Infrastructure Risk Rating (IRR) Manual

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Contents

Table of Tables

1 Introduction

The procedure for determining a speed limit for a speed zone is outlined in Section 3 of the Department of Transport and Main Roads' (TMR's) *Queensland Road Safety Technical User Volumes* (QRSTUV) *Guide to Speed Management*. Stage 3 of this procedure includes the *Determination of the Risk Assessed Speed Limit* (RASL). Identification of the Infrastructure Risk Rating (IRR) is required to determine the RASL.

IRR is a road infrastructure assessment methodology designed to assess road safety risk. The road safety risk is assessed by coding road and roadside attributes and inputting these into the IRR model so that a risk rating can be determined. The eight road and roadside attributes are:

- road stereotype;
- alignment;
- carriageway width;
- roadside hazard;
- land use;
- intersection density;
- access density; and
- traffic volume.

This manual provides guidance about the procedure to be used to determine the IRR for a speed zone, which is to be used in conjunction with TMR's *QRSTUV Guide to Speed Management* when undertaking a speed limit review.

2 Infrastructure Risk Rating Coding

The process to determine an IRR score for a speed zone requires the assessment and coding of IRR attributes. The coding involves assigning each attribute a value based on the available categories (as shown in Section 3.1 to 3.8) for the speed zone. Before coding can begin, homogeneous road sections need to be identified as per the process outlined in Section 3.3 of TMR's *QRSTUV Guide to Speed Management*.

2.1 Coding Sources

Coding can be undertaken through a variety of media and data sources. Aerial imagery is useful to gain an overview of the road section to be coded and can also be used to code features such as alignment. Data sources such as road asset management databases are useful for coding traffic volume and carriageway width. A street level view is required to code other features such as roadside hazards, land use and road stereotype. Google Street View is a good source of street level imagery, if road video is unavailable, however the images can often be out of date.

Where practical, a site inspection should be undertaken to verify the attributes collected through media and data sources. An IRR checklist has been provided in Appendix B of this manual to assist in the collection of appropriate information when conducting site inspections.

2.2 Road Corridors

Divided and undivided carriageways are coded differently. Undivided carriageways are coded once, with both sides of the road coded while viewing the road travelling in one direction. Divided roads are coded twice; once for each carriageway. Section 5.1.4 of TMR's *QRSTUV Guide to Speed Management* provides guidance on how IRR is used for divided roads in determination of the RASL.

For the purposes of coding, a road is considered divided if there is a physical feature separating opposing traffic flows. A physical separating feature is any kind of raised median, such as a kerb island or a concrete barrier. There may be gaps present in the median at intersections.

Divided roads can have a traversable or a non-traversable median. A traversable median is a physical barrier that is not designed to prevent an out of control vehicle from crossing the median, such as a kerb island. A non-traversable median is a physical barrier that prevents vehicle movements across the median, such as a concrete barrier.

Roads with features such as a flush median, centreline Audio Tactile Line Marking (ATLM) or wide centreline do not prevent vehicle movements across them and therefore should be coded as undivided.

Short lengths of divided road (less than 500m), such as on the approach to an intersection, should be ignored and treated as part of the undivided road section and vice versa.

3 Infrastructure Risk Rating Model

The IRR Score is calculated using the following equation:

$$IRR_{SCORE} = \log_{10}\left(RS_{RS} \times RS_{A} \times RS_{CW} \times \frac{RS_{LRH} + RS_{RRH}}{2} \times RS_{LU} \times RS_{ID} \times RS_{AD} \times RS_{TV}\right)$$

Where:

RS_{RS}	=	Road Stereotype Risk Score	Refer to Section 3.1
RS_{A}	=	Alignment Risk Score	Refer to Section 3.2
RS_{CW}	=	Carriageway Width Risk Score	Refer to Section 3.3
RS_{LRH}	=	Left-side Roadside Hazard Risk Score	Refer to Section 3.4
RS_{RRH}	=	Right-side Roadside Hazard Risk Score	Refer to Section 3.4
RS_{LU}	=	Land Use Risk Score	Refer to Section 3.5
RS_{ID}	=	Intersection Density Risk Score	Refer to Section 3.6
RS_{AS}	=	Access Density Risk Score	Refer to Section 3.7
RS_{TV}	=	Traffic Volume Risk Score (Rural only)	Refer to Section 3.8

The IRR Score is converted into an IRR Band based on the thresholds shown in Table 1.

Table 1: Infrastructure Risk Rating Bands

Risk Band	Risk Score	
	Urban	Rural
High	>2.22	>1.64
Medium-High	2.02 – 2.22	1.46 – 1.64
Medium	1.76 – 2.02	1.07 – 1.46
Low-Medium	1.49 – 1.76	0.92 – 1.07
Low	<1.49	<0.92

The Urban and Rural environments are defined based on the Land Use categories within Table 8.

3.1 Road Stereotype

Road stereotype is coded by selecting the most appropriate of the six categories shown in Table 2.

