertaken to further establish actual traffic and risk conditions to inform consideration of appropriate Target Speeds. In such cases, Main Roads may recommend that road asset owners undertake collection of additional site data to enable more detailed analysis of the level and nature of crash risks. Further site information and evidence on the nature of specific crash risks then enables consideration of the full set of possible treatments that could be used to manage and reduce the level of crash risk.

3.4.3 Variability of Risk

Determining individual road user risk requires consideration of how risks vary for different road users and in different conditions. The implementation of speed management measures (including regulatory signage) should consider differences in road conditions and infrastructure risk through time. These differences may include:

- Recurrent traffic patterns
  - School Zones (see section 5.4)
  - High intensity pedestrian activity (see section 5.8)
  - Patterns of congestion, through flow patterns or disruptions
  - Movement patterns at intersection-level, potentially treated with Vehicle Activated Warning Systems (contact Main Roads for guidance on system types.)

Where there is significant variation in risk associated with different times or conditions, the desired Target Speed is likely to vary. In these instances, temporary and variable approaches to managing speeds may be considered.

Where road conditions present different risks to road user groups (such as on very long steep gradients), vehicle-specific speed limits may be used. Refer to section 5.6 for information on Heavy Vehicle Speed Limits.

3.5 Road Form and Specific Limiting Features

Target Speeds may be limited by the presence of individual limiting features, such as traffic signals, and existing road design factors. These are outlined in section 5. Where these limiting features exist, the Target and Posted Speed may be lowered specifically at the feature, or extended to a broader Speed Zone section, in accordance with this Policy and Technical Guidelines.

Physical road features that should be considered include, but are not limited to:

- Clear zones
- Lane width
- Horizontal and vertical curves
- Roadside hazards
- Batter slopes
- Sealed shoulder widths
- Sight distances

- Cross section
- Intersection and access forms and frequency
- Surface and pavement quality
- Crossing types

Regulatory Speed Limits should not be used solely to control speeds on isolated substandard alignments. In such conditions, it is generally found that speeds are better controlled by the use of alignment warning and advisory speed signs rather than by speed zoning. However, where a speed zone is proposed on a road where the alignment or design features are poor over a substantial length, steps should be taken to ensure that the Posted Speed Limit is appropriate.

3.6 Other Factors and Considerations

Before final selection of the Target Speed, a number of key factors should be checked to ensure the Target Speed is aligned with technical guidance and broader road network management principles. At this stage, guidance on the configuration of speed zones provided in sections 4 and 5 shall be reviewed to ensure the Target Speed can be implemented in accordance with Main Roads design principles, engineering requirements, and technical guidelines.

The impact on the broader network should also be considered at this stage (refer to section 3.6.5).

Numerous other data, if available, may also be considered to ensure the appropriateness of the Target Speed, the extent of specific speed zones, and the application of supporting treatments.

3.6.1 85th Percentile Speed

All data for existing 85th Percentile Speed should be reviewed to indicate current operating speeds. The 85th Percentile Speed (along with the Standard Deviation) is a useful metric for evaluating the need for potential treatments to ensure the road environment is clearly aligned with the Target Speed. The 85th Percentile Speed is only one data point and shall not exclusively be used to determine a Posted Speed. A guide to the determination of the 85th Percentile Speed is set out in AS 1742.2 – Appendix A.

Lowering a Posted Speed limit may have limited impact on the 85th Percentile Speed without the application of appropriate supporting treatments.

3.6.2 95th Percentile Speed

All data for existing 95th Percentile Speed should be reviewed to indicate whether there is evidence of excessive speeding by a minority of road users.

Where the 95th Percentile Speed significantly exceeds the Target Speed, measures to discourage speeding should be considered. Design features to limit the potential for speeding (such as narrowed lanes, deviations, and other traffic calming measures) should be considered. Early engagement with Main Roads should be undertaken to ensure that appropriate measures are selected for the specific site context.

3.6.3 Compliance and Enforcement

Existing speed data should be reviewed to evaluate the nature of any speeding occurring along the roadway. Where there is a regular pattern of speeding (for instance, during late night hours), targeted enforcement may address the issue and achieve compliance.

3.6.4 Route Consistency and Continuity

Generally, it is desirable for a Route (a continuous carriageway which may have different common names for individual sections) to have a legible and consistent set of speed environments, aligned so that changes in Posted Speed Limit clearly match the immediate road environment. Excessive speed zone changes along a single route are often frustrating for road users, especially where speed limits vary only marginally (for instance, transitions of 10 km/h or 20 km/h), or where the need for such changes at each location is not clear to the road user.

It is therefore desirable to adopt a "typical" Target Speed for a route, with consistent lower Target Speeds where the road environment is substantially different. For example, a regional highway may have a Target Speed of 100 km/h with 60 km/h sections through appropriate town sites.

Deviations in the Target Speed along a route should generally only be lower than the typical speed, when there are changes in the roadway environment. Situations where short (less than 5 km or the distance travelled in 3 minutes at the Target/Posted Speed) sections of through road with a posted limit different from the typical limit for that roadway shall be avoided where possible. This is to provide for a legible driver experience with a clearly established maximum Target Speed along a route.

3.6.5 Network Consistency

The context of the roadway within the wider network should be considered when evaluating Target Speeds. Two key network factors should be evaluated to ensure the selected Target Speed does not result in unintended outcomes.

