

# LG STARS – Safety Ratings for Local Government Roads Tool Assessment Guide



RoadWise®



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WESTERN AUSTRALIAN  
CENTRE FOR ROAD  
SAFETY RESEARCH



Australian Government

MADE SAFER BY **iRAP**

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## General Information

The WA Local Government Association's (WALGA) RoadWise is the Local Government road safety program.

WALGA's RoadWise works to build the capacity of Local Governments and works with other agencies to promote the adoption and application of best practice road safety.

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## Introduction

### Why create a tool to assess the safety of Local Government roads?

Local Governments manage a substantial portion (87.4%) of the road network in Western Australia, where 58% of fatalities and serious injuries occur.<sup>1</sup> However, Local Governments do not have an easy-to-use, repeatable, reliable, and cost-effective method for assessing the safety of and ultimately prioritising investment on the road networks they manage.

While several safety rating systems are in use in Australia today, including the Australian Road Assessment Programme (AusRAP), the Australian National Risk Assessment Model (ANRAM), the Infrastructure Risk Rating (IRR) tool, and the AustRoads Road Stereotype tool, none of these tools are specifically tailored to the Local Government context. **The aim of this project was to create a tool to assess the safety of Local Government roads using a simple and clear methodology and to provide an assessment method that can be utilized by Local Government officers without expertise in road safety engineering.**

There are numerous tools to assess the safety of road segments available. However, very few of these tools are used by Local Governments. This tool is much easier to use than many other tools due to the simplicity of its methodology. However, this comes at the expense of having very precise outputs. Some other benefits and drawbacks are presented below.



#### Benefits

- Proactive
- Easy-to-Use, Easy-to-Understand
- Supports works programming
- Provides a baseline and supports safety benchmarking
- Can help justify decisions
- Suggests treatment options
- Focus on existing infrastructure – Risk analysis applied later



#### Drawbacks

- Requires additional staff time
- Assumes all road safety treatments have the same effect
- Cross-Sections may not exactly reflect conditions on the road
- On unsealed roads, small changes may have a large effect on Star Rating

### Safe System Approach

This tool is underpinned by the Safe System Approach to Road Safety. This approach acknowledges that **the human body is vulnerable and that responsibility for protecting road users is shared among system designers, builders, managers, and road users.** The following principles support the Safe System Approach:

- The limits of human performance: we all make mistakes and we all need to acknowledge the limits of our capabilities.
- The physical limits of human tolerance to violent forces: we are physically vulnerable when involved in a traffic crash.
- Shared responsibility: this means all of us take an individual and shared role in road safety.
- A forgiving road system: so that when crashes do happen, deaths can be avoided and injuries minimised.
- Increased use of public transport.

Creating a safe system depends heavily on understanding and implementing these principles. The focus is on protecting people so that if they are involved in a crash, they will not be killed or seriously injured, no matter how they travel (walk, drive, ride, or cycle). This approach differs from a traditional traffic engineering approach, which focuses on all crashes, rather than fatality and serious injury crashes; typically allocates blame to road users, rather than understanding that responsibility for road safety is shared; is reactive, rather than proactive; and accepts that some fatality and serious injury crashes will occur, based on competing objectives (travel time reduction, increasing vehicle throughput), rather than focusing on maximizing safe mobility.

**Fundamentally, this tool provides a visual representation of the combination of infrastructure elements that will lead to the least possible risk on a road segment and presents several broad-brush recommendations on how to achieve a five-star cross-section.**

**The ultimate goal of the tool is to help reduce the number of fatality and serious injury crashes on Local Government roads.**

### Speed Reduction

Treatments for specific road attributes, e.g., reduction in speed limit from 100 to 90, change in lane width from narrow to

medium, etc., will have different crash modification factors (CMFs) or reductions / increases of the likelihood of a killed or serious injury crash. However, for ease-of-use and ease-of-understanding reasons, the effects of all treatments in this tool are held equal.

In selecting treatments, it is strongly recommended that a change in speed limit be considered in the first instance. **There is very strong evidence that a reduction in speed limit will have a direct positive impact on reducing Killed and Serious Injury crashes.**<sup>2</sup>

### Managing Road Safety Using This Tool

Fundamentally, this tool can help Local Governments to include road safety considerations in their decision-making and prioritization process. Using this tool is a starting point and progress will be gradual. Local Governments will be able to establish a baseline, inform their works programming, and better understand what network-wide treatments will have a substantive impact.

Some Local Governments may find in using the tool that many of their roads are of a similar standard. In these cases, the tool will not help to narrow down, identify, and prioritize segments in need of safety improvement. The best solution to ensure that this tool provides value in prioritizing safety improvements is to locate **sharp curves** and **substandard drainage infrastructure** along the lowest ranking segments and to prioritize these locations for improvement first.

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*With the majority of fatality and serious injury crashes occurring on Local Government roads, including safety in the prioritisation and programming of works on roads is a key piece of the works management puzzle.*

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### Utility for Local Governments

Across Western Australia, Local Governments spent 18.6% of their revenue capacity on roads in 2020-2021, equating to a total of own resource expenditure of \$492.7 million.<sup>3</sup> This accounts for a substantial portion of the overall budget for each Local Government.

#### Works Program Prioritization

With the majority of fatality and serious injury crashes occurring on Local Government roads, including safety in the prioritization and programming of works on roads is a key piece of the works management puzzle. However, without easily accessible tools to

<sup>1</sup> Main Roads WA. (2019). Annual Report 2019. <https://annualreports.mainroads.wa.gov.au/AR-2019/assets/Uploads/Annual-Report-2019-PDF-Final-Bookmarked-Version.PDF>

<sup>2</sup> Turner, B., Job, S. and Mitra, S. (2021). Guide for Road Safety Interventions: Evidence of What Works and What Does Not Work. Washington, DC., USA: World Bank. <https://documents1.worldbank.org/curated/en/206691614060311799/pdf/Guide-for-Road-Safety-Interventions-Evidence-of-What-Works-and-What-Does-Not-Work.pdf>

<sup>3</sup> WALGA. (2022). Report on Local Government Road Assets & Expenditure 2020-2021. <https://walga.asn.au/getattachment/Policy-Advocacy/Our-Policy-Areas/Infrastructure/Roads/Report-on-Local-Government-Road-Assets-and-Expendi/Road-Assets-and-Expenditure-Report-2020-21-website.pdf?lang=en-AU>.

support the assessment of Local Government roads, safety is less likely to be considered in the prioritization of Local Government investment in roads.

This tool will support Local Governments to use their road funds to the greatest effect with respect to safety and will provide meaningful information to inform long-term work programs and investment planning processes.

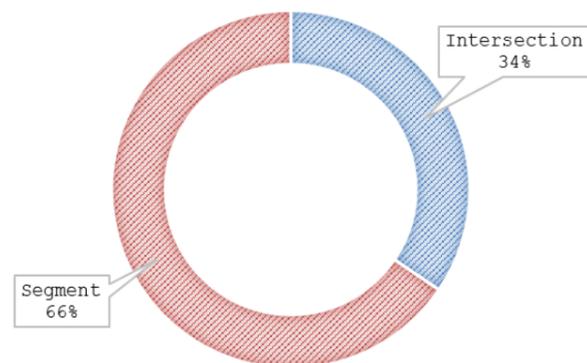
Support Network Analysis

This tool places special emphasis on assessing the road network as a whole regarding safety. Many Local Governments may not currently have a comprehensive picture of the safety standard of their roadway network. By assessing the whole road network using the safety rating methodology, Local Governments can identify network-wide countermeasures, prioritize safety improvements to focus on those areas that are likely to have the highest impact, and use the safety ratings for each road as an input into the determination of the works program.

**Segments versus Intersections**

On the Local Government Road Network, slightly more than 34% of Killed and Serious Injury crashes occurring between 2017 and 2021 correspond to the Right Angle and Right Turn Thru crash types.<sup>4</sup>

These crash types are typically associated with intersection crashes.



The methods for evaluating road segments and intersections differ substantially. In its current form, **this tool only addresses infrastructure elements on road segments and does not address intersection infrastructure elements or provide guidance on recommended treatments at intersections.** The intent of this tool is to support the assessment of the road network as a whole and to prioritise investment in those areas most in need of improvement. Though not always the case, intersection treatments are often not implemented or assessed on a network level. For this reason, as well as the difficulty of representing all intersection types in cross-section format, intersections have been omitted from this tool. Infrastructure

elements at intersections may be considered in a second version of this tool.

Some tools to assess intersection safety include the MRWA Crash Map tool and AustRoads Publication: AP-R556-17: Understanding and Improving Safe System Intersection Performance (<https://austroads.com.au/publications/road-design/ap-r556-17>).

**Pedestrian and Bicycle Infrastructure**

In order to create a simple tool, the Project Team did not evaluate infrastructure by mode. This tool endeavours to illustrate cross-sections that are safe for all modes. However, as these cross-sections are visual cues, some road types may have bicycle/pedestrian infrastructure that is not visually represented in this tool. **Local Governments should consider all road users in selecting appropriate treatments to improve safety on their road networks, regardless of road type.** It is recommended to collect both qualitative and quantitative data on road use and review the community vision for transport before commencing a design process to determine what facilities to provide.

**Liability**

During the consultation, some Local Governments expressed concern about the possibility of increasing liability as a result of completing an assessment of the safety of the Local Government road network. Research into the role of Local Government in road safety indicates that road safety is a core responsibility for all road authorities, and the Local Government sector holds a critical role in the realisation of a safe road system and desirable road safety outcomes.

While it is recognized that State and National Governments can support Local Governments in delivering road safety, the duty of care to all those using Local roads sits solely with Local Governments.<sup>5</sup>

*Road authorities owe all road users a duty of care, and must do what is reasonable to be aware of deficiencies in the road transport system, to assess and prioritise them, and have a system for remedying them.*<sup>6</sup>

To uphold this duty of care Local Governments must demonstrate they have done all that is reasonably practicable to assess the road safety risks on their network and put in place a process to address those risks within a manageable timeframe.