Table 2: Road Stereotype Risk Scores

Category	Risk Score	Description
Unsealed	10.0	Any road that is unsealed
Two lane undivided	3.7	An undivided road with one lane in each direction
Multi-lane undivided	3.4	An undivided road with more than one lane in each direction. Includes roads with two lanes in one direction and one lane in the other direction.
Divided (traversable)	3.0	Divided road with a traversable median
Divided (non-traversable)	1.0	Divided road with a non-traversable median
One way	1.0	One way streets

Section 2.2 provides descriptions of divided and undivided roads.

A divided road with a non-traversable median will stop an out of control vehicle from crossing the median. A non-traversable median is typically a physical safety barrier between opposing traffic flows.

A divided road with a traversable median has features that prevent vehicle movements across the median but will not stop an out of control vehicle from crossing the median. Traversable medians include kerb islands between opposing traffic flows.

In case of any ambiguity or overlap between categories, the category that appears higher in the table (i.e. has the higher risk score) should be selected (e.g. if a road is unsealed and one way then the unsealed category should be selected).

Homogeneous sections are partly defined based on road stereotype, so aside from short changes in road stereotype (e.g. at short (<1km) overtaking lanes), the road stereotype should be the same over the homogeneous length.

3.2 Alignment

Alignment is categorised based on the degrees of turn per km. Alignment, or degrees of turn per km, is estimated by summing the deviation angles of the horizontal curves from plans or aerial photography and dividing by the length of road. Road stereotype is coded by selecting the most appropriate of the four categories shown in Table 3. Examples demonstrating the estimation of alignment category can be found in Appendix A.

Table 3: Alignment Risk Scores

Category	Risk Score	Definition	Description
Tortuous	6.0	≥300 degrees of turn/km	Consecutive curves and numerous sharp curves (typical radii of 350m to 500m) and very sharp curves (typical radii <350m). Can generally be driven at less than 75 km/h for rural roads.
Winding	3.5	≥150 and <300 degrees of turn/km	Many consecutive curves and sharp curves (typical radii of 350m to 500m). Can generally be driven at 75 to 85 km/h for rural roads.
Curved	1.5	≥50 and <150 degrees of turn/km	Moderate curves (typical radii of 500m to 1500m). Can generally be driven at 85 to 100 km/h for rural roads. Some straight sections or isolated curves may be present.
Straight	1.0	<50 degrees of turn/km	Straight or gently curved (typical radii of >1500m). Can generally be driven at 100 km/h or more for rural roads.

Alignment may vary over a homogeneous speed zone. Therefore, the alignment category that depicts the largest proportion of the homogeneous speed zone should be selected. If the average value falls halfway between two categories, then the higher risk category (shown highest in Table 3) should be selected. For example, over a 6.4km homogeneous length, if 4km is 'Straight', 2km 'Curved', and 400m 'Winding', then alignment should be coded as 'Straight'. If there is 2.5km 'Straight' and 2.5km 'Curved', then 'Curved' should be selected. Homogenous sections should aim for consistent alignment, although changes between two adjoining alignment categories, or large changes in alignment over short lengths (<1km) are acceptable.

3.3 Carriageway Width

The carriageway width risk score is coded by rating both the lane width and sealed shoulder width as shown in Table 4 and Table 5.

These lane and shoulder widths should be measured or taken from asset management databases where practicable. If data is not readily available, visual judgement can be used by comparing the lane and shoulder widths to vehicles travelling on the road (a truck is generally 2.5m wide and cars are typically between 1.8m and 2.3m wide).

Table 4: Lane Width Categories

Category	Description
Narrow (<3.0m)	Narrow lane width (<3.0m) is generally present
Medium (3.0-3.5m)	Medium lane width (3.0m to 3.5m) is generally present
Wide (>3.5m)	Wide lanes (>3.5m) are generally present

Where there is more than one lane, only the narrowest lane width is taken into consideration. However, cycle lanes and other special vehicle lanes, such as bus lanes, should be ignored.

For unsealed roads or roads with no marked centreline, the lane widths are estimated using judgement to determine the number of lanes based on travelled vehicle paths.

Where lane width varies along the homogeneous section, coding is based on the category that depicts the largest proportion of the homogeneous speed zone.

Table 5: Sealed Shoulder Width Categories

Category	Description
Very narrow shoulder (0 to <0.5m)	Very narrow with little or no shoulder (<0.5m) is generally present
Narrow shoulder (0.5 to <1.0m)	Noticeable but narrow shoulder (0.5m to <1.0m) is generally present
Wide Shoulder (1.0m to 2.0m)	Good wide shoulder (1.0m to <2.0m) is generally present
Very wide shoulder (≥2.0m)	Very wide shoulder (≥2.0m) is generally present

The sealed shoulder width is measured from the centre of the painted edgeline (excluding ATLM outside the painted edgeline) to the unsealed surface. If the edge of seal begins to break up on the shoulder, the sealed shoulder width should be measured up to where the edge break occurs.

Roadside parking should be coded as shoulder. However, cycle lanes and other special vehicle lanes are not considered to be part of the shoulder.