- **Diversion** – The potential for traffic to shift on the network as a result of Posted Speed changes should be considered. For instance, if the Posted Speed on a major regional highway is reduced over a substantial distance, some vehicles may select alternative routes with higher Posted Speeds but with lower standard roads. If this was to occur, the diversion of traffic on to lower standard roads might increase overall exposure to crash risks. In cases where the potential for diversion has been identified, a monitoring and evaluation program should be considered for that network.

- **Consistency** – Similar road environments within a road network should have similar Posted Speeds. This should not be the main driver of Target Speed selection, but the speed zoning of other routes nearby should be checked to ensure that the road network is legible and consistent for road users. Where there is significant difference between similar roads in an area or region, it may be necessary to evaluate speed limits at a broader scale.

3.6.6 Network Operations Practitioner Knowledge

The knowledge and experience of the Approval Authority in road network planning and operations is necessary when assessing appropriate Target Speeds and associated treatments.

3.6.7 Setting Target Speed

Following full assessment of the Movement, Place, and Individual Risk Characteristics, and other factors, the Target Speed shall be utilised as a basis for identifying and selecting appropriate treatments.

4 SPEED ZONES DEFINITION

Appropriate treatments should be selected to achieve or support the desired Target Speed. Road treatments which influence the perception of the appropriate speed for road users are important for achieving compliance with Regulatory Speed Limits, and for ensuring that limits are aligned with a broad range of objectives. These treatments should be considered as the primary mechanism for managing speeds, supported with signage where necessary.

Where isolated or minor features of a roadway are otherwise inconsistent with a Target Speed, it is preferable to treat those features rather than modify regulatory speed controls (refer section 3.6). However, certain road features listed in section 5.1 are subject to absolute maximum limits. The presence of a large number of road hazards should be considered through Movement, Place and Individual Road User Risk Assessments, and should be reflected in the Target Speed.

Guidance on Road Treatments to support speed zone modifications are provided below and in other documents listed in Appendix B. The most common treatments currently adopted in Western Australia include but are not limited to:

- changes in the road design and alignment, such as wide shoulders, line markings, edge treatments, guide posts, roadside and median barriers, etc.
- alterations in the urban design of the roadway, such as modification of street furniture, lighting, crossing points, etc.
- selection of appropriate road surface and texture, such as different pavement surfaces within shared zones
- the introduction of traffic management devices, such as horizontal or vertical deflection points or other Local Area Traffic Management (LATM) measures
- reductions in lane width, such as through the realignment of edge lines,
- the installation of raised medians or barriers,
- installation of advisory speed signage for isolated hazards, such as substandard curves (refer also to AS 1742.2)
- monitoring and enforcement,
- variable speed signage devices,
- vehicle activated signs,
- the use of other streetscape or roadside design measures as appropriate, taking into account Road User Risk, Movement and Place functions, and other policy and technical guidance as appropriate.

The following sections define different types of speed zones and their applications.

4.1 Default Speed Zones

Default Speed Limits apply to all roads that do not have regulatory signage installed.

4.2 Fixed and Variable Speed Limits

Fixed speed zones provide an appropriate treatment for roads that do not have regular frequent or extreme variations in traffic conditions.

Where Target Speed varies significantly, and the variation risk profile is sufficient to justify more active forms of speed management, temporary or variable speed limits may be used to ensure Posted Speed Limits are suited to the various operating conditions.

Variable Speed Limits are applied in School Zones, Smart Freeways and Time Based Speed Zones.

4.3 Offset Speed Zones (Speed Zones for Opposing Directions)

An offset speed zone means that there are different Posted Speed limits in each direction of a road. Offset speed limits are often difficult to enforce and confusing to some motorists. They should only be adopted after careful consideration of road safety and enforcement implications.

It may be appropriate to use offset speed zones in the following situations:

- On divided roads (including those with a raised median or central barrier), where one direction of a road presents a greater risk to that of the opposing direction (e.g., steep downgrades in combination with poor alignment).
- On divided roads where the roadside development or road geometry on the two sides is markedly different.
- For short transition sections on approaches to intersections or other defined hazards (refer section 4.5)
- On the departure side of highly localised hazards (such as at railway crossings or traffic signals, refer section 5.1)

At steep descents/ascents with unbroken dividing lines and climbing lanes for buses and trucks, it may also be desirable for a lower speed limit for descending heavy vehicles only. (refer Heavy Vehicle Zones 5.6)

4.4 Speed Zone Transitions

A Speed Zone Transition is intended for use where there is a significant reduction in speed limit along a carriageway. Where there is a significant reduction of the speed limit, two sets of Speed Limit Ahead Signs (G9-79) shall be placed in advance of the start of the lower speed zone in accordance with AS 1742.4, Section 2.3.5.

Placement of the Speed Limit Ahead signage may vary to account for adjacent signage, Operating Speeds, road features, and other hazards. Specifically, the distance travelled at the preceding Target Speed (refer Table 5) should also be reviewed to identify the reasonable travel time and distance available for drivers to adjust their speed upon sighting of signage. The visibility of both Speed Limit Ahead and the following speed restriction sign should also be considered, and may justify variation in the location of the placement of Speed Limit Ahead signs to appropriately match road conditions, typically at 4 to 10 seconds of travel time from the change in limit.

Speed Limit Ahead Signage should not be used for increases in speed limit, or on exit ramps at interchanges, or at approaches and departures to Shared Zones. Speed Limit Ahead Signage will only be used for decreases in speed limits as defined in Table 3.