Section 5Z of the Civil Liability Act 2022 (WA) provides a special defense for road authorities regarding liability. The competing

demands of road agencies can influence what is considered reasonable action in addressing identified road safety issues. Experts increasingly agree that more information does not necessarily mean increased liability and it is better to understand any issues and create a plan of action, than to do nothing.<sup>7</sup>

In short, **collecting data regarding the safety of Local Government roads and incorporating this data into processes to prioritize Local Governments' investment in their road networks will not increase the liability of individual Local Governments,** unless Local Governments choose not to act on the data.

**Other Tools**

This section contains a summary of a selection of other tools that Local Government practitioners may find useful in assessing and addressing issues on the road network, to achieve safety improvements.



Road View

Road View is an application that uses a GPS enabled dashcam to create video

files which are then georeferenced with crash data and asset information. The videos are available to Local Governments and consultants working for Local Government and can be downloaded and used to assist with road safety route assessments. To apply to access and use Road View, visit the [Main Roads WA](#) website.



Crash Map

Crash Map is an interactive mapping application that provides real time crash

data available to Local Governments and their consultants. Users can perform macro and micro analysis of reported road crashes to provide an indication of the road safety performance of the examined location. Further information, access to, and training in Crash map can be found on the [Main Roads WA](#) website.

**ROAD SAFETY AUDIT PORTAL**

Road Safety Audits and Inspections

A Road Safety Audit is a formal, systematic assessment of a new road project or improvement to identify any potential road safety risks. A Road Safety Inspection follows the same process to identify any potential road safety risks on an existing road.

<sup>4</sup> Road Safety Commission. (2022). 2017-2021 RSIC Road Safety Performance Report Raw Data.

<sup>5</sup> Austroads (2020). Local Government Road Safety Management Guidance. <https://austroads.com.au/publications/road-safety/ap-r612-20>

<sup>6</sup> Austroads (2021). Guide to Road Safety Part 1: Introduction and the Safe System. <https://austroads.com.au/publications/road-safety/agrs01>

<sup>7</sup> Austroads (2022). Guide to Road Safety Audit. <https://austroads.com.au/publications/road-safety/agrs06>

Road Safety Audits and Inspections must be carried out by an independent qualified audit team led by an accredited Senior Road Safety Auditor.

Further information regarding Road Safety Audit training and accreditation and a full list of accredited Auditors in Western Australia can be found on the [Road Safety Audit Portal](#).

**Crash Investigations**

Main Roads Western Australia conduct crash location investigations after the occurrence of a fatal crash. If a preliminary investigation determines that the road environmental factors may have contributed to the cause or severity of the crash, a full investigation is then completed.

Crash Location Reports are completed for all fatal crashes and a copy of the report is supplied to the Local Government responsible for the road on which the crash occurred. Preliminary Investigation Reports will also be supplied to the relevant Local Government when the road environment is determined to have not been at fault, or if road safety issues not directly related to the crash have been identified during the investigation and require attention.



Preliminary Investigation and Crash Location Reports can be used in conjunction with Road Safety Audits to identify weak links in the road network. Further information and access to an Interactive Intersection Crash Ranking Report can be found on the [Main Roads WA](#) website.

**Black Spot Program**

The Black Spot program identifies and treats locations which experience high numbers of crashes over a defined period or are identified as high risk in a Road Safety Inspection Report. Black Spot Funding is focused on the most cost-effective treatment for the situation and evidence suggests the Black Spot Program is effective in reducing crashes and therefore improving the safety of high-risk roads.

Further information on the National and Western Australian Black Spot Programs can be found on the [Main Roads WA](#) website.

**Interface with the International Road Assessment Program**

The International Road Assessment Program (iRAP) Star Ratings method is widely used across the globe to analyse attributes of road segments and assign a rating from 1-star (most risk) to 5-star (least risk). The iRAP Star Ratings provide an objective measure of the likelihood of a road crash occurring and the severity of the outcome. The focus with this method is on identifying and recording the road attributes which influence the most common and severe types of crash, based on scientific evidence-based research. In this way, the level of risk to a road user on a particular road section or network can be defined without the need for detailed crash data. Research shows that a person’s risk of death or serious injury is highest on a 1-Star road and lowest on a 5-Star road. Star Ratings are produced for vehicle occupants, motorcyclists, pedestrians, and bicyclists.

*Collective risk, that is the number of fatalities and serious injuries of a road, is a function of individual risk (Star Ratings) and traffic volume.*

Star Ratings represent the risk of a fatal injury to an individual road user. For example, for vehicle occupants, Star Ratings equate to the number of deaths and serious injuries per vehicle kilometre travelled on a road. Collective risk, that is the number of fatalities and serious injuries of a road, is a function of individual risk (Star Ratings) and traffic volume. Star Ratings can be used to objectively quantify the level of risk associated with new road designs (where crash data is not available) to assist in evidence-based decisions on safety improvements. They are also useful where low crash frequency limits

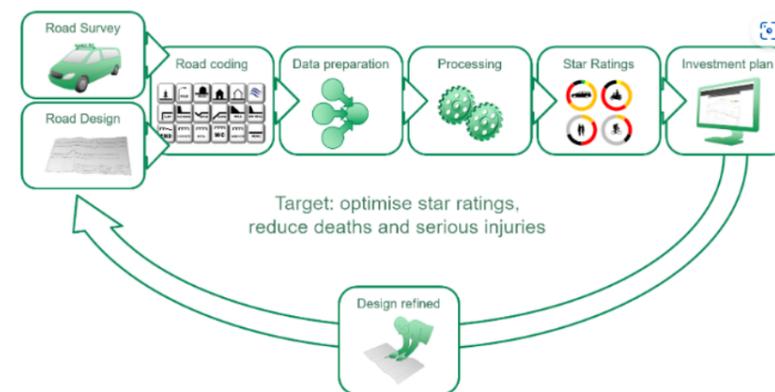


Figure 1: Star Rating Process (<https://irap.org/rap-tools/infrastructure-ratings/star-ratings/>)

the ability of crash analysis to influence performance monitoring and investment prioritization.

This tool uses the iRAP Star Ratings as a basis. Further detailed guidance on how to do a full Star Rating assessment can be found in a series of user guides and manuals available at [www.irap.org/specifications](http://www.irap.org/specifications). For specific information on how to record different road features, please refer to the iRAP Coding Manual. For more information on the full range of tools available, see [www.irap.org/rap-tools](http://www.irap.org/rap-tools).

## Cross-Sections

### Intent

The cross-sections presented in this tool were developed as representative visualizations of conditions on the WA Local Government road network. In preparing an assessment of the Local Government road network, these cross-sections are unlikely to correspond exactly with the conditions on each road. However, the intent is that the road cross-section will provide a visual cue to identifying which Star Safety Rating can likely be assigned to each road.

**Users of the tool should use the checklist to mark off the specific characteristics of each road, keeping in mind that the pertinent Star Safety Rating is represented by the column with the most check marks. When elements remain the same across the Star Ratings, select the lowest possible rating to ensure that the determination of a star rating is not overinflated.** This may result in ratings that are skewed lower than the actual Star Rating. To undertake a more detailed assessment of the Star Rating for a particular segment, please see the link to the [Star Rating Demonstrator](#).

### How to Choose the Appropriate Cross-Section?

Each cross-section has various characteristics (listed below), which were used to build and validate the different Star Ratings.

- Context – Rural or Urban
- Seal – Sealed or Unsealed
- Carriageway – Divided or Single
- Hierarchy – Highway/Arterial/Collector Road, etc.
- AADT/Traffic Volumes

In the above order, select the context, seal status, carriageway, and traffic volumes to determine which cross-section to reference.



Figure 2: Star Rating Demonstrator Example Rating

### Validation

Specific treatments will have larger or smaller effects on the overall Star Safety Rating of a specific road. The section on potential

treatments (included in the Checklist) provides a rough guide to which actions may result in greater safety benefits. If more information is required, the IRAP Vida Star Rating Demonstrator Tool ([Star Rating Demonstrator - iRAP](#) - <https://irap.org/project/star-rating-demonstrator/>) in the online ViDA Software ([Login - ViDA \(irap.org\)](#) - <https://vida.irap.org/en-gb/home>) is a great resource and allows users to input the exact road conditions and explore the effects of different road safety treatments. This tool is free and can also be used to

*In preparing an assessment of the Local Government road network, these cross-sections are unlikely to correspond exactly with the conditions on each road. However, the intent is that the road cross-section will provide a visual cue to identifying which Star Safety Rating can likely be assigned to each road.*

validate each cross-section.

### Cross-Section Development

The starting point for the development of the cross-sections were the categories defined in two AustRoads research reports ([AP-R619-20 | Austroads](#) and [AP-R618-20 | Austroads](#)). The Western Australian Local Government road network, however, does not include some of the cross-sections identified in the report (e.g., rural and urban freeways), so these were not represented. Conversely, some road cross-sections prevalent in WA, particularly cross-sections of unsealed roads, were not included in the AustRoads guides; these cross-sections were identified, the attributes validated, and then developed as cross-sections for inclusion in this tool. Each cross-section was validated using the Star Rating Demonstrator tool to ensure that the combination of treatments resulted in the indicated Star Safety Rating.

### All Modes

The [Star Rating Demonstrator](#) provides Star Ratings for vehicles, motorcycles, pedestrians, and cyclists. To ensure that this tool remained easy and relatively expedient to use, the tool provides cross-sections that reflect a safe facility for all users. However, some users may not be accommodated on specific road types (e.g., pedestrians on rural roads).

### 2-Star and 4-Star Safety Ratings

In order to ensure that minimal overlap was present between represented Star Safety Ratings, 2-star and 4-star roads were not represented in cross-section form as part of this tool.

### Sealed vs. Unsealed Roads

The AustRoads guides [AP-R618-20](#) and [AP-R619-20](#) assume that unsealed roads have a lower Star Safety Rating, due to unsealed

roads having inadequate delineation, i.e. no pavement markings. In Western Australia, 68.8% of roads are unsealed and many of these roads are never likely to be sealed. For this reason, we have represented 1-Star, 3-Star, and 5-Star cross-sections for unsealed roads that do not recommend adding a seal as a safety treatment.