For divided roads, the left-hand shoulder width is measured.

For undivided roads, the lesser (minimum) of the left and right-hand shoulder width is measured.

Where shoulder width varies along the homogeneous section, coding is based on the shoulder width that depicts the largest proportion of the homogeneous speed zone.

Examples demonstrating how lane width and sealed shoulder width are measured can be found in Appendix A.

The carriageway risk score is obtained by combining the lane width category and sealed shoulder width category as shown in Table 6.

Table 6: Carriageway Risk Scores

		Lane Width Category		
		Narrow (<3.0m)	**Medium (3.0-3.5m)**	**Wide (>3.5m)**
Sealed Shoulder Width Category	**Very narrow shoulder (0 to <0.5m)**	2.01	1.79	1.58
	Narrow shoulder (0.5 to <1.0m)	1.79	1.45	1.18
	Wide Shoulder (1.0m to 2.0m)	1.22	1.00	0.85
	Very wide shoulder (≥2.0m)	1.00	0.78	0.66

3.4 Roadside Hazard

Roadside hazards involves assessing hazard risk based on the severity and offset of the hazard and then determining which category to use to represent the homogeneous section being rated. Table 7

provides guidance on how to assess roadside hazard risk based on the offset and severity of identified hazards. The definitions provided in Table 7 do not necessarily consider hazards listed in the same category as being equivalent, rather hazards listed within the same category are considered equivalent for the purposes of the IRR Model. Therefore, it is important to apply the definitions within Table 7 when assessing the roadside hazard risk rather than applying alternate definitions.

The roadside hazard offset is recorded from the edgeline, if present. If there is no edgeline, then the hazard offset is recorded from the edge of seal.

Roadside hazards are rated separately for each side of the road. For divided roads, when coding hazards on the right-hand side, hazards are recorded as measured from the right-side edge of the divided carriageway, i.e. hazards in the median.

For a group of point hazards to receive a particular risk score, they need to be at a density where the likelihood of the hazard being hit is relatively high. Therefore, Table 7 requires that 20+ point hazards be present per kilometre (or one every 50m on average) for the particular hazard category to apply. Similarly, if there are intermittent hazards, such as structures/ buildings or regular short sections of cliffs and slopes, then these should occur at relatively regular intervals and cover at least 50% of the road section length. For example, if a road has sections exposed to cliffs within 5m along 50% of the road length, then this should be coded as 'Severe'.

If the roadside hazards do not meet these density requirements, judgement is required to determine the average hazard score. For example, if part of the road section has regular short sections (<50%) exposed to cliffs within 5m ('Severe') and metal barriers are present within 5m ('Minor') over the remainder of the section on one side, then this could be coded 'High' or 'Moderate'. In this case, the road should be coded as 'High' if cliffs are present for close to 50% of the section and 'Moderate' if the cliffs cover significantly less than 50% of the section.

In cases where the roadside hazards change regularly over short sections, the average hazard category should be selected. For example, if the section is an open plain with intermittent trees and poles (<20 per km) then the average roadside hazard category should be selected. In this case, if the trees and poles are generally between 5m and 10m from the edge of seal then the hazard coding is alternating between 'Moderate' (where there are trees and poles) and 'Low' (where there are no hazards) and therefore the 'Minor' category should be selected.

As the coding is being done over homogeneous lengths, some judgement may be required to determine the roadside hazard risk category that best represents the entire homogeneous section. Example photos of roadside hazards in each category are shown in Appendix A.

Table 7: Roadside Hazard Risk Scores

Category	Risk Score	Description	Example Hazards
Severe	2.80	• **Aggressive/severe** continuous hazards and cliffs, **within 5m*** OR • **20+ non-frangible** point hazards per kilometre (1+ per 50m) or **rigid structures/ bridges/ buildings, within 5m**	Aggressive/severe continuous hazards can include: • Aggressive vertical faces • Deep drainage ditches • Cliffs with steep or high drop offs, and/or deep water, that would result in death regardless of speed Examples of non-frangible point hazards include: • Trees, signs, posts, poles >=10cm diameter • Large boulders (>=20cm diameter) • Unprotected barrier ends

High	2.28	• **Cliffs** or **deep water** at **5m to <10m*** • **Roll-over up-slopes** and downslopes (e.g. >15^0 and >1m high) at **<5m***	
Moderate	1.43	• **Aggressive/severe and moderate** continuous hazards at **5m to <10m**, excluding cliffs and deep water* OR • **20+ non-frangible** point hazards per kilometre (1+ per 50m) or **rigid structures/ bridges/ buildings at 5m to <10m** OR • **Car parking** or **semi-rigid** structures or buildings at **<5m***	Aggressive/severe and moderate continuous hazards can include: • Aggressive vertical faces • Deep drainage ditches • Roll-over up-slopes and downslopes (e.g. >15^0 and >1m high) Non-frangible point hazards can include: • Trees, signs, posts, poles >=10cm diameter • Large boulders (>=20cm diameter) • Unprotected barrier ends
Minor	0.67	• Metal and concrete **safety barriers** at **<5m*** • **Car parking** or **semi-rigid** structures or buildings at **5m to <10m***	
Low	0.40	• Metal and concrete **safety barriers** at **5m+*** • Low severity property damage hazards at any distance* • All hazards at **>=10m***	Low severity property damage hazards can include: • Kerbs • Wire-rope barriers • Level and safe slopes (<=15^0 and <=1m high) with no hazards • Frangible trees, posts, poles <10cm diameter

* ***>=50% of the length, where they occur intermittently***

3.5 Land Use

Land use is coded by selecting the most appropriate of the eight categories shown in Table 8.