Table 3: Speed Zone Ahead Signage

Speed Zone Difference	Speed Zone Ahead Signage
10 km/h	Not to be used
20 km/h to 30 km/h	Optional (site specific)
40 km/h and above	Mandatory (other treatments likely to be required), except at Freeway off ramps

4.5 Speed Environment – Road Characteristics and Individual Hazards

Australian Standard 1742.4-2008 Appendix A, Section A3 provides definitions for Road Characteristics and their implications for speed limits. This Section shall be used except for sub-section *A3.4 - Road Hazards*, which is replaced with the following: Speed limits should not be reduced for isolated road hazards, such as un-signalised intersections and isolated curves. Road hazards such as these should be treated with the appropriate warning and regulatory signs.

However, where several hazards occur in close proximity to each other, a lower Posted Speed Limit may be appropriate.

4.6 Minimum Length

The Minimum Length of Posted Speed Zones should be considered with reference to the time taken to travel the length of the zone at the Target Speed.

The desirable minimum lengths of speed zones are specified in Table 4. This shall be used in place of AS 1742.4-2008 Table 2.2. These minimum lengths typically equate to the distance travelled in 30 seconds at the Posted Speed Limit. However, shorter distances may be acceptable for lower limits on approach to traffic signals, roundabouts, railway crossings, or single lane bridges (see section 5.1).

Table 4 – Minimum Lengths of Speed Zones

Regulatory Speed Limit (km/h)	Minimum Length of Speed Zone (km)	Typical Travel Time at Regulatory Speed (seconds)
30	As Appropriate	As Appropriate
40	0.4	36
50	0.5	36
60	0.6	36
70*	0.7	36
80*	0.8	36
90	0.9	36
100	2.0	72
110	4.0	131
School Zones - 40	Depends on site – should be based on allowing for 4 to 10 seconds of travel time at the Posted Speed to allow road users to adjust speed for each approach	
Intersection Speed Zones - variable		

*Traffic Signals speed zoned at 70km/h are to have a minimum length of 0.3km. This comprises of 200m on approach to and 100m on departure from the intersection. Similarly, roundabouts, railway level crossings, and single lane bridges on a road with a posted speed limit greater than 80km/h may have short sections of Posted Speed Limits applied on approaches (refer section 5.1).

4.7 Location of Speed Zone Changes

Speed Zone Changes should occur at a point of clear visual transition along the roadway. Transition

points include:

- At the commencement of a roadway/on the departure leg of intersections
- At a clear change of Movement or Place characteristics
- On approach to a major interchange or intersection
- Landmarks and/or changes in environment at the entry to a town or urban centre
- At a change in road seal, road width, road alignment, or other significant geometric feature

Where Speed Zone Changes occur at or near a major intersection, consideration should be given for placing the transition point in advance of the intersection to reduce the Impact Speed of potential right angle or rear end collisions that might occur at the intersection. The site conditions on the approach should be evaluated to ensure any relevant factors (such as queueing or sight distance constraints) are considered in the placement of signage.

It is desirable that speed zone changes occur in advance of major intersections to avoid distractions and to allow drivers to adapt to the lower speed limit before reaching the intersection. A typical distance travelled in 4 to 10 seconds at the Posted Speed is desirable to allow for road users to adjust their travelling speed. Guiding distance values are provided in Table 5 below.

Table 5: Distance Travelled at Posted Speed

Posted Speed (km/h)	4 Seconds of travel time (Minimum)	10 Seconds of travel time (Maximum)
30	33 m	84 m
40	44 m	111 m
50	55 m	140 m
60	66 m	166 m
70	77 m	195 m
80	88 m	222 m
90	99 m	250 m
100	111 m	278 m
110	122 m	305 m

Except on divided carriageways where offset speed zones can be used, it is desirable that speed zone changes occur in advance of major intersections to avoid distractions and to allow drivers to adapt to the lower speed limit before reaching the intersection. A typical distance of 300 metres is desirable where appropriate conditions exist. However, where the speed zone is lower on the departure side of the intersection (for instance on the terminating leg of a T-junction), the speed zone change should be installed as near as possible to the intersection (100 m in rural areas, 50 m in urban areas) to discourage continuation of the higher travel speeds after the intersection.

5 COMMON SPEED ZONE TREATMENTS

This section provides specific guidance on Speed Zoning for common roadway features and environments.

5.1 Intersections and Specific Hazard Types

The following road features may be subject to a maximum Posted Speed Limit, or otherwise constraints to Target Speed as described in this section.

5.1.1 Traffic Signals

The maximum speed limit through Traffic Signals in Western Australia is 70 km/h.

Where the approach road has a Regulatory Speed Limit of 80 km/h and above, the approach to the intersection shall be speed zoned to 70 km/h or less, for a distance of not less than 10 seconds of travel time (refer Table 5) at the preceding higher Posted Speed Limit before the signals.

As outlined in section 4.7, it is highly desirable for speed limit changes in proximity to intersections to be placed such that the lowest speed limit applies through the intersection.

5.1.2 Roundabouts

Where a roadway has a Regulatory Speed Limit of 90km/h or higher, the approach to a roundabout shall be speed zoned to 80km/h or less, for a distance of not less than 10 seconds of travel time (refer Table 5) at the preceding higher Posted Speed Limit before the roundabout. Approaches to roundabouts shall be designed to ensure traffic enters the roundabout at a desired Target Speed. Posted Speed Limits on the approaches may be considered if crash risks justify a regulatory speed limit control. The tendency for roundabouts to inherently control through speeds due to the potential need to give way and through the geometry of the roundabout should be considered when evaluating whether a regulatory control on the approach is needed to influence Operating Speeds.