### Represented Cross-Sections

The following cross-sections represent all road types found on Local Government managed road networks in Western Australia.

#### Sealed Roads

- **A) Rural highway**, divided carriageway, multilane, 90/100/110 km/h, AADT 15 000 or greater (p. 11)
- **B) Rural highway**, divided carriageway, multilane, 90/100/110 km/h, AADT 0–15 000 (p. 12)
- **C) Rural road**, single carriageway, two-lane two-way, 80/90/100/110 km/h, AADT 2 000 or greater (p. 13)
- **D) Rural road**, single carriageway, two-lane two-way, 70/80/90/100/110 km/h, AADT 250– 2 000 (p. 14)
- **E) Rural road**, single carriageway, two-lane two-way, 70/80/90/100/110 km/h, AADT < 250 (p.15)
- **F) Rural local collector road**, single carriageway, two-lane two-way, 70/80/90/100/110 km/h, AADT > 100 (p.16)
- **G) Rural local access road**, single carriageway, two-lane, two-way, 50/60/70/80/90/100/110 km/h, AADT < 100 (p. 17)
- **H) Urban arterial**, divided carriageway, multilane, 60/70/80/90/100 km/h, AADT 14 000 or greater (p. 18)
- **I) Urban arterial**, single carriageway, two-lane two-way, 40/50/60/70/80 km/h, AADT 4 000– 14 000 (p. 19)
- **J) Urban local collector road**, single carriageway, two-lane two-way, 30/40/50/60/70/80 km/h, AADT 500–8 000 (p. 20)
- **K) Urban local access road**, single carriageway, two-lane two-way, 30/40/50/60/70 km/h, AADT 0–500 (p. 21)

#### Unsealed Roads

- **L) Rural highway**, single carriageway, two-lane two-way, 50/60/70/80/90/100/110 km/h, AADT 2 000 or greater (p. 22)
- **M) Rural road**, single carriageway, two-lane two-way, 50/60/70/80/90/100/110 km/h, AADT 500– 2 000 (p. 23)
- **N) Rural road**, single carriageway, two-lane two-way, 50/60/70/80/90/100/110 km/h, AADT < 500 (p. 24)
- **O) Rural local collector road**, single carriageway, two-lane two-way, 80/90/100/110 km/h, AADT > 250 (p. 25)
- **P) Rural local access road**, single carriageway, two-lane, two-way, 40/50/60/70/80/90/100/110 km/h, AADT < 250 (p. 26)
- **Q) Urban local access road**, single carriageway, two-lane two-way, 30/40/50/60/70/80/90/100/110 km/h, AADT 0–1 000 (p. 27)

## Using the Tool

### Electronic Resources

A Checklist and Summary Table are provided in this Assessment Guide. To facilitate the use of the tables for the assessment of multiple road segments, please print pages 28 and 29 of this document or download Microsoft Excel versions on the [RoadWise website](#).

### Video Data

If available, video data of the road network or maintenance data can be helpful in defining segments and determining road attributes. However, this tool has been designed to be used without access to video data. Standard tools such as Google/Bing Maps and the various MRWA GIS platforms are often sufficient to perform the assessment.

### Segmentation

This tool operates based on road segments. There is no limit to the length of road segments if conditions on that segment remain constant. Some criteria to start a new segment are listed below.

- Change in number of lanes
- Change in shoulder treatments
- Change in posted speed limit
- Change in road name
- At major Intersections
- Change in adjoining land use
- Steep differences in traffic volumes

### Straight Line Kilometre (SLK)

SLK data can be determined using information on this map ([GPS-SLK Map \(mainroads.wa.gov.au\)](#)), provided by Main Roads WA.

### Road Attribute Definitions

For definitions of specific road attributes, please see the Road Attribute Definitions section of this Assessment Guide.

### Star Safety Rating Trends

If the bulk of the criteria identified in the assessment are trending toward a higher or lower Star Safety Rating but cannot be classified wholly as a higher or lower Star Safety Rating, please place a tick in the “+” or “-” box to indicate that this segment is likely to be trending upwards or downwards.

### Treatment Selection

The final step in this process is to consider which treatments are likely to improve the safety of the road network. Various considerations

come into play in determining which treatment is most appropriate and some highly effective treatments may also carry a large price tag. Any treatment implemented on a road segment, however, is likely to improve the Star Safety Rating.

More information on the effectiveness of treatments can be found by using the IRAP Star Safety Rating Demonstrator, part of the online ViDA Software Package ([Star Rating Demonstrator - iRAP](#)). Registration to access and use the Star Safety Rating Demonstrator is free.

### Cross-Section Conversions

The cross-sections used in this document are derived from the AustRoads guides, [AP-R619-20 | Austroads](#) and [AP-R618-20 | Austroads](#), and differ slightly from the Main Roads road hierarchy definitions. The following table provides conversions between the three road type definitions (Main Roads WA, AustRoads, LG STARS tool).

Main Roads Definition	Austrroads Stereotype no.	LG STARS Tools Definition
Primary Distributor (State Roads)	9	n/a
Regional Distributor (Peri-urban and Regional LGAs)	1, 2, 3, 4, 5	Rural Highway/Rural Road* (A, B, C, D, E)
District Distributor A (Built up areas - Most metro and some major regional centres)	10	Urban Arterial (H)*
District Distributor B (Built up areas - Metro and some major regional centres)	11	Urban Arterial (I)*
Local Distributor (Built up and non-built-up areas)	6, 12	Urban/Rural Local Collector* Street (F, J)
Access Road (Built up and non-built-up areas)	7*, 13	Urban/Rural Local Access* Road. (G, K)

\*Slight Variation in AADT

To reference a road’s MRWA hierarchy, please see this map ([Road Information Mapping System \(mainroads.wa.gov.au\)](#)).

## Tips for Using the Paper Version of the Tool

The following points provide some helpful guidance to effectively use the paper-based version of the tool.

- Consider using the Macro ([www.roadwise.asn.au/lgstars](#)) to simplify data entry.
- Use the Main Roads WA GPS-SLK Map ([GPS-SLK Map \(mainroads.wa.gov.au\)](#)) to determine the SLK for each segment.
- Print the Road Attribute Definitions (pages 9-10) single-sided for easy reference.
- Print copies of page 28 to use for your segments
- Print copies of page 29 to record each summarised segment
- The bulleted list on page 5 is an important reference in selecting which cross-sections page to reference.
- Remember to only evaluate cells in the attribute matrix with black text. The grey text indicates that that cell is unselectable.
- Certain attribute rows are linked to one another for some road types (5 linked to 11, 13 linked to 14). Check marks in both rows must correspond with each other.
- Consider using existing data sources, including the following:
  - [Main Roads Road Information Mapping System](#)
  - [Main Roads SLK Lookup Map](#)
  - [Main Roads Traffic Map](#)
  - [Google Maps](#) or [Bing Maps](#) for StreetView and for the measuring tool (right-click → “Measure Distance”)
  - Existing Video Data
  - Existing Asset Management Data, such as data from RAMM to determine widths and presence of infrastructure
- To better determine what effect a specific treatment or change in attribute will have on the Star Rating, visit the [Star Rating Demonstrator](#) Tool.
- Select your cross-sections starting with context, then sealed status, then carriageway number, then hierarchy, and finally AADT.

## Capacity and Resource Assessment

This tool has been developed for the purpose of enabling Local Governments with limited capacity for road safety assessments to assess the risk rating of their local network in an efficient and validated manner. Table 1 lists the operational requirements for conducting a road safety assessment. This table can be used to establish a Local Government's level of capacity to conduct a safety assessment of the road network.

Please select a response under each operational requirement to determine which, if any, of these tools may be suitable for your Local Government.

If your responses match with the requirements for a specific risk rating tool (iRAP/ AusRAP, ANRAM, IRR, or Road Stereotype), your Local Government may already have the capacity to assess the road safety risk rating of your road network using one of these tools. However, if your responses do not match or if you selected NO/LOW or MODERATE for any of the operational requirements for each of the tools, then this tool may be of assistance in assessing the safety of your Local Government's road network.

More information on the operational requirements for these tools can be found in the Road Safety Ratings for Local Government Roads Project Reference Document under the "Literature Review" heading.

Table 1: Capacity assessment

Operational requirement	Responses	iRAP / AusRAP	ANRAM	IRR	Road Stereotype
How would you rate the level of road safety expertise in your organisation?	Very Good <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/>	HIGH (Very Good)	HIGH (Very Good)	MODERATE (Good)	MODERATE (Good)
Have any personnel completed training in the use of the tool?	Yes <input type="checkbox"/> No <input type="checkbox"/>	YES	YES	NO	YES
Does anyone in your organisation have the required accreditation?	Yes <input type="checkbox"/> No <input type="checkbox"/>	YES	NO	NO	NO
What level of time commitment can be given to this task?	High <input type="checkbox"/> Moderate <input type="checkbox"/> Low <input type="checkbox"/>	HIGH	HIGH	MODERATE	MODERATE
What level of funding can be allocated to use the tool?	High <input type="checkbox"/> Moderate <input type="checkbox"/> Low <input type="checkbox"/>	HIGH	HIGH	MODERATE	LOW
Is an instrumented survey vehicle available, to collect data?	Yes <input type="checkbox"/> No <input type="checkbox"/>	YES	NO	NO	NO
Is there capacity to drive each route to be analysed?	Yes <input type="checkbox"/> No <input type="checkbox"/>	YES	NO	NO	NO
Can existing data sources be used successfully?	N/A	NO	NO	YES	YES
Is software available to complete the road safety ratings?	N/A	YES	YES	UNCLEAR	NO
Is support available for the tool?	N/A	YES	SOME (ARRB/NTRO)	UNCLEAR	SOME (ARRB/NTRO)