The Land Use attribute considers the surrounding land use and the category can also be informed by the presence of accesses and intersections. The purpose of the land use attribute is to give an indication of the likely level of activity present on the road. This includes pedestrian and cyclist activity along and across the road, as well as vehicle movements – parking and driveway manoeuvres and vehicles turning to and from intersections and accesses etc.

Changes in land use should be coded where the change is present for more than 500m for rural roads and 250m for urban roads.

The adjacent land use should be considered with regards to how the land use is accessed from the road as the purpose of this attribute is to capture the impact of land use on vehicle movements and the level of activity present that impacts on the road. For example, if there are commercial big box retail shopping centres present and these are accessed from a highway through intermittent intersections, then the coder's judgement will be required as to whether this is coded as 'Commercial Big Box/Industrial' or 'Controlled Access'.

If there is uncertainty around which category to select or if the land use on either side of a road is different, the category that appears higher in the table should be chosen, e.g. 'Commercial Strip Shopping' over 'Rural Town' if coding a rural town section with a long length (1km+) of high density commercial shops.

Table 8: Land Use Risk Scores

Category	Risk Score	Environment	Description
Commercial strip shopping	5.0	Urban	Numerous shops facing the street-front with high levels of pedestrian and cyclist activity. High occupancy on-street parking present resulting in many vehicle movements to and from the road. Regular intersections and accesses will also be present.
Commercial big box / industrial	4.0	Urban	Large (big box) shops and/or industry/factories with intermittent accesses leading to large off-street parking areas. Regular intersections and some pedestrian and cyclist activity may be present.
Urban residential	3.0	Urban	Urban residential area dominated by housing with frequent driveways and on-street parking. Regular intersections are likely to be present. Pedestrian and cyclist activity is also likely, particularly at certain times of the day.
Rural town	2.5	Urban	Rural town with mixture of residential activity and some shops or a low density urban road on the outskirts of an urban centre. Some intersections and accesses are likely to be present. Some pedestrian and cyclist activity may also be present.
Controlled access	2.0	Urban	Road with roadside development and controlled access, such as an urban highway or arterial where there are few accesses to the road, e.g. as a result of a service road. Some pedestrian and cyclist activity may be present but with few crossing movements.
Rural residential	1.5	Rural	Rural area with medium to low density accesses to private dwellings and farms. Accesses may also be provided to industry/factory developments. Some pedestrian and cyclist activity may also be present, particularly at certain times of the day, but with few crossing movements.
Remote rural	1.0	Rural	Accesses and intersection densities are low or very low. Surrounding land is rural with few houses and almost no industry.
No access (motorway / freeway)	1.0	Rural	No accesses or at grade intersections are present and pedestrians and cyclists are not allowed, e.g. motorway.

3.6 Intersection Density

At-grade intersection density is coded by selecting the most appropriate of the six categories shown in Table 9.

The appropriate intersection density category should be selected by counting the number of intersections and dividing by the homogenous section length to determine the average density.

A homogeneous section should be segmented if the intersection density changes significantly over 1km or more. If a significant change occurs over a short length (<1km) then judgement is required to determine whether a section break is required, depending on the scale of the density change.

Table 9: Intersection Density Risk Scores

Category	Risk Score
10+ intersections / km	5.00
5 to <10 intersections / km	2.60
3 to <5 intersections / km	1.50
2 to <3 intersections / km	1.25
1 to <2 intersections / km	1.15
<1 intersections / km	1.00

3.7 Access Density

Access density is coded by selecting the most appropriate of the six categories shown in Table 10.

The appropriate access density category should be selected by counting the number of accesses and dividing by the homogenous section length to determine the average density.

A homogeneous section should be segmented if the access density changes significantly over 1km or more. If a significant change occurs over a short length (<1km) then judgement is required to determine whether a section break is required, depending on the scale of the density change.

Table 10: Access Density Risk Scores

Category	Risk Score
20+ accesses / km	1.30
10 to <20 accesses / km	1.10
5 to <10 accesses / km	1.06
2 to <5 accesses / km	1.03
1 to <2 accesses / km	1.01
<1 accesses / km	1.00

3.8 Traffic Volume

Traffic volume is coded by selecting the most appropriate of the five categories shown in Table 11. Traffic volume is only required to be coded for roads in a rural environment as defined within Table 8. The traffic volume risk score is not required for roads in an urban environment as per the definition in Table 8.