Very large roundabouts (Rotary Intersections) or roundabouts with metering signals shall be treated in the same manner as Traffic Signals as detailed in section 5.1.1.

5.1.3 Railway Level Crossings

Railway level crossings located at midblock locations along sealed roads shall have a Posted Speed of no greater than 80 km/h. Any Posted Speed signage on an approach to a railway crossing shall be placed at a distance suitable to allow drivers to adjust their speed and react to the presence of an approaching train (refer to AS 1742.7:2016).

Railway level crossings under passive Stop control, located ≤ 300 metres from an intersection on a terminating road, or situated where other road design features (such as tight curves) constrain practical Operating Speeds to less than 80 km/h do not require specific speed zoning.

5.1.4 Single Lane Bridges

Single Lane Bridges shall have Regulatory Speed limits applied to approaches to mitigate head-on crash risks. The Posted Speed and associated traffic control devices on single lane bridges shall be according to Policy and Guidelines for Give Way Control Approaching Narrow Roads and One-Lane Bridges.

Posted Speed Limit signage on the approach shall be placed at a distance suitable to allow drivers to adjust their speed and react to the presence of any opposing traffic.

5.1.5 Interchanges

Interchange exit and entry ramps shall be signed in accordance with the Technical Guidelines – Speed Zoning. The Posted Speed limit at off-ramps will be equal to the speed of the through road, and that of the on-ramp shall be equal to the speed of the freeway/highway**.**

5.2 High Risk/High Place Function Roads

Where a roadway passes through areas of increased pedestrian activity and/or increased risk to vulnerable road users, the Target Speed shall be set to minimise the risk of serious injury or fatalities and to help facilitate the place function.

Low Target Speed road sections shall be contained within a recognisable and dedicated tourist, recreation, conservation, shopping, commercial or industrial area / precinct / reserve. The following conditions shall generally be met:

- The start and end of the road section should have a threshold treatment or be located at a point of clear visual transition
- The speed zone shall be of sufficient length to justify regulatory signage (refer to section 4.6)
- Mid-block speed-reducing treatments shall be provided where the length exceeds 200 metres (or greater than the distance travelled in 10 seconds at the Target Speed), or where the road environment does not otherwise indicate the need for a lower through speed

5.3 Rural Town Sites

Rural town sites on State Roads shall be zoned to ensure risks to vulnerable road users within the town are minimised. The placement of speed limit signage shall be at a point of clear visual transition, such as a major intersection, or first significant roadside development. Speed limit ahead signs are to be used in accordance with section 4.4.

5.4 School Zones

Areas of increased risk around schools shall have Target Speeds which reduce the risk to road users during school opening and closing times. School Zones shall comply with the definition of a School Zone as given in the *Road Traffic Code 2000*. School Zones may be installed around pre-primary, primary or secondary schools. All School Zones shall have a Posted Speed Limit of 40 km/h (except for roads already zoned at a lower Posted Speed value).

The roads on which the School Zone apply should generally have frontage access to the school, as well as a clear visual connection to the School.

School Zones should include children's crossings, zebra crossings, pelican crossings or pedestrian refuges in the immediate proximity of the school. The School Zone should incorporate any on-road facilities dedicated to the drop-off and pick-up of students, including parking zones specifically for parent vehicles, bus zones, etc. The placement of School Zone signage shall be coordinated with the design of the roadways and installation of crossing locations, etc.

School Zones should, where possible, extend 50 metres beyond the frontages of the school and achieve a length of 200 metres.

School Zones will not be applied to:

- Freeways,
- Control of Access Highways,
- Primary and Regional Distributors roads with posted speed limits greater 50km/h.
- 6 lane roads, or roads where the carriageway width is greater than 10 metres (traffic management treatments should be considered to reduce the carriageway width to less than 10 metres)
- Road within a speed zone, equal or less than the proposed school zone.
- Roads where direct access is restricted for children via physical barriers such as fencing, walls, embankments, grade separated children/pedestrian crossing facilities, etc.

School Zones may be eligible for consideration when it can be demonstrated that there would be a clear overall benefit from the introduction of a school zone.

5.4.1 Adjacent School Zones

Where two schools are nearby and they both independently satisfy the selection criteria, one continuous School Zone serving both schools may be applied at the discretion of Main Roads, taking into account the local road conditions, risks, and principles outlined in this policy.

5.4.2 School Zone Threshold Treatments

School Zones may be defined by the use of fixed static signage, pavement markings, or electronic signage as identified as appropriate by Main Roads.

5.4.3 Use of Electronic Speed Limit Signs at School Zones

The use of Electronic Speed Limit Signs at School Zones shall be considered on the main school frontage road where the school has direct access to the road or carriageway.

However, the Electronic signs may be installed on alternate road if there is a more appropriate road due to the following conditions:

- A history of pedestrian casualty crashes,
- Existing vehicle speed data provided by the WA Police Service, Local Government Authority etc. which demonstrates that the operating speed (85th percentile) is 10 km/h or greater than the posted speed over the full 1.5-hour School Zone period,
- A School Zone located on a designated Restricted Access Vehicle (RAV) route, and / or a designated heavy vehicle route.

5.4.4 Days and Times of School Zones

School Zones are effective on ‘School days’ which are those days excluding weekends and local public holidays, within school terms set by the Department of Education and published on its website.

The times of operation shown on School Zone signs shall be as shown in Table 6.