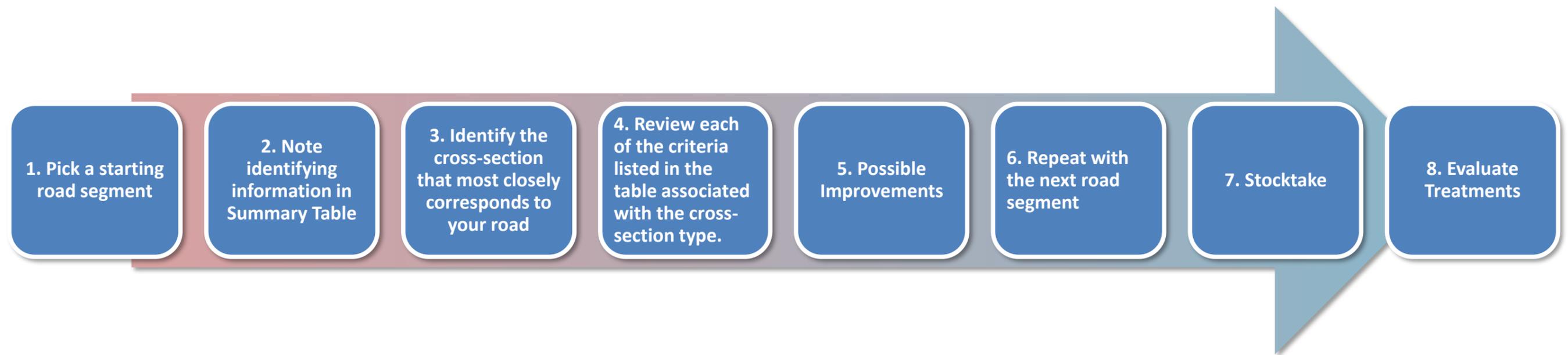
= Likely to be a significant barrier for Local Government

= Moderate barrier for Local Government

= Unlikely to be a significant barrier for Local Government

## How to Use this Tool

The following flow chart presents a step-by-step process for completing an assessment of the Local Government road network using this tool.



1. **Pick a starting road segment** – Segments to be defined based on major differences in the characteristics of the road (see Segmentation section above).
2. **Note identifying information in Summary Table** – Road name, starting Straight Line Kilometres (SLK), ending Straight Line Kilometres (SLK), Unique ID, Road field (Main Roads Identifier) and Date Assessed.
3. **Identify the cross-section that most closely corresponds to your road** – Keep number of lanes, road hierarchy, speed limit, and average annual daily traffic (AADT) in mind.
4. **Review each of the criteria listed in the table associated with the cross-section type** – Using the Checklist provided, tally the total number of ticks corresponding to the Star Rating in each respective column.
5. **Possible Improvements** – Note any possible improvements for that road segment (see table on the Checklist) in the summary table (see Treatment Selection).
6. **Repeat with the next road segment** – Repeat with the next road segment.
7. **Stocktake** – Once all the road segments on the Local Government network have been assessed, identify the worst performing segments, and consider using this information as an input for program/works planning.
8. **Evaluate Treatments** – Consider which treatments make the most sense for the identified segments.

## Road Attribute Definitions

The road attribute definitions in Table 3 align with the [IRAP Coding Manual](https://irap.org/specifications/) (<https://irap.org/specifications/>) and are used in the iRAP Vida Demonstrator with some enhancements for clarification. Further information and diagrams are provided in the manual.

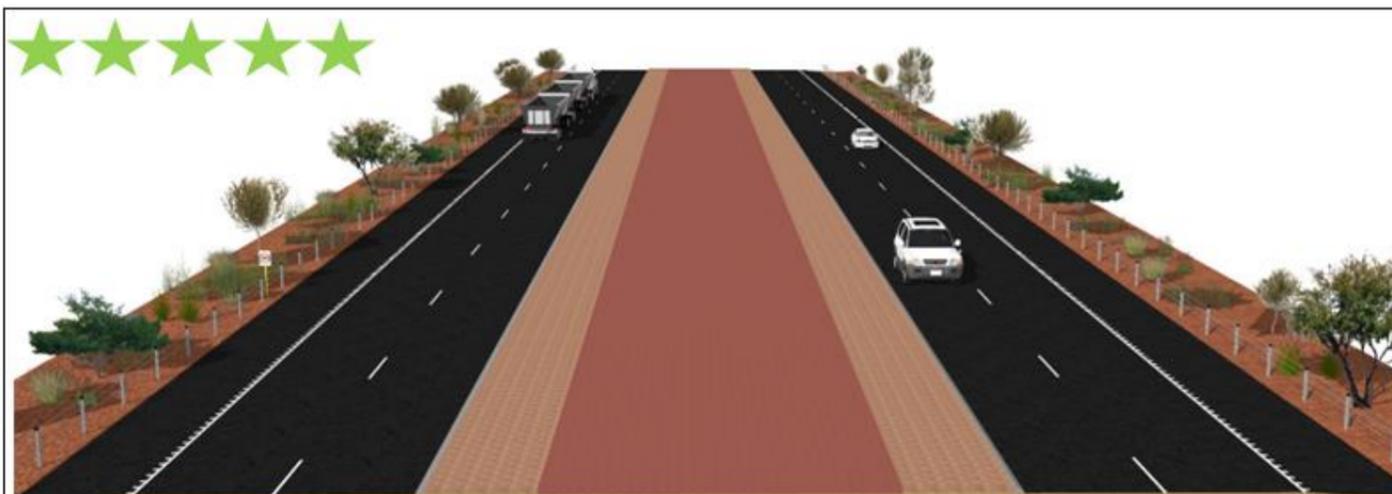
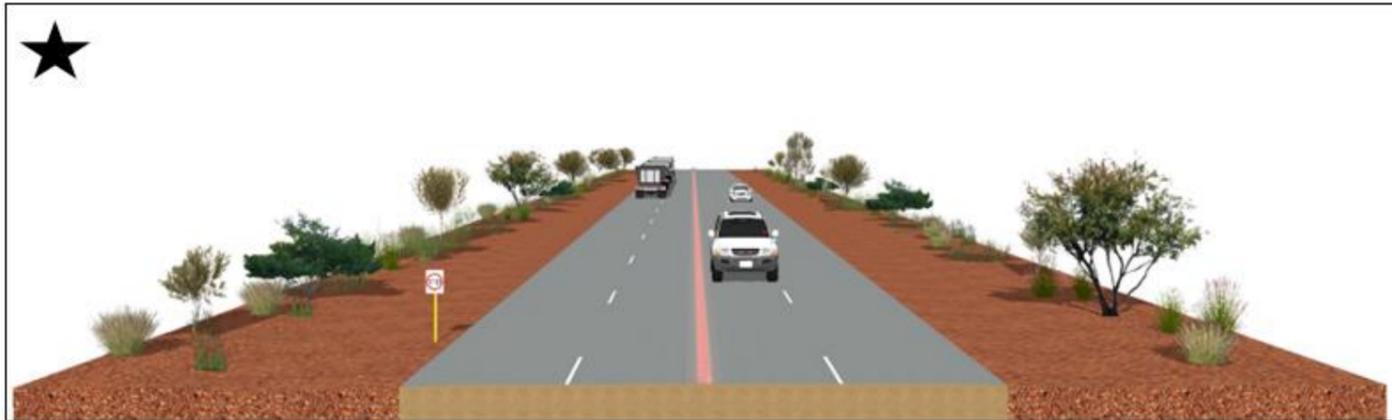
Table 3: Road attribute definitions

Road Attribute	Definition
<b>Speed Limit</b>	- <u>Kilometres per hour</u>
<b>Curvature</b>	- <u>Straight or gently curving</u> – can be driven at 100 km/h or more - <u>Moderate</u> – can be driven between 70 and 100 km/h - <u>Sharp</u> – can be driven between 40 and 70km/h - <u>Very Sharp</u> – can be driven at less than 40km/h
<b>Skid Resistance</b>	<b>Sealed</b> <ul style="list-style-type: none"> <li>- <u>Sealed – adequate</u>: no visible smooth/shiny sections</li> <li>- <u>Sealed – medium</u>: medium grip surface, e.g., looks smooth/shiny or covered in loose gravel/other material for up to 20% of surface</li> <li>- <u>Sealed – poor</u>: low grip surface, e.g., looks smooth/shiny or covered in loose gravel/other material for more than 20% of surface</li> </ul> <b>Unsealed</b> <ul style="list-style-type: none"> <li>- <u>Unsealed – adequate</u> (relatively good surface grip in all weather conditions;</li> <li>- <u>Unsealed – poor</u> (low grip surface, e.g., covered in loose gravel, or slippery in wet conditions, e.g. silt/clay surfaces)</li> </ul>
<b>Lane Width</b>	- <u>Very Narrow</u> : Total Seal < 4.5m - <u>Narrow</u> : >= 2.25m to < 2.75m; - <u>Medium</u> : >= 2.75m to < 3.25m; - <u>Wide</u> : >= 3.25m
<b>Roadside Hazards</b>	- 0 to <1m to roadside object - 1 to <5m to roadside object - 5 to <10m to roadside object - >=10m to roadside object
<b>Road Condition</b>	- <u>Good</u> – Very few or no defects with no potential impacts on vehicle control or on motorcyclists and bicyclists - <u>Medium</u> – Minor defects resulting in occasional impact on vehicle control or on motorcyclists and bicyclists - <u>Poor</u> – Serious defects resulting in frequent or unpredictable impact on vehicle control or on motorcyclists and bicyclists
<b>Delineation</b>	- <u>Poor</u> – Signing of hazards, or centre and edge markings are generally absent or in poor condition - <u>Adequate</u> – Signs warning of sever hazards and centre and edge markings are generally present and visible
<b>Number of Lanes</b>	- <u>One</u> - <u>Two and One</u> - <u>Two</u> - <u>Three and Two</u> - <u>Three</u> - <u>Four or More</u>
<b>Carriageway</b>	- <u>Undivided Road</u> - <u>Carriageway A of a Divided Carriageway Road</u> - <u>Carriageway B of a Divided Carriageway Road</u> - <u>Carriageway A of a Motorcycle Facility</u> - <u>Carriageway B of a Motorcycle Facility</u>
<b>Paved Shoulder</b>	- <u>None</u> – No paved shoulder and no edgeline - <u>Narrow</u> – >= 0m to < 1.0m with edgeline present - <u>Medium</u> – >= 1.0m to < 2.4m with edgeline present - <u>Wide</u> – >= 2.4m with edgeline present
<b>Roadside Object</b>	- <u>None</u> - <u>Cliff</u> - <u>Tree &gt;= 10cm dia.</u> - <u>Sign, Post or Pole &gt;= 10cm dia.</u> - <u>Rigid Structure/ Bridge or Building</u> - <u>Unprotected Safety Barrier End</u> - <u>Large Boulders &gt;=20cm High</u> - <u>Aggressive Vertical Face</u> - <u>Deep Drainage Ditch</u> - <u>Upwards Slope - Rollover Gradient</u> - <u>Downwards Slope</u> - <u>Upwards Slope - No Rollover Gradient</u> - <u>Semi-rigid Structure or Building</u> - <u>Safety Barrier – Metal</u> - <u>Safety Barrier - Motorcycle Friendly</u> - <u>Safety Barrier – Concrete</u> - <u>Safety Barrier – Wire Rope</u>
<b>Shoulder Rumble Strips</b>	- <u>Present</u>