Traffic volume should be recorded for the carriageway being coded. For undivided roads, traffic volume in both directions should be coded, and for divided roads, traffic volume for the single direction carriageway being coded should be recorded. If traffic volume for divided roads is not available by direction, then the two-way traffic volume should simply be halved.

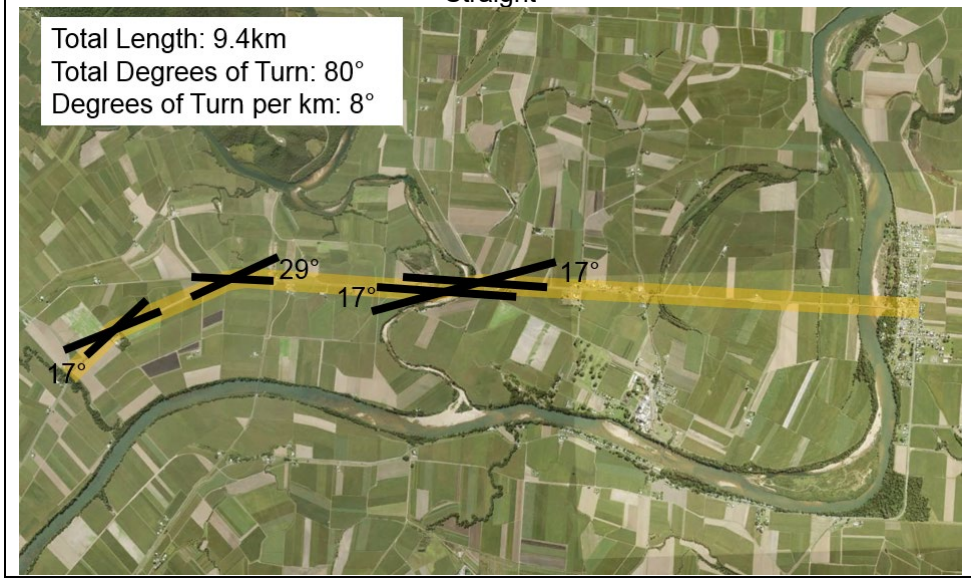
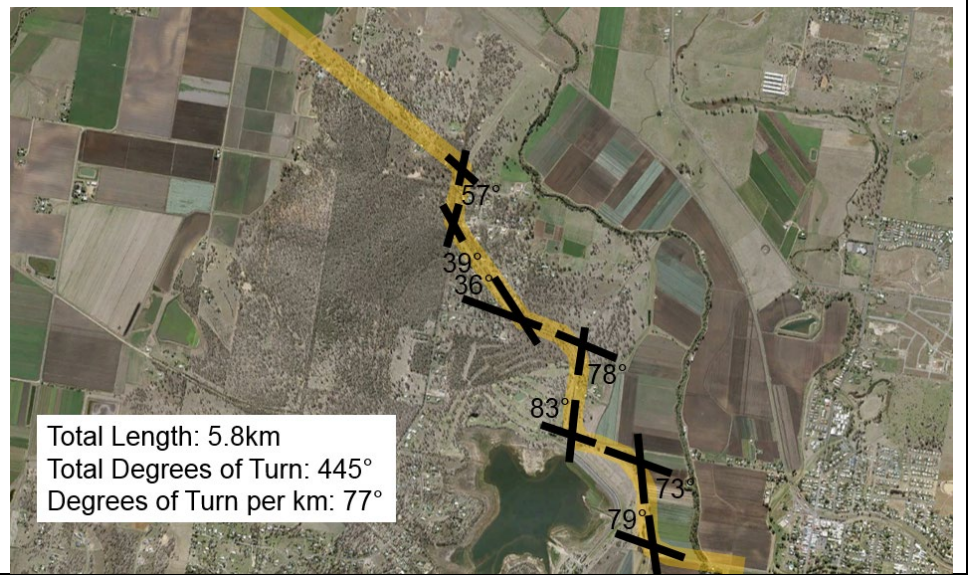
Rural homogeneous sections should be defined so that the whole section falls into the same traffic volume category however, small changes in traffic volume that fall outside of a traffic volume category are acceptable.