Table 6: School Zone Times

Location	Hours of Operation
Gascoyne, Pilbara,	07:30 – 9:00 a.m. and 2:00 to 3:30 p.m.
Kimberley	07:00 – 8.30 a.m. and 2:00 to 3:30 p.m
Carnarvon	07:30 – 9:00 a.m. and 2:00 to 4:00 p.m.
Rest of WA	07:30 – 9:00 a.m. and 2:30 to 4:00 p.m.

Electronic School Zone Signs shall only be activated during the times shown on School Zone signs.

5.5 Urban Area Speed Zones

Area Speed Zones may be considered where a local area has consistent characteristics which support broad application of a consistent speed limit. Area Speed Zones apply a regulatory limit on all roads within the area through the installation of signage of all entrance points to the area.

For any urban Area Speed Zone, all roads shall be fully contained within a clearly recognisable and dedicated residential, shopping, commercial, industrial, tourist, recreation, conservation or other precinct or reserve, subject to the following:

- The traffic volume on each road shall be less than 5,000 vpd,
- The area shall have a higher than normal pedestrian activity level and significant broader Place values,
- The proposed area speed zones to be signed shall have a clearly defined boundary,
- The boundaries of the area, precinct or reserve should have a threshold treatment to clearly define the area, and
- Generally, all roads within the area shall be local access or local distributor roads in a functional road hierarchy (having generally lowest, low to medium Movement function).

There is no arbitrary restriction on the maximum or minimum size of an area to which an area speed zone may be applied. Generally, most area speed zones will naturally be restricted by the size of the relevant precinct. The adopted boundary of the zone and the associated speed limit signing should appear logical and clear to drivers.

Where a Local Government boundary passes through an area proposed for an area speed zone, close consultation and coordination will be necessary so that the zone is implemented within both municipalities simultaneously.

5.5.1 Evaluation of Speed Activity in proposed Area Speed Zones

Prior to the implementation of Area Speed Zones, existing speed patterns shall be evaluated to identify the need for treatments other than speed signage.

Effective speed reducing devices may include roundabouts, slow points and speed humps in conformance with the following guidelines and standards in order of precedence as below:

- Main Roads Local Area Traffic Management.
- Austroads Guide to Traffic Management Part 8, Local Area Traffic Management (2008),
- AS 1742.13-1991, Local Area Traffic Management.

5.5.2 Area Speed Zones where the State Default Limit would otherwise apply

Area Speed Zones may be installed where there is a locality with characteristics which necessitate consistent application of a speed zone other than the relevant default speed. These Area Speed Zones shall generally conform with the guidance detailed in section 5.5.

The proposed local area speed zone shall have a clearly defined boundary. Acceptable features for the boundary are primary distributor roads, district distributor roads, local distributor roads, other major traffic routes that are to retain a higher speed limit, townsite development boundaries and physical boundaries such as rivers, lakes, railway lines and protected bushland. The boundaries of the area, precinct or reserve should have a threshold treatment to clearly define the area.

Primary distributor roads, district distributor roads and other major traffic routes should be excluded from the area speed zone and are to retain a higher speed limit. Generally, all roads within the area shall be local access or local distributor roads in a functional road hierarchy. For rural environments, short sections of unsealed/gravel roads may be considered within the Area Speed Zone.

The adopted boundary of the zone and the associated speed limit signing should appear logical and clear to drivers.

Where a Local Government boundary passes through an area proposed for an area speed zone, close consultation and coordination will be necessary so that the zone is implemented within both municipalities simultaneously.

5.6 Heavy Vehicle Zones

Where road conditions may pose specific risks relating to heavy vehicle movements, limits applying specifically to heavy vehicles may be applied. The definitions for heavy vehicle, heavy vehicle speed zone and heavy vehicle speed zone sign are given in the *Road Traffic Code 2000*.

The normal speed zone restriction for heavy vehicles on a steep decline is 40 km/h but this may be varied depending upon the particular situation. These are assessed individually depending on the circumstances e.g., structure, road geometry.

The conditions applicable to a heavy vehicle speed zone on a long steep descent shall be in accordance with the requirements in AS 1742.2-2009 Section 4.9.4 Figure 4.25 for Steep Descent and Long Steep Descent, except the descent shall extend for a minimum length of 1000 metres for grades equal to or greater than 10%.

5.7 Winding Roads

Road sections which have, or are proposed to have, a Winding Road sign (W1-5) and Next __ km sign (W8-17-1) with a length of 3 km or more, shall be speed zoned, based on the guidance provided within this policy. For the application of these signs, refer to AS1742.2-2009, Clause 4.4.7.5.

5.8 Shared Zones

Shared Zones are very low speed environments where vehicles operate in predominantly pedestrian areas. Shared Zones shall be located within a central business district, a dedicated tourist area, or a heritage area. These zones are provided only in exceptional circumstances, for example, the Hay St and Murray St Mall, Perth. These are assessed individually based on the following:

- Pedestrian movements shall predominate over vehicular movements,

- The Shared Zone shall meet the definition of a Shared Zone as given in the *Road Traffic Code 2000*,
- The Shared Zone may consist of a network of roads or a single road,
- The speed limit is as defined in *the Road Traffic Code 2000* (other limits are not permitted),
- The driving environment for motorised vehicles shall be such that vehicle-operating speeds are generally no more than 10km/h,
- Raised kerbs shall be removed to provide visual cues to drivers that pedestrians have right of way,
- The surface texture of the shared zone shall be different from the surrounding road network,
- Entrance and exit widths shall be narrowed so that there is a physical entry/exit to the zone,
- Each road shall have a trafficable width of at least 2.5 metres for one-way traffic and 4.5 metres for two-way traffic,
- There shall be minimal turning and intersecting motorised vehicular traffic,
- The roads shall have significant physical interruption to vehicular traffic by the use of bollards, parallel parking bays, plants and landscaped areas,
- Parking spaces and loading zones, where provided, shall be located adjacent to the trafficable path and clearly signed and marked,
- The shared zone shall be an integral part of an agreed traffic management plan for the area that was developed with community consultation,
- Service and Emergency vehicles shall be able to use all roads,
- All roads within the area shall meet the definition of a built-up area and have street lighting to Category P as defined in AS1158.3.1-2005.