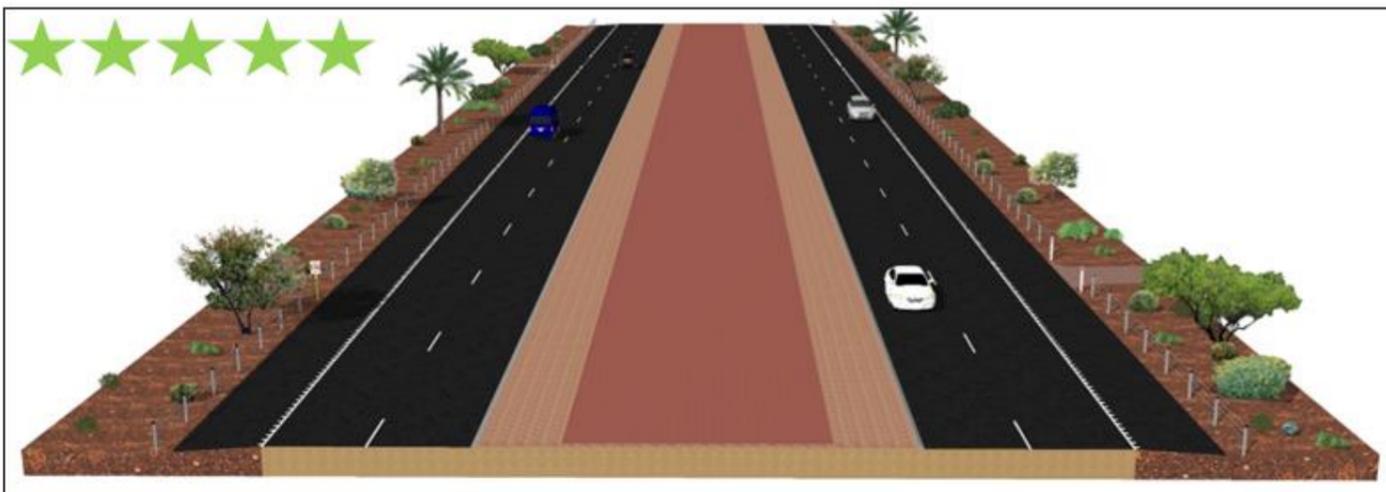
	- <u>Not Present</u>		- <u>Median Crossing Point - Formal</u>
<b>Centreline Rumble Strips</b>	- <u>Present</u> - <u>Not Present</u>	<b>Intersecting Volume</b>	- <u>None</u> - <u>1 to 100 vehicles per day;</u> - <u>100 to 1,000 vehicles per day;</u> - <u>1,000 to 5,000 vehicles per day;</u> - <u>5,000 to 10,000 vehicles per day;</u> - <u>10,000 to 15,000 vehicles per day;</u> - <u>&gt;= 15,000 vehicles</u>
<b>Median Type</b>	<b>Undivided Two-Way Road</b> - <u>Centreline (less than 0.3m wide)</u> - <u>Wide Centreline (0.3m to 1m)</u> - <u>Central Hatching (&gt; 1m)</u> - <u>Continuous Central Turning Lane</u> - <u>Flexible Posts</u> <b>Divided Road</b> - <u>Physical Median Width (&gt;= 0m to &lt; 1.0m)</u> - <u>Physical Median Width (&gt;= 1.0m to &lt; 5.0m)</u> - <u>Physical Median Width (&gt;= 5.0m to &lt; 10.0m)</u> - <u>Safety Barrier - Concrete</u> - <u>Safety Barrier - Metal</u> - <u>Safety Barrier - Motorcycle Friendly</u> - <u>Safety Barrier - Wire Rope</u> - <u>Physical Median Width (&gt;= 10.0m to &lt; 20.0m)</u> - <u>Physical Median Width (&gt;= 20.0m)</u> <b>One-Way</b> - <u>One Way Road</u>	<b>Vehicle Parking</b>	- <u>None</u> - <u>One Side</u> - <u>Two Sides</u>
<b>Property Access Points</b>	- <u>None</u> – No access points - <u>Residential Access 1 or 2</u> – Less than 3 residential access points - <u>Residential Access 3+</u> – Three or more residential access points - <u>Commercial Access 1+</u> – One or more commercial access points	<b>Footpath</b>	- <u>None</u> – No pedestrian access - <u>Informal Path (0m to &lt; 1.0m)</u> – Informal path within 1 m with no barrier to travel lane - <u>Informal Path (&gt;= 1.0m)</u> – Informal path with a distance greater than 1 m with no barrier to travel lane - <u>Footpath (0m to &lt; 1.0m)</u> – Footpath with a distance of less than 1m with no barrier to travel lane - <u>Footpath (1.0m to &lt; 3.0m)</u> – Footpath with a distance of 1m to less than 3m with no barrier to travel lane - <u>Footpath (1.0m to &lt; 3.0m)</u> - Footpath with a distance of greater than 3m with no barrier to travel lane - <u>Physical Barrier</u> – Footpath with a physical barrier to travel lane
<b>Intersection Type</b>	- <u>None</u> - <u>4-leg (Unsignalised) with no Protected Turn Lane</u> - <u>4-leg (Unsignalised) with Protected Turn Lane</u> - <u>4-leg (Signalised) with no Protected Turn Lane</u> - <u>3-leg (Unsignalised) with no Protected Turn Lane</u> - <u>3-leg (Unsignalised) with Protected Turn Lane</u> - <u>Mini Roundabout</u> - <u>3-leg (Signalised) with no Protected Turn Lane</u> - <u>4-leg (Signalised) with Protected Turn Lane</u> - <u>3-leg (Signalised) with Protected Turn Lane</u> - <u>Roundabout</u> - <u>Railway Crossing - Passive (Signs Only)</u> - <u>Merge Lane</u> - <u>Railway Crossing - Active (Flashing Lights/ Boom Gates)</u> - <u>Median Crossing Point – Informal</u>	<b>Bicycle Facilities</b>	- <u>None</u> – No specific provision - <u>Signed Shared Roadway</u> – No specific provision for bicycles - <u>Extra Wide Outside (&gt;= 4.2m)</u> – Outer most lane is equal or greater than 4.2m in width - <u>On-road Lane</u> – Dedicated on-road bicycle lane - <u>Shared Use Path</u> – Path shared with pedestrians, separated from traffic - <u>Off-road Path</u> – Dedicated bicycle facility, separated from traffic - <u>Off-road Path with Barrier</u> – Dedicated bicycle facility, separated from traffic by a physical barrier
		<b>Street Lighting</b>	- Present – Sufficient to illuminate pedestrians and bicyclists - Not Present or Insufficient -
		<b>Vehicle Flow</b>	Annual Average Daily Traffic (AADT)

## A) Rural Highway

Divided Carriageway, Multilane, 110/100/90 km/h or less, AADT: 15,000 or greater



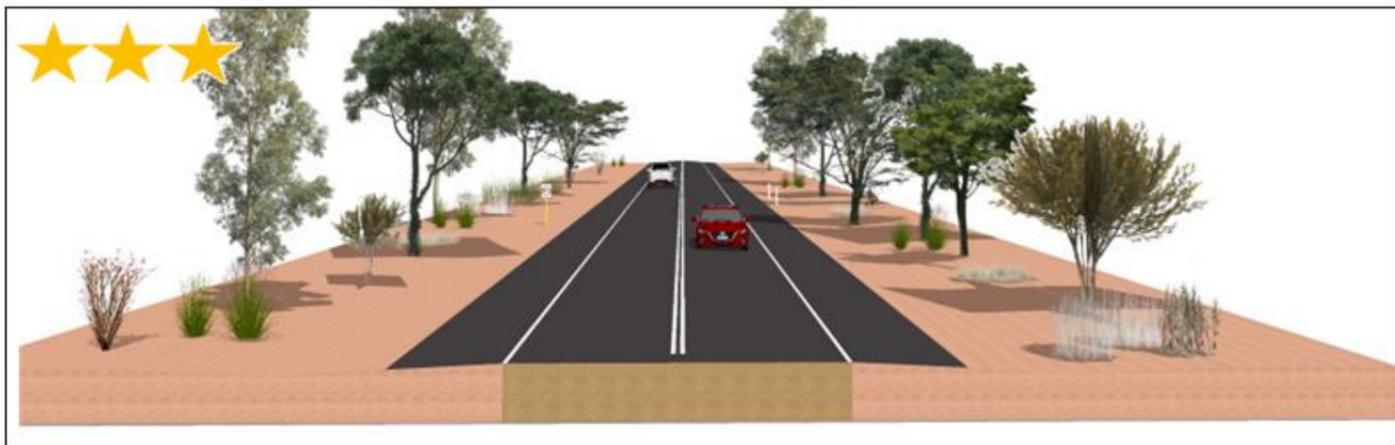
Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	110km/h	100km/h	100 km/h or less
2. Curvature	Straight or gently curving			
3. Skid Resistance	Sealed - poor	Sealed - medium	Sealed - adequate	Sealed - adequate
4. Lane Width	Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	6m from roadside	10+m from roadside	1-5m from roadside
6. Road Condition	Poor	Medium	Good	Good
7. Delineation	Poor	Poor	Adequate	Adequate
8. Number of Lanes	2 (per carriageway)	2 (per carriageway)	2 (per carriageway)	2 (per carriageway)
9. Carriageway	Divided carriageway road	Divided carriageway road	Divided carriageway road	Divided carriageway road
10. Paved Shoulder	None	Narrow	Medium	Wide
11. Roadside Object (linked to 5)	Tree	Tree	Tree	Safety barrier - wire
12. Shoulder Rumble Strips	Not present	Not present	Not present	Present
13. Centreline Rumble Strips	Not present	Not present	Not present	Present
14. Median Type	0m to <1m	0m to <1m	>=1m to <5m	>=10m to <20m
15. Property Access Points	Residential 1 or 2			