Table 11: Traffic Volume Risk Scores

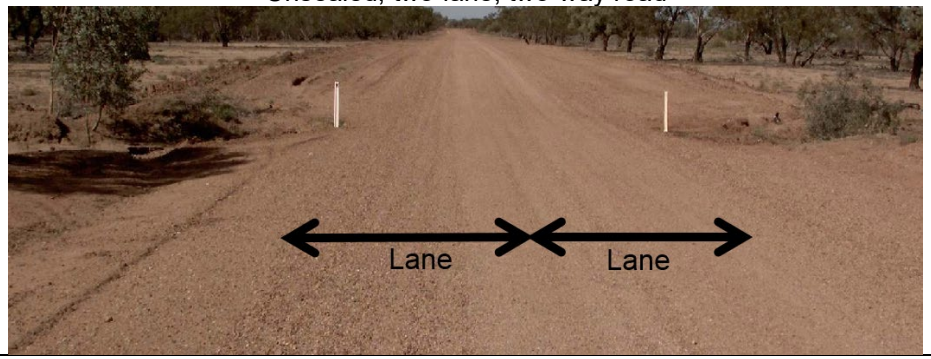
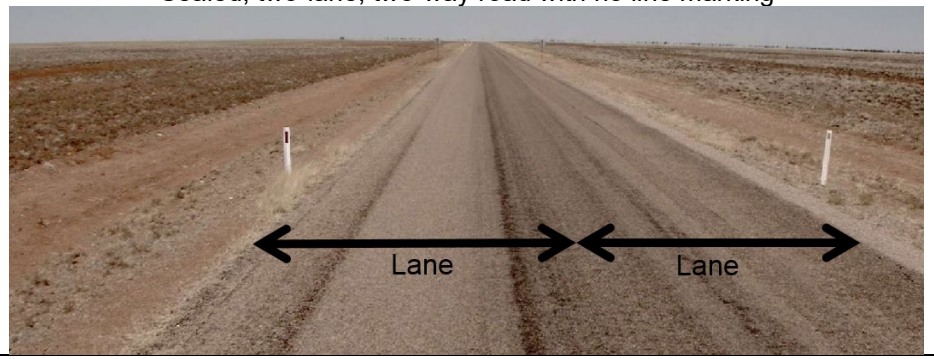
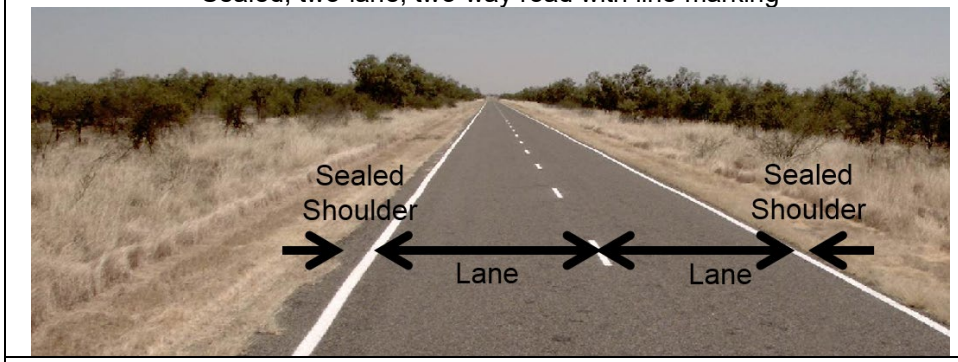
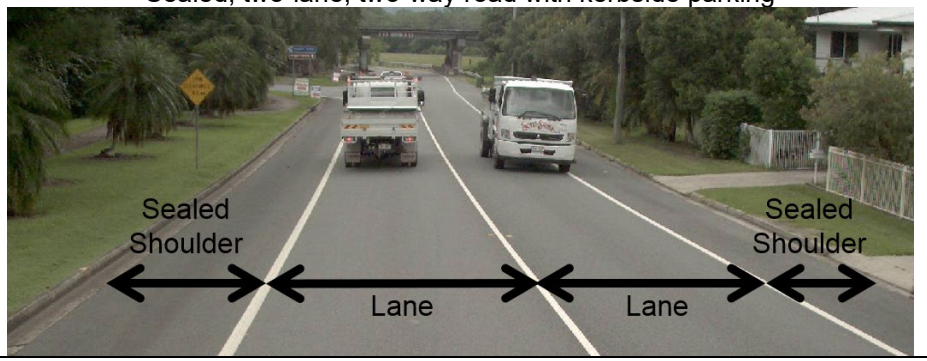
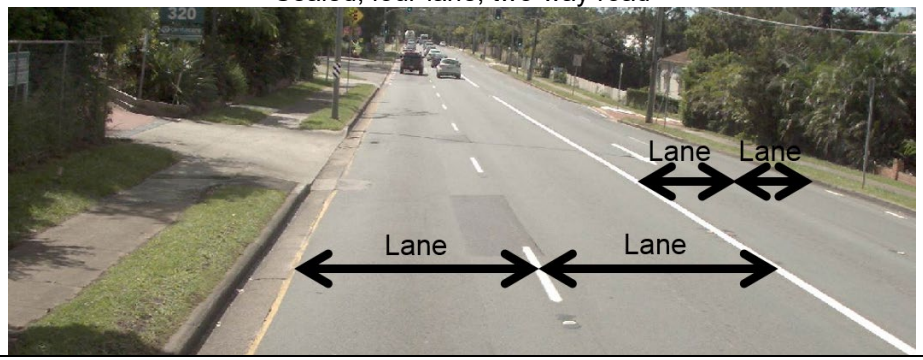
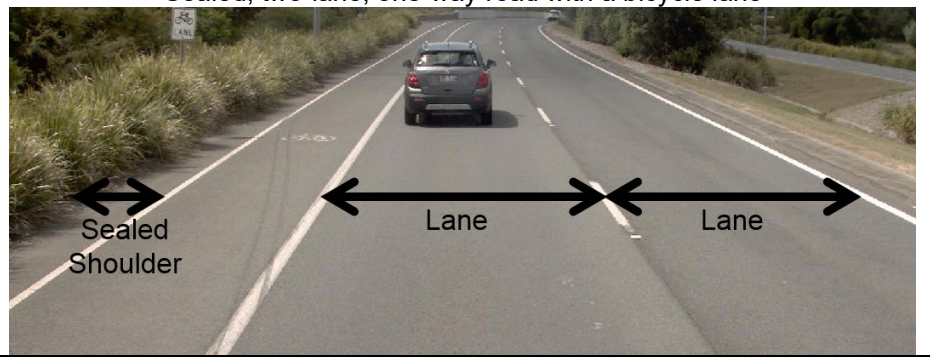
Category	Risk Score
18,000+ veh/day	3.4
12,000 to <18,000 veh/day	3.0
6,000 to <12,000 veh/day	2.2
1,000 to <6,000 veh/day	1.4
<1,000 veh/day	1.0