Speed reduction devices should be installed at a spacing of approximately 40 metres and placed to enforce an extremely low speed environment. Devices should include planting areas to contain the area visually. Bollards with reflectors may be used to delineate the shape of the roadway on the approach side of landscaping.

5.9 Construction Sites and Special Events

Refer to WA Traffic Management for Works on Roads Code of Practice on the Main Roads website for further information

5.10 Advisory Speed Signing

Advisory speed signing shall be limited to horizontal and vertical curves (including LATM devices) on sealed highways, main roads and other speed zoned roads that have a safe operating speed less than the speed limit. These are to be assessed for signing with curve warning and advisory speed signs, in accordance with AS 1742.2-2009, Section 4.4 unless otherwise directed in this guideline.

Where there are a series of more than two closely spaced horizontal curves, some or all of which are substandard, the symbolic Winding Road sign (W1-5) shall be used at the beginning of the series of curves. The winding road sign used shall indicate the direction of the first substandard curve and the advisory speed sign shall indicate the advisory speed of the slowest curve. However, if the series of curves extends over a distance of one kilometre or more and the slowest curve is more than 10 km/h slower than the others, the slowest curve is to be signed separately.

Clause 3.3 of AS1742.4-2008 shall apply with respect to the conflict between speed limits and advisory speed signs. Advisory speed signs within any speed zone or default limit shall never show

a speed greater than the Regulatory Speed Limit. Speed limit signs and advisory speed signs showing different speed values from one another shall not be placed where drivers can read both at the one time or otherwise so close that they might appear to be conveying contradictory messages.

If the crash level on a section of speed zoned road with advisory speed signing becomes greater than the network average for that type of road, then that road section may be speed zoned at a lower value.

Advisory Speed signs shall not be used in conjunction with Crossroad (W2-1), T-junction (W2-3 and W2-14), Roundabout (W2-7), Side Road Junction (W2-4, W2-8 and W2-13) or Modified Intersection Warning (W9 series) signs, where a driver may be required to give way to other vehicles.

5.11 Speed Limit Pavement Marking

Under the *Road Traffic Code* 2000, Regulatory Speed Limits are defined by the placement of signage (including fixed and variable illuminated signage.)

Speed Limit Pavement Markings may be used to supplement regulatory signage, particularly where compliance with the speed limit may be poor, and where the road environment may limit drivers' perception or awareness of posted signage.

Speed Limit Pavement Markings, comprising white numerals, may be provided in the following situations:

- for a speed limit decrease at the end of a significant length of any urban road with 3 through lanes and a decrease from 100 km/h or higher
- for a speed limit decrease at the end of a significant length of rural or regional road with 3 through lanes and a decrease from 100 km/h or higher

Speed Limit Pavement Markings may only be installed on straight sections of road, to Main Roads specifications, and only following the receipt of written approval from Main Roads.

5.12 Default Speed Limit Signing

Speed Zone signs should not be used on roads subject to the default speed limits.

The only exception may be for situations where:

- A speed zone greater than 50 km/h terminates on a section of continuing road within a built up area, in which case 50 km/h speed limit signs shall be installed for motorists leaving the higher speed limit section.

5.13 "Remember 50 in Built-up Areas" Signing

Advisory "Remember 50 in Built-Up Areas" signs should not be used on roads subject to the default speed limits.

The only exception may be for situations where:

- Roads meet the Built-Up Area definition, but where the operating speed (85th percentile) is 10km/h or greater than the Built-Up Area speed limit, and
- Where the Default Regulatory Speed would otherwise be unclear.

5.14 Paths

Paths shall not have a Posted Speed Limit.

6 APPLICATIONS FOR NEW AND AMENDED SPEED ZONES

Main Roads will review requests for Speed Zone controls as outlined in this section, and provided:

- A request is received from the relevant road authority in line with this section
- The same location has not been reviewed within the last five years (provided that there has been no significant change in conditions since that review)
- The requested change is broadly in line with the provisions of this policy document. Main Roads may decline to undertake a request which is clearly contrary to this policy. In such cases, Main Roads will provide a reason for declining the application.

It is recommended that applicants should identify opportunities to treat localised hazards rather than modify regulatory speed zones.

The appropriate selection of treatments will vary depending on the road form and function. Applicants should liaise early with Main Roads to identify the suitability and requirements for any treatments for speed management prior to submitting requests for formal reviews of speed limits.

In some cases, non-regulatory measures to achieve the Target Speed may be applied without the application of Posted Speed Limits. In such cases, data for the Operating Speed of the road should be monitored to ensure that the desired Target Speed has been achieved.