## B) Rural Highway

Divided Carriageway, Multilane, 110/100/90/80 km/hn or less, AADT: 0-15,000

Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	110km/h	90-100km/h	80 km/h or less
2. Curvature	Straight or gently curving			
3. Skid Resistance	Sealed - poor	Sealed - medium	Sealed - adequate	Sealed - adequate
4. Lane Width	Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	6m from roadside	10+m from roadside	1-5m from roadside
6. Road Condition	Poor	Medium	Good	Good
7. Delineation	Poor	Poor	Adequate	Adequate
8. Number of Lanes	2 (per carriageway)	2 (per carriageway)	2 (per carriageway)	2 (per carriageway)
9. Carriageway	Divided carriageway road	Divided carriageway road	Divided carriageway road	Divided carriageway road
10. Paved Shoulder	None	Narrow	Medium	Wide
11. Roadside Object (linked to 5)	Tree	Tree	Tree	Safety barrier - wire
12. Shoulder Rumble Strips (if no -> 1 Star)	Not present	Not present	Not present	Present
13. Centreline Rumble Strips (if no -> 1 Star)	Not present	Not present	Not present	Present
14. Median Type	None	0m to <1m	>=1m to <5m	>=10m to <20m
15. Property Access Points	Residential 1 or 2			



### C) Rural Road

Single Carriageway, two-lane, two-way, 110/100/90/80 km/h or less, AADT: 2,000-8,000

Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	110km/h	90-100km/h	80km/h or less
2. Curvature	Straight or gently curving			
3. Skid Resistance	Sealed - poor	Sealed - medium	Sealed - adequate	Sealed - adequate
4. Lane Width	Very Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	6m from roadside	1-5m from roadside
6. Road Condition	Poor	Medium	Good	Good
7. Delineation	Poor	Poor	Adequate	Adequate
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	None	Narrow	Medium	Wide
11. Roadside Object (linked to 5)	Tree	Tree	Tree	Safety barrier - wire
12. Shoulder Rumble Strips	Not present	Not present	Not present	Present
13. Centreline Rumble Strips (linked to 14)	Not present	Not present	Not present	Present
14. Median Type (linked to 13)	No Centre line	Centre line	Wide Centre line	Wide Centre Line
15. Property Access Points	Residential 1 or 2			



## D) Rural Road

Single Carriageway, two-lane, two-way, 110/100/90/80/70 km/h or less, AADT: 250-2,000

Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	110km/h	80-100km/h	80 km/h or less
2. Curvature	Straight or gently curving			
3. Skid Resistance	Sealed - poor	Sealed - medium	Sealed - adequate	Sealed - adequate
4. Lane Width	Very Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	6m from roadside	1-5m from roadside
6. Road Condition	Poor	Medium	Good	Good
7. Delineation	None	Poor	Adequate	Adequate
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	None	None	Narrow	Medium
11. Roadside Object (linked to 5)	Tree	Tree	Tree	Safety barrier - wire
12. Shoulder Rumble Strips	Not present	Not present	Not present	Present
13. Centreline Rumble Strips (linked to 14)	Not present	Not present	Not present	Present
14. Median Type (linked to 13)	No Centre line	Centre line	Wide Centre line	Wide Centre line
15. Property Access Points	Residential 1 or 2			



## E) Rural Road

Single Carriageway, two-lane, two-way, 110/100/90/80/70 km/h or less, AADT: <250

Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	110km/h	80-100km/h	80 km/h or less
2. Curvature	Straight or gently curving			
3. Skid Resistance	Sealed - poor	Sealed - medium	Sealed - adequate	Sealed - adequate
4. Lane Width	Very Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	6m from roadside	1-5m from roadside
6. Road Condition	Poor	Poor	Good	Good
7. Delineation	None	Poor	Adequate	Adequate
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	None	Narrow	Medium	Wide
11. Roadside Object (linked to 5)	Tree	Tree	Tree	Safety barrier - wire
12. Shoulder Rumble Strips	Not present	Not present	Not present	Present
13. Centreline Rumble Strips (linked to 14)	Not present	Not present	Not present	Present
14. Median Type (linked to 13)	No Centre line	Centre line	Centre line	Centre line
15. Property Access Points	Residential 1 or 2			

## F) Rural Local Collector Road

Single Carriageway, two-lane, two-way, 110/100/90/80/70 km/h or less, AADT: >100



Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	100km/h	80-90km/h	70km/h or less
2. Curvature	Moderate	Moderate	Moderate	Moderate
3. Skid Resistance	Sealed - poor	Sealed - medium	Sealed - adequate	Sealed - adequate
4. Lane Width	Very Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	6m from roadside	1-5m from roadside
6. Road Condition	Poor	Medium	Good	Good
7. Delineation	None	Poor	Adequate	Adequate
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided	Undivided	Undivided	Undivided
10. Paved Shoulder	None	None	Narrow	Wide
11. Roadside Object (linked to 5)	Tree	Tree	Tree	Safety barrier - wire
12. Shoulder Rumble Strips	Not present	Not present	Not present	Present
13. Centreline Rumble Strips (linked to 14)	Not present	Not present	Not present	Present
14. Median Type (linked to 13)	No Centre line	Centre line	Centre line	Centre line
15. Property Access Points	Residential 1 or 2			

## G) Rural Local Access Road

Single Carriageway, two-lane, two-way, 110/100/90/80/70/60/50 km/h or less, AADT: <100



Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	100km/h	80-90km/h	70 km/h or less
2. Curvature	Moderate	Moderate	Moderate	Moderate
3. Skid Resistance	Sealed - poor	Sealed - medium	Sealed - adequate	Sealed - adequate
4. Lane Width	Very Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	6m from roadside	1-5m from roadside
6. Road Condition	Poor	Medium	Good	Good
7. Delineation	None	Poor	Adequate	Adequate
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	None	None	Narrow	Wide
11. Roadside Object (linked to 5)	Tree	Tree	Tree	Safety barrier - wire
12. Shoulder Rumble Strips	Not present	Not present	Not present	Present
13. Centreline Rumble Strips (linked to 14)	Not present	Not present	Not present	Present
14. Median Type (linked to 13)	No Centre line	Centre line	Centre line	Centre line
15. Property Access Points	Residential 1 or 2			



## H) Urban Arterial

Divided Carriageway, multilane, 100/90/80/70/60 km/h or less, AADT: 14,000-30,000

Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	100km/h	90km/h	70-80km/h	60 km/h or less
2. Curvature	Straight or gently curving	Straight or gently curving	Straight or gently curving	Straight or gently curving
3. Skid Resistance	Sealed - poor	Sealed - poor	Sealed - adequate	Sealed - adequate
4. Lane Width	Medium	Medium	Wide	Wide
5. Roadside Hazards	1-5m from roadside	1-5m from roadside	1-5m from roadside	1-5m from roadside
6. Road Condition	Poor	Poor	Good	Good
7. Delineation	Poor	Poor	Adequate	Adequate
8. Number of Lanes	2+ (per carriageway)	2+ (per carriageway)	2+ (per carriageway)	2+ (per carriageway)
9. Carriageway	Divided carriageway road	Divided carriageway road	Divided carriageway road	Divided carriageway road
10. Paved Shoulder	Narrow	Medium	Wide	Wide
11. Roadside Object	Tree/Pole	Tree/Pole	Tree/Pole	Safety barrier - wire
12. Shoulder Rumble Strips	Not present	Not present	Not present	Present
13. Centreline Rumble Strips	Not present	Not present	Not present	Present
14. Median Type	>=0m to <1m	>=0m to <1m	>=1m to <5m	>=10m to <20m
15. Property Access Points	None	None	None	None
16. Intersection Type	3-leg unsignalised, no protected turn lane	3-leg unsignalised, no protected turn lane	3-leg unsignalised, protected turn lane	Roundabout
17. Intersecting Volume	<1,000 vehicles	<1,000 vehicles	<1,000 vehicles	<1,000 vehicles
18. Bicycle Facilities	None	On-road lane	Off-road path	Off-road path w/barrier
19. Pedestrian Facilities	Informal path 0m to <1m	Informal path 0m to <1m	Footpath (1.0m to <3.0m)	Physical Barrier
20. Street Lighting	Not Present	Present	Present	Present



## I) Urban Arterial

Single Carriageway, two-lane, two-way, 80/70/60/50/40 km/h, AADT: 4,000-14,000

Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	80km/h	70km/h	50-60km/h	40km/h
2. Curvature	Straight or gently curving	Straight or gently curving	Straight or gently curving	Straight or gently curving
3. Skid Resistance	Sealed - adequate	Sealed - adequate	Sealed - adequate	Sealed - adequate
4. Lane Width	Narrow	Narrow	Medium	Wide
5. Roadside Hazards	1-5m from roadside	1-5m from roadside	1-5m from roadside	1-5m from roadside
6. Road Condition	Poor	Poor	Good	Good
7. Delineation	Adequate	Adequate	Adequate	Adequate
8. Number of Lanes	2 (per carriageway)	2 (per carriageway)	2 (per carriageway)	2 (per carriageway)
9. Carriageway	Divided carriageway road	Divided carriageway road	Divided carriageway road	Divided carriageway road
10. Paved Shoulder	None	Medium	Wide	Wide
11. Roadside Object	Tree/Pole	Tree/Pole	Tree/Pole	Safety barrier - wire
12. Shoulder Rumble Strips	Not present	Not present	Not present	Present
13. Centreline Rumble Strips	Not present	Not present	Not present	Present
14. Median Type	Centre Line	Centre Line	Centre Line	>=1m to <5m
15. Property Access Points	None	None	None	None
16. Intersection Type	3-leg unsignalised, no protected turn lane	3-leg unsignalised, no protected turn lane	3-leg unsignalised, protected turn lane	Roundabout
17. Intersecting Volume	<1,000 vehicles	<1,000 vehicles	<1,000 vehicles	<1,000 vehicles
18. Bicycle Facilities	None	On-road lane	Off-road path	Off-road path w/barrier
19. Pedestrian Facilities	Informal path 0m to <1m	Informal Path (>= 1.0m)	Footpath (1.0m to < 3.0m)	Physical Barrier
20. Street Lighting	Not Present	Not Present	Present	Present