Appendix A - Example Photos for Alignment, Carriageway Width and Roadside Hazards

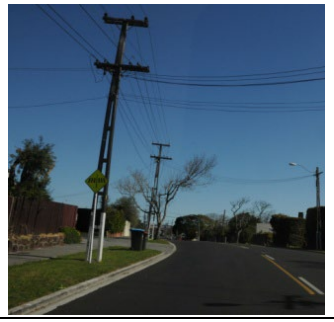
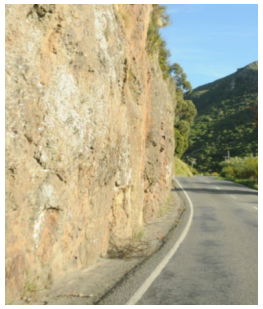
Alignment

Example Photos	
Straight	Curved
	

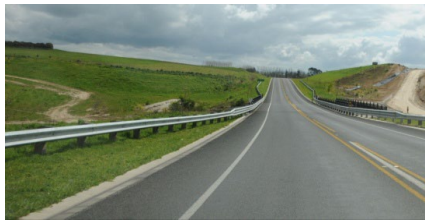
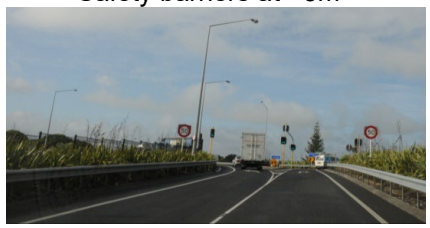
Carriageway Width

Example Photos	
Unsealed, two-lane, two-way road 	Sealed, two-lane, two-way road with no line marking 
Sealed, two-lane, two-way road with line marking 	Sealed, two-lane, two-way road with kerbside parking 
Sealed, four-lane, two-way road 	Sealed, two-lane, one-way road with a bicycle lane 

Roadside Hazard Risk

Category	Example Photos				
Severe	Deep ditches >1m deep at <5m 	Trees at <5m 	Non-frangible poles at <5m 	Deep ditches >1m deep at <5m 	Aggressive vertical face at <5m 
High	Roll over slow (<15° and >1m high) at <5m   				Drop off water hazard at 5-10m 
Moderate	Semi-rigid structures / buildings at <5m 	Trees at 5-10m 	Rigid structures / buildings at 5-10m 		Car parking at <5m 

Roadside Hazard Risk *(continued)*

Category	Example Photos
Minor	Safety barriers at <5m    Semi-rigid structures / buildings at 5-10m 
Low	Low severity property damage hazards (lightweight structures, small trees and so on.) within 10m   

Appendix B - Site Inspection Checklist

Infrastructure Risk Rating – Site Inspection Checklist

Road Name / Description of Section (start and end)

Road Stereotype

	Category	Description
☐	Unsealed	Any road that is unsealed
☐	Two lane undivided	An undivided road with one lane in each direction
☐	Multi-lane undivided	An undivided road with more than one lane in each direction. Includes roads with two lanes in one direction and one lane in the other direction.
☐	Divided-traversable	Divided road with a traversable median. A divided road with a traversable median has features that prevent vehicle movements across the median but will not stop an out of control vehicle from crossing the median. Traversable medians include kerb islands between opposing traffic flows.
☐	Divided – non traversable	Divided road with a non-traversable median. A divided road with a non-traversable median will stop an out of control vehicle from crossing the median and typically has a safety barrier between opposing traffic flows.
☐	One way	One way streets

Additional Notes:

Alignment

	Category	Description
☐	Tortuous	Consecutive curves and numerous sharp curves (typical radii of 350m to 500m) and very sharp curves (typical radii <350m). Can generally be driven at less than 75 km/h for rural roads.
☐	Winding	Many consecutive curves and sharp curves (typical radii of 350m to 500m). Can generally be driven at 75 to 85 km/h for rural roads.
☐	Curved	Moderate curves (typical radii of 500m to 1500m). Can generally be driven at 85 to 100 km/h for rural roads. Some straight sections or isolated curves may be present.
☐	Straight	Straight or gently curved (typical radii of >1500m). Can generally be driven at 100 km/h or more for rural roads.