6.1 Identification and Definition of Speed Management Problems

To commence a speed zone review the applicant must provide evidence to support a Target Speed different to the current Regulatory Speed. Any existing problems with Operating Speeds should be considered in contemplating the appropriate Target Speed and speed treatments.

As such, all applications for review or amendment to existing speed zones should describe the key motivating problem or problems which the applicant wishes to address through the use of speed signage or other treatments.

Applicants should provide any available supporting information which illustrates the motivating problem(s). This information may assist Main Roads in suggesting speed management treatments, particularly where changes to the regulatory speed limit may not be appropriate.

6.2 General Speed Zones

Applications for general speed zones and/or changes to existing speed zones should be addressed to the Manager Traffic Management Services for the Metropolitan Region and the Network Manager or Network Operations Manager in the Regional Office.

The applicant should provide the following information:

- Applicants Name, Postal Address, E-mail Address and Telephone Number,
- Road Name and Section (linked to a physical landmark e.g. intersection),
- Outline of reasons for seeking a change to the existing speed limit or speed zone,
- Supporting reasons for a proposed speed limit.

6.3 Area Speed Zones

Applications shall only be made by the Local Government with responsibility for the area in which the Area Speed Zone is proposed.

All applications should be addressed to the Manager Traffic Management Services for the Metropolitan Region and the Network Manager or Network Operations Manager in the Regional Office.

The application shall include:

- A scaled map showing the boundary of the proposed local area speed zone.
- A list of all roads in the proposed area, the traffic volumes and the 85th percentile speed of traffic on these streets on an hourly basis.
- A completed Speed Zone Review Form
- A list of all roads that will require installation of speed control calming devices, where appropriate.
- A list of all roads with substandard seal widths (less than 5.5 metres), and deteriorating surfaces.
- Drawings to show the location and details of all proposed and existing speed control devices, proposed and existing threshold treatments, proposed local area speed limit signs and the locations of conducted speed surveys.
- A brief description of a monitoring program. The monitoring program shall include at least local community attitudes and vehicle speeds.
- The date on which the area speed zone is planned to come into force (i.e. after completion of Main Roads approvals and Local Government completion of roadwork if any).
- A commitment by Local Government to measure speeds for the road sections with new speed control devices and to provide additional devices if the 85th percentile speed exceeds the area speed limit by more than 10 km/h.
- A summary of consultation with the local community, police, emergency services and public transport authorities.

6.4 Heavy Vehicle Zones

All applications should be addressed to the Manager Traffic Management Services for the Metropolitan Region and the Network Manager or Network Operations Manager in the Regional Office.

The applicant should provide the following information:

- Applicants Name, Postal Address, E-mail Address and Telephone Number,
- Road Name and Section (linked to a physical landmark e.g., intersection),
- Outline of reasons for seeking a heavy vehicle speed zone,
- Supporting reasons for a proposed speed limit.

6.5 School Zones

Applications shall only be made by the Headmaster / Principal or Parents & Citizens Association of the school or initiated by the Main Roads Road Services Officer (Speed Zoning).

All applications should be addressed to the Manager Traffic Management Services for the Metropolitan Region, or the Network Manager or Network Operations Manager in the Regional Office.

The applicant should provide the following information:

- Applicants Name, Postal Address, E-mail Address and Telephone Number,
- A sketch map showing the school location with road names, buildings, adjacent playing fields, parking and access points,
- For new schools, the anticipated starting date for the school opening.

6.6 Shared Zones

Applications shall only be made by the Local Government with responsibility for the area in which the Shared Zone is proposed.

All applications should be addressed to the Manager Traffic Management Services for the Metropolitan Region and the Network Manager or Network Operations Manager in the Regional Office.

The application shall include:

- A scaled map showing the proposed shared zone boundaries. The proposed shared zone shall have clear boundaries with other roads and features,
- The traffic volumes and the 85th percentile speed of traffic on an hourly basis,
- Drawings to show the location and details of all existing and proposed speed control, traffic signing, traffic calming devices, threshold treatments and the locations of conducted speed surveys,
- A brief description of a monitoring program. The monitoring program shall include at least local community attitudes and vehicle speeds,
- A commitment by Local Government to measure speeds for the road sections with new speed control devices and to provide additional devices if the 85th percentile speed exceeds the shared zone limit,
- A summary of consultation with the local community, Police Force, emergency services and public transport authorities,
- The proposed commencement date for the shared zone.

6.7 Advisory Speed Limit Signing

For all roads within the Perth Metropolitan Boundary, applications should be addressed to the Manager Traffic Management Services for the Metropolitan Region. For Local Government roads outside of the Perth Metropolitan Boundary, applications for advisory speed limit signing should be forwarded to the relevant Local Government. For highways and main roads outside the Perth Metropolitan Area, applications should be addressed to the Network Manager or Network Operations Manager in the Regional Office.

6.8 Railway Level Crossing Speed Limit Signing

Applications shall only be made by the Road authority with responsibility for the road in which the Railway level crossing speed zone is proposed.

All applications should be addressed to the Manager Traffic Management Services for the Metropolitan Region OR the Network Manager or Network Operations Manager in the relevant Regional Office.

The application shall include:

- A detailed plan at an appropriate scale showing the proposed speed limit signage and appropriate dimensions. The plan must show existing road / rail infrastructure and signage (i.e., seal width, seal length, existing speed limits and signage etc.).
- Written confirmation from the rail infrastructure manager that they support the speed reduction and will make any required adjustments to level crossing infrastructure (such as Advanced Active Warning Signage).

6.9 Monitoring and Review

Any changes to regulatory speed limits should be monitored and reviewed as appropriate for the road type and relative volume of demand.

Main Roads will vary regulatory speed limits for a trial period and review available results at the end of the trial period. Where applications for speed zone changes are requested by Local Governments, Main Roads may require the local government to undertake or contribute to a formal review.

7 ENQUIRIES FOR INFORMATION ON SPEED LIMITS

7.1 General Speed Limits

All queries in relation to local roads should be initially discussed with the applicable Local Government(s).

All enquiries should be to the Road Services Officer (Speed Zoning) for the Metropolitan Region and the relevant Network Manager or Network Operations Manager in the Regional Office. Contact details are provided on the website www.mainroads.wa.gov.au under Our Role & Regions.

7.2 Speed Limits Changes

All queries in relation to changes to speed limits on local roads should be initially discussed with the applicable Local Government(s).

Changes to speed limits are provided on Main Roads WA website. Details are advertised for four (4) weeks and are removed after six (6) months after the speed limit has changed.

7.3 Roadwork Speed Limits

All enquiries should be to the relevant Project Manager for the roadwork in the Metropolitan or Regional Office. Guidelines for temporary speed limit signs for roadwork are given on the website www.mainroads.wa.gov.au under Road & Traffic Information > Traffic Management > Roadworks.

7.4 Special Events Speed Limits

All enquiries should be to the Traffic Management Co-ordinator in the Metropolitan Region and the relevant Network Manager or Network Operations Manager in the Regional Office.

Guidelines for temporary speed limit signs for events are given on the website www.mainroads.wa.gov.au under Road & Traffic Information > Traffic Management > Events.

8 APPROVAL

All proposed new and amended speed zones shall be approved by the Manager Traffic Management Services Network Operations prior to implementation.

9 REFERENCES AND RELATED DOCUMENTS

Main Roads WA

Main Roads WA. 2019. Road Safety Management System (ROSMA). https://www.mainroads.wa.gov.au/OurRoads/RoadSafety/Pages/managementsystem.aspx

Australian Standards

Australian Standard AS 1742.1, Manual of uniform traffic control devices, Part 1: General introduction and index of signs
Australian Standard AS 1742.2, Manual of uniform traffic control devices, Part 2: Traffic control devices for general use
Australian Standard AS 1742.4, Manual of uniform traffic control devices, Part 4: Speed controls
Australian Standard AS 1742.13, Manual of uniform traffic control devices, Part 13: Local Area Traffic Management
Australian Standard AS 1743, Road signs - Specifications
Australian Standard AS 2890.1, Parking facilities – Off street car parking
Australian Standard AS 5156, Electronic speed limit signs

Austroads Resources

Austroads. 2014. Model National Guidelines for Setting Speed Limits at High-risk Locations. Sydney, Austroads.
Austroads. 2008. Guide to Road Safety – Part 3: Speed Limits and Speed Management.
Austroads. Guide to Road Design – Part 3: Geometric Design.
Austroads. 2017. Guide to Traffic Management – Part 5: Road Management
Austroads. Guide to Traffic Management – Part 8: Local Area Traffic Management
Austroads. Guide to Traffic Management – Part 9: Traffic Operations
Austroads. Guide to Traffic Management – Part 10: Traffic Control and Communication Devices
Austroads. Austroads Report AP-118/96 - Urban Speed Management in Australia.
Austroads. 2010. Austroads Report AP-T141-10 – Infrastructure / Speed Limit Relationship in Relation to Road Safety Outcomes
Austroads. 2014. Austroads Report AP-R449-14 – Methods for Reducing Speeds on Rural Roads – Compendium of Good Practice
Austroads. Austroads Report AP-R455-14 – Model National Guidelines for Setting Speed Limits at High-risk Locations
Austroads. Austroads Report AP-R508-16 – Speed Reduction Treatments for High-speed Environments
Austroads. 2016. Austroads Report AP-R514-16 – Achieving Safe System Speeds on Urban Arterial Roads: Compendium of Good Practice
Austroads. 2019. Austroads Report AP-TR587-19 – Road Risk Assessment, Case Studies and Engagement Guidance for Speed Management.

Other Reference Material

Elvik, Rune et al, 2005, Speed and Road Accidents: an evaluation of the Power Model, Nordic Road and Transport Research No. 1.
Elvik, Rune et al, 2009. The Handbook of Road Safety Measures. Emerald.
European Conference of Ministers of Transport (ECMT), 2006, Speed Management, OECD Publishing, France, ISBN 92-821-0377-3 – no. 55291 2006.
Fildes, B. et al, 2005, Balance between Harm Reduction and Mobility in Setting Speed Limits: A Feasibility Study, Austroads report AP-R272/05.
Fildes, B. and Jarvis, J. 1994. Perceptual Countermeasures: Literature Review. Research Report CR4/94. NSW RTA, Sydney.
Fildes, B. et al 1987. Speed Perception 1: Drivers' judgements of safety and speed on urban and rural straight roads. Canberra, Federal Office of Road Safety.

Nilsson, G, 1990, Reduction in the speed limit from 100 km/h to 90 km/h during summer 1989: effects on personal injury accidents, injured and speeds, report no. 358A, Swedish Road and Traffic Research Institute, Linkoping, Sweden.
World Health Organization (WHO), 2008, Speed management: a road safety manual for decision-makers and practitioners, Global Road Safety Partnership, WHO, Geneva (http://apps.who.int/iris/bitstream/10665/43915/1/9782940395040_eng.pdf).