## J) Urban Local Collector Road

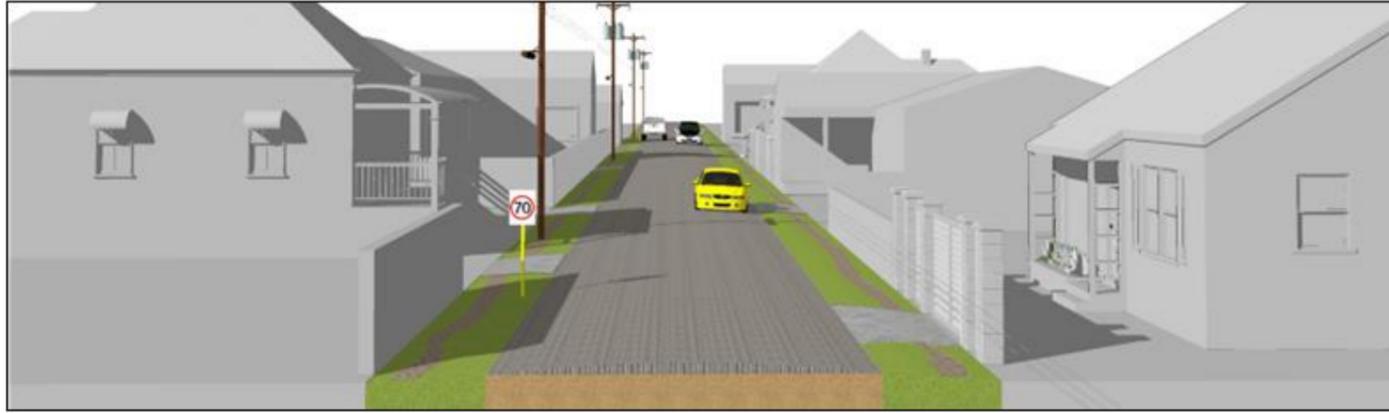
Single Carriageway, two-lane, two-way, 80/70/60/50/40/30 km/h, AADT: 500-8,000



Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	80km/h	70km/h	50-60km/h	30 km/h
2. Curvature	Moderate	Moderate	Moderate	Moderate
3. Skid Resistance	Sealed - adequate	Sealed - adequate	Sealed - adequate	Sealed - adequate
4. Lane Width	Narrow	Narrow	Medium	Wide
5. Roadside Hazards	0-1m from roadside	1-5m from roadside	1-5m from roadside	1-5m from roadside
6. Road Condition	Poor	Medium	Good	Good
7. Delineation	Adequate	Adequate	Adequate	Adequate
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Divided carriageway road
10. Paved Shoulder	None	Narrow	Medium	Wide
11. Roadside Object	Tree/Pole	Tree/Pole	Tree/Pole	Tree/Pole
12. Shoulder Rumble Strips	Not present	Not present	Not present	Not present
13. Centreline Rumble Strips	Not present	Not present	Not present	Not present
14. Median Type	None	Centre line	Centre line	>=1m to <5m
15. Property Access Points	Residential 3+	Residential 3+	Residential 3+	Residential 3+
16. Intersection Type	3-leg unsignalised, no protected turn lane	3-leg unsignalised, no protected turn lane	3-leg unsignalised, no protected turn lane	3-leg unsignalised, protected turn lane
17. Intersecting Volume	<1,000 vehicles	<1,000 vehicles	<1,000 vehicles	<1,000 vehicles
18. Bicycle Facilities	Not Present	On-road lane	Off-road path	Off-road path w/barrier
19. Pedestrian Facilities	Informal path 0m to <1m	Informal Path (>= 1.0m)	Footpath (1.0m to < 3.0m)	Path with Physical barrier
20. Street Lighting	Not Present	Not Present	Present	Present

## K) Urban Local Access Road

Single Carriageway, two-lane, two-way, 70/60/50/40/30 km/h, AADT: 0-500



Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	70km/h	60km/h	50km/h	30-40km/h
2. Curvature	Straight or gently curving			
3. Skid Resistance	Sealed - poor	Sealed - poor	Sealed - medium	Sealed - adequate
4. Lane Width	Narrow	Narrow	Narrow	Medium
5. Roadside Hazards	0-1m from roadside	1-5m from roadside	1-5m from roadside	1-5m from roadside
6. Road Condition	Poor	Poor	Medium	Good
7. Delineation	Poor	Poor	Poor	Adequate
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	None	Narrow	Narrow	Medium
11. Roadside Object	Tree/Pole	Tree/Pole	Tree/Pole	Tree/Pole
12. Shoulder Rumble Strips	Not present	Not present	Not present	Not present
13. Centreline Rumble Strips	Not present	Not present	Not present	Not present
14. Median Type	None	Centre line	Centre line	Centre line
15. Property Access Points	Residential 3+	Residential 3+	Residential 3+	Residential 3+
16. Intersection Type	None	None	None	None
17. Intersecting Volume	<1,000 vehicles	Two sides	Two sides	Two sides
18. Bicycle Facilities	Not Present	Not present	Not present	Not Present
19. Pedestrian Facilities	Informal path 0m to <1m	Informal path 0m to <1m	Informal Path (>= 1.0m)	Path with Physical barrier
20. Street Lighting	Not Present	Not Present	Not Present	Present

## L) Rural Highway (Unsealed)

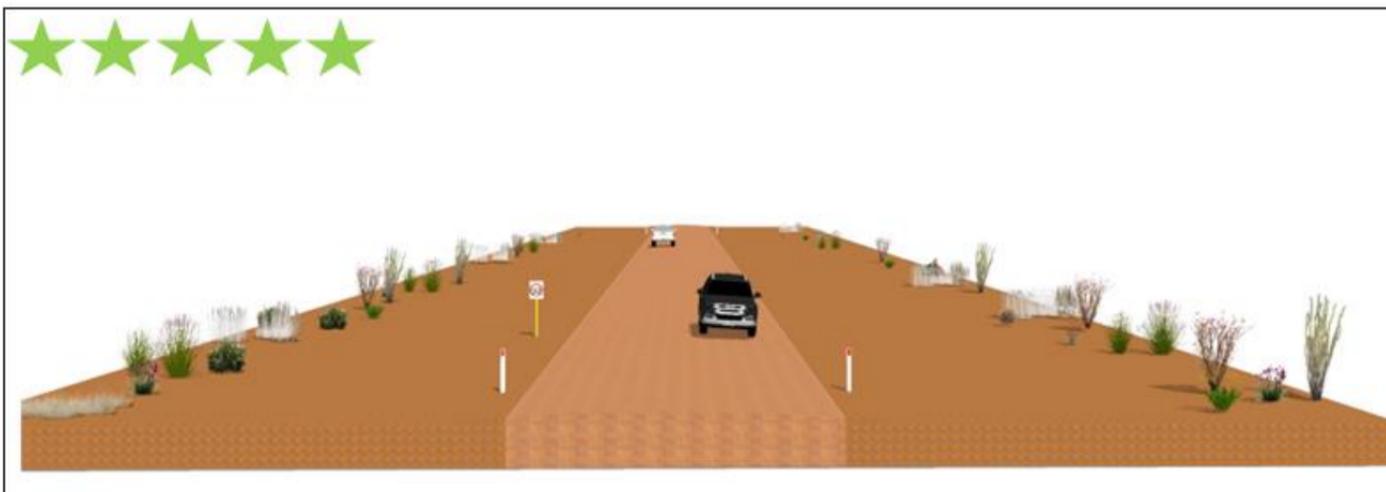
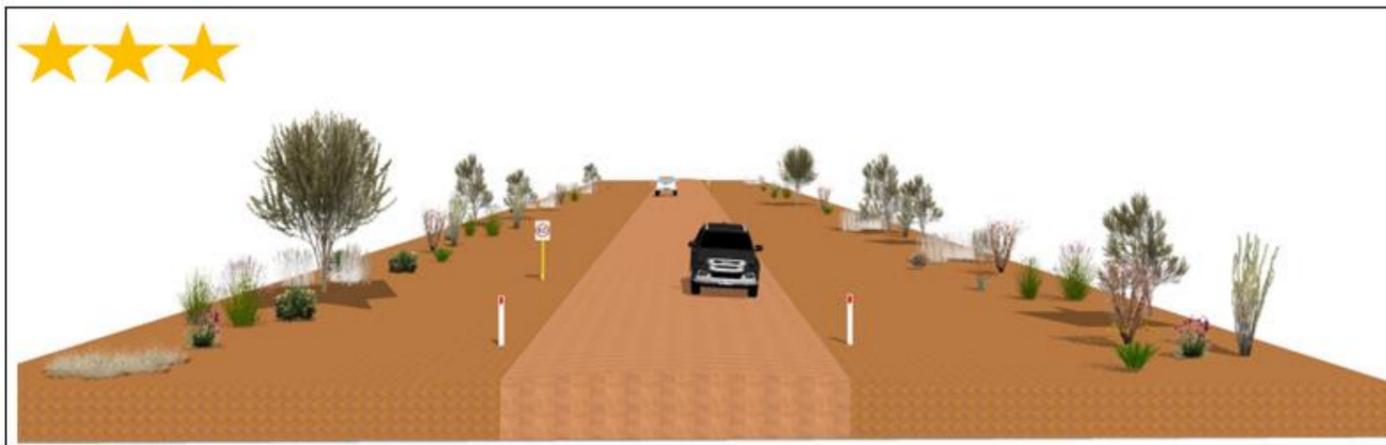
Single Carriageway, two-lane, two-way, 110/100/90/80/70/60/50 km/h, AADT: 2,000 or greater



Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	80-100km/h	60-70km/h	50 km/h
2. Curvature	Straight or gently curving			
3. Skid Resistance	Unsealed - poor	Unsealed - adequate	Unsealed - adequate	Unsealed - adequate
4. Lane Width	Narrow	Narrow	Medium	Medium
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	5-10m from roadside	10+m from roadside
6. Road Condition	Poor	Medium	Good	Good
7. Delineation	Poor	Poor	Adequate	Adequate
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	Not possible	Not possible	Not possible	Not possible
11. Roadside Object (linked to 5)	Tree	Tree	Tree	None
12. Shoulder Rumble Strips	Not possible	Not possible	Not possible	Not possible
13. Centreline Rumble Strips	Not possible	Not possible	Not possible	Not possible
14. Median Type	Not possible	Not possible	Not possible	Not possible
15. Property Access Points	Residential 1 or 2			

## M) Rural Highway (Unsealed)

Single Carriageway, two-lane, two-way, 110/100/90/80/70/60/50 km/h, AADT: 500-2,000



Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	80-100km/h	60-70km/h	50 km/h
2. Curvature	Straight or gently curving			
3. Skid Resistance	Unsealed - poor	Unsealed - adequate	Unsealed - adequate	Unsealed - adequate
4. Lane Width	Narrow	Medium	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	5-10m from roadside	10+m from roadside
6. Road Condition	Poor	Medium	Good	Good
7. Delineation	Poor	Poor	Adequate	Adequate
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	Not possible	Not possible	Not possible	Not possible
11. Roadside Object (linked to 5)	Tree	Tree	Tree	None
12. Shoulder Rumble Strips	Not possible	Not possible	Not possible	Not possible
13. Centreline Rumble Strips	Not possible	Not possible	Not possible	Not possible
14. Median Type	Not possible	Not possible	Not possible	Not possible
15. Property Access Points	Residential 1 or 2			

## N) Rural Highway (Unsealed)

Single Carriageway, two-lane, two-way, 110/100/90/80 /70/60/50km/h, AADT: <500



Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	80-110km/h	60-70km/h	50 km/h
2. Curvature	Straight or gently curving			
3. Skid Resistance	Unsealed - poor	Unsealed - adequate	Unsealed - adequate	Unsealed - adequate
4. Lane Width	Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	5-10m from roadside	10+m from roadside
6. Road Condition	Poor	Good	Good	Good
7. Delineation	Poor	Poor	Adequate	Adequate
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	Not possible	Not possible	Not possible	Not possible
11. Roadside Object (linked to 5)	Tree	Tree	Tree	None
12. Shoulder Rumble Strips	Not possible	Not possible	Not possible	Not possible
13. Centreline Rumble Strips	Not possible	Not possible	Not possible	Not possible
14. Median Type	Not possible	Not possible	Not possible	Not possible
15. Property Access Points	Residential 1 or 2			

## O) Rural Local Collector Road (Unsealed)

Single Carriageway, two-lane, two-way, 110/100/90/80/70/60/50 km/h, AADT: >250



Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	80-100km/h	60-70km/h	40-50km/h
2. Curvature	Moderate	Moderate	Moderate	Moderate
3. Skid Resistance	Unsealed - poor	Unsealed - adequate	Unsealed - adequate	Unsealed - adequate
4. Lane Width	Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	5-10m from roadside	10+m from roadside
6. Road Condition	Poor	Good	Good	Good
7. Delineation	Poor	Poor	Poor	Poor
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	None	None	None	None
11. Roadside Object (linked to 5)	Tree	Tree	Tree	None
12. Shoulder Rumble Strips	Not possible	Not possible	Not possible	Not possible
13. Centreline Rumble Strips	Not possible	Not possible	Not possible	Not possible
14. Median Type	Not possible	Not possible	Not possible	Not possible
15. Property Access Points	Residential 1 or 2	Residential 1 or 2	Residential 1 or 2	Residential 1 or 2

## P) Rural Local Access Road (Unsealed)

Single Carriageway, two-lane, two-way, 110/100/90/80/70/60/50/40 km/h, AADT: <250



Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	70-100km/h	60km/h	40-50km/h
2. Curvature	Moderate	Moderate	Moderate	Moderate
3. Skid Resistance	Unsealed - poor	Unsealed - adequate	Unsealed - adequate	Unsealed - adequate
4. Lane Width	Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	5-10m from roadside	10+m from roadside
6. Road Condition	Poor	Good	Good	Good
7. Delineation	Poor	Poor	Poor	Poor
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	None	None	None	None
11. Roadside Object (linked to 5)	Tree	Tree	Tree	None
12. Shoulder Rumble Strips	Not possible	Not possible	Not possible	Not possible
13. Centreline Rumble Strips	Not possible	Not possible	Not possible	Not possible
14. Median Type	Not possible	Not possible	Not possible	Not possible
15. Property Access Points	Residential 1 or 2	Residential 1 or 2	Residential 1 or 2	Residential 1 or 2

## Q) Urban Local Access Road (Unsealed)

Single Carriageway, two-lane, two-way, 110/100/90/80/70/60/50/40/30 km/h, AADT: 0-1,000



Attribute	<1 Star	1 Star	3 Star	5 Star
1. Speed Limit	110km/h	70-100km/h	50-60km/h	30-40km/h
2. Curvature	Straight or gently curving			
3. Skid Resistance	Unsealed - poor	Unsealed - adequate	Unsealed - adequate	Unsealed - adequate
4. Lane Width	Narrow	Narrow	Medium	Wide
5. Roadside Hazards (linked to 11)	0-1m from roadside	1-5m from roadside	5-10m from roadside	10+m from roadside
6. Road Condition	Poor	Good	Good	Good
7. Delineation	Poor	Poor	Poor	Poor
8. Number of Lanes	2	2	2	2
9. Carriageway	Undivided road	Undivided road	Undivided road	Undivided road
10. Paved Shoulder	None	None	None	None
11. Roadside Object (linked to 5)	Tree/Pole	Tree/Pole	Tree/Pole	None
12. Shoulder Rumble Strips	Not possible	Not possible	Not possible	Not possible
13. Centreline Rumble Strips	Not possible	Not possible	Not possible	Not possible
14. Median Type	Not possible	Not possible	Not possible	Not possible
15. Property Access Points	Residential 3+	Residential 3+	Residential 3+	Residential 3+
16. Vehicle Parking	Two sides	Two sides	Two sides	Two sides
17. Side Walk	None	None	Informal path >=1.0m	Non-physical separation >=3.0m
18. Street Lighting	Not present	Not present	Not present	Present

Checklist

The following table (Table 2) can be copied/printed and filled out. Use this table to assess the Star Rating of your road while referring to the corresponding cross-section. The table on the right provides a rough indication of which types of treatments are likely to have

Table 2: Blank checklist

Road Attribute	<1 Star	1 Star	3 Star	5 Star
Speed Limit				
Curvature				
Skid Resistance				
Lane Width				
Roadside Hazards				
Road Condition				
Delineation				
Number of Lanes				
Carriageway				
Paved Shoulder				
Roadside Object				
Shoulder Rumble Strips				
Centreline Rumble Strips				
Median Type				
Property Access Points				
Intersection Type				
Vehicle Parking				
Pedestrian Facilities				
Bicycle Facilities				
Street Lighting				
Vehicle Flow				
Total				

Potential Treatment	Effectiveness
Reduce Speed Limit	✓✓✓
Improve Safety at Curves	✓✓✓
Improve Skid Resistance	✓✓✓
Increase Lane Width	✓✓✓
Roadside Hazard Removal	✓✓✓
Improve Road Condition	✓✓
Add/Improve Delineation	✓✓
Add Overtaking Lanes	✓✓
Add Centre Barrier System/Divide Road	✓✓✓
Add Paved Shoulder	✓✓
Move Roadside Objects	✓✓✓
Add Shoulder Rumble Strips	✓✓
Add Centreline Rumble Strips	✓✓
Median Type	N/A
Reduce Number of Property Access Points	✓
Change Intersection Type	✓✓✓
Add On-Street Parking	✓
Add Footpath	✓✓✓
Add Bicycle Facilities	✓✓
Add Street Lighting	✓✓
Vehicle Flow	N/A



## Notes on the Preservation of the Data

After applying this tool to assess the safety of the road network, Local Governments can use the data for various purposes.

### Baseline

One of the key benefits of this tool is to generate a baseline understanding of the safety of the network. This baseline information should be preserved either in hard copy or electronic form. To this end, an excel spreadsheet has been prepared and can be found here: <https://www.roadwise.asn.au/lgstars>. It is recommended that Local Governments reassess their road networks on a 5-year basis.

### Benchmarking

Another key benefit of this tool is to provide the opportunity to benchmark progress toward the realisation of a safe road network. To understand what improvements have been made, it is important to retain all documentation of the initial assessment of the Local Government road network, whether in paper or electronic format. Once the second-round assessment has been completed, the Local Government can review the baseline data and second round assessment to determine what changes to the Star Safety Rating have occurred and showcase any improvements that have been completed in the intervening time.

### Works Programming

Preserving the data in a meaningful way is also important for integrating the results into works programs or other investment processes. By ensuring the data is collected and stored an easily accessible way will support the delivery of projects or mass actions that will treat areas of the network most in need of safety improvement.

## Notes on Data Uniformity

Particularly in regional and remote Local Governments, many of the roads may be very similar and may have similar attributes (and thus similar Star Safety Ratings). This may make programming improvements difficult. One good starting point for developing a program to improve the Star Safety Rating of a road segment, and thereby improve safety outcomes, is to focus on areas where significant crashes are likely to occur. **Improving safety at curves** is a good starting point, while **programming simple, achievable treatments** is also recommended. If possible, programming and implementing a treatment across the entire network is preferable to investing heavily in single road segments at the expense of more network-wide solutions.

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