Notes:

Alignment is categorised based on the degrees of turn per km and should therefore be based on plans or aerial photography. However, a general perception of the alignment of the road corridor can be recorded during a site inspection based on the descriptions provided.

Additional Comments:

Carriageway Width

Category	Measurement						
Lane Width (m)	.....	.....	.....	.....	.....	.....	.....
Shoulder Width (m)	.....	.....	.....	.....	.....	.....	.....

Notes:

1. Cycle lanes and other special vehicle lanes, such as bus lanes, should be ignored for both lane width and sealed shoulder width.
2. For unsealed roads or roads with no marked centreline, the lane widths are estimated using judgement to determine the number of lanes based on travelled vehicle paths.
3. The sealed shoulder width is measured from the centre of the painted edgeline to the unsealed surface. If the edge of seal begins to break up on the shoulder, the sealed shoulder width should be measured up to where the edge break occurs.
4. Roadside parking should be coded as shoulder.
5. For divided roads, the left-hand shoulder width is measured.
6. For undivided roads, the lesser (minimum) of the left and right-hand shoulder width is measured.

Additional Comments:

Land Use

	Category	Description
☐	Commercial strip shopping	Numerous shops facing the street-front with high levels of pedestrian and cyclist activity. High occupancy on-street parking present resulting in many vehicle movements to and from the road. Regular intersections and accesses will also be present.
☐	Commercial / big box industrial	Large (big box) shops and/or industry/factories with intermittent accesses leading to large off-street parking areas. Regular intersections and some pedestrian and cyclist activity may be present.
☐	Urban residential	Urban residential area dominated by housing with frequent driveways and on-street parking. Regular intersections are likely to be present. Pedestrian and cyclist activity is also likely, particularly at certain times of the day.
☐	Rural town	Rural town with mixture of residential activity and some shops or a low density urban road on the outskirts of an urban centre. Some intersections and accesses are likely to be present. Some pedestrian and cyclist activity may also be present.
☐	Controlled Access	Road with roadside development and controlled access, such as an urban highway or arterial where there are few accesses to the road, e.g. as a result of a service road. Some pedestrian and cyclist activity may be present but with few crossing movements.
☐	Rural residential	Rural area with accesses present to private dwellings and farms. There may be the occasional industry/ factory present. Some pedestrian and cyclist activity may also be present, particularly at certain times of the day, but with few crossing movements.
☐	Remote Rural	Only occasional accesses and intersections are present. Surrounding land is rural with few houses and almost no industry.
☐	No Access (motorway / freeway)	No accesses or at grade intersections are present and pedestrians and cyclists are not allowed, e.g. motorway.

Additional Comments:

Road side Hazard

	Category	Description	Example Hazards
☐	Severe	• Aggressive/severe continuous hazards and cliffs, within 5m* OR • 20+ non-frangible point hazards per kilometre (1+ per 50m) or rigid structures/ bridges/ buildings, within 5m	Aggressive/severe continuous hazards can include: • Aggressive vertical faces • Deep drainage ditches • Cliffs with steep or high drop offs, and/or deep water, that would result in death regardless of speed Examples of non-frangible point hazards include: • Trees, signs, posts, poles >=10cm diameter • Large boulders (>=20cm diameter) • Unprotected barrier ends
☐	High	• Cliffs or deep water at 5m to <10m* • Roll-over up-slopes and downslopes (e.g. >15^0 and >1m high) at <5m*	
☐	Moderate	• Aggressive/severe and moderate continuous hazards at 5m to <10m, excluding cliffs and deep water* OR • 20+ non-frangible point hazards per kilometre (1+ per 50m) or rigid structures/ bridges/ buildings at 5m to <10m OR • Car parking or semi-rigid structures or buildings at <5m*	Aggressive/severe and moderate continuous hazards can include: • Aggressive vertical faces • Deep drainage ditches • Roll-over up-slopes and downslopes (e.g. >15^0 and >1m high) Non-frangible point hazards can include: • Trees, signs, posts, poles >=10cm diameter • Large boulders (>=20cm diameter) • Unprotected barrier ends
☐	Minor	• Metal and concrete safety barriers at <5m* • Car parking or semi-rigid structures or buildings at 5m to <10m*	
☐	Low	• Metal and concrete safety barriers at 5m+* • Low severity property damage hazards at any distance* • All hazards at >=10m*	Low severity property damage hazards can include: • Kerbs • Wire-rope barriers • Level and safe slopes (<=15^0 and <=1m high) with no hazards • Frangible trees, posts, poles <10cm diameter

Additional Comments:

Intersection Density

# of Intersections:	

Additional Comments:

Access Density

# of Accesses:	

Additional Comments:
