

ROAD SAFETY INSPECTION

Wingebellup Road and Poison Hill Road Intersection



Inspection Ref: PTS/RSB/RSI/PS/2023/009

Prepared for:

Shire of Cranbrook

By:

Road Safety Branch

Main Roads Western Australia

Report Issue Date: **6/07/2023**

Road Safety Inspection Document Control Sheet

Project Location:	Wingebellup Road and Poison Hill Road Intersection
Prepared for:	Shire of Cranbrook
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Inspection Team Leader Organisation:	Main Roads Western Australia
Inspection Reference:	PTS/RSB/RSI/PS/2023/009
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1. INTRODUCTION

1.1 Scope of the Inspection

A Road Safety Inspection is a formal examination of an existing road or road related area in which an independent, qualified team report on the crash potential and likely safety performance of the location. (Formerly known as an 'Existing Road Safety Audit')

This Road Safety Inspection has been conducted following the general principles detailed in *Austroads Guide to Road Safety Part 6: Road Safety Audit*

This report results from a request for a Road Safety Inspection to be conducted at Wingebellup Road and Poison Hill Road Intersection .

The background and objective of the inspection is there have been concerns raised by Council and others that this intersection has restricted sightlines and as such has been the subject of a number of 'near miss' events involving vehicles entering Wingebellup Road from Poison Hill Road.

The Road Safety Inspection was undertaken by Paul Starling of Main Roads Western Australia with reference to the details provided by the client.

The Road Safety Inspection comprised an examination of the area identified by Shire of Cranbrook .

All the findings described in Section 2 of this report are considered by the inspection team to require action in order to improve the safety of the existing road environment and to minimise the risk of crash occurrence and reduce potential crash severity.

The inspection team has examined and reported only on the road safety implications of the road infrastructure as presented.

1.2 The Inspection Team

Auditor No.	Name	Role	Organisation
702(S)	Paul Starling	Inspection Team Leader	Main Roads Western Australia
311(A)	Alan Millar	Inspection Team Member	City of Albany
952(T)	David Elliott	Inspection Team Trainee	City of Albany

The inspection team visited the site on 19/06/2023 at 1400hrs. At the time of the site visit the weather was fine and the existing road surface was dry.

A night-time site visit was undertaken on 19/06/2023 at 1815hrs.

1.3 Specialist Advisors

There were no specialist advisors present for this inspection

1.4 Safe System Findings

The aim of Safe System Findings is to focus the Road Safety Inspection process on considering safe speeds and by providing forgiving roads and roadsides. This is to be delivered through the Road Safety Inspection process by accepting that people will always make mistakes and by considering the known limits to crash forces the human body can tolerate. This is to be achieved by focusing the Road Safety Inspection on particular crash types that are known to result in higher severity outcomes at relatively lower speed environments to reduce the risk of fatal and serious injury crashes.

The additional annotation **“IMPORTANT”** shall be used to provide emphasis to any Road Safety Inspection finding that has the potential to result in fatal or serious injury, or findings that are likely to result in the following crash types above the related speed environment: head-on (>70 km/h), right angle (>50 km/h), run off road impact object (>40 km/h), and crashes involving vulnerable road users (>30 km/h), as these crash types are known to result in higher severity outcomes at relatively lower speed environments.

The exposure and likelihood of crash occurrence shall then be considered for all findings deemed **“IMPORTANT”** and evaluated based on an auditors professional judgement. Auditors should consider factors such as, traffic volumes and movements, speed environment, crash history and the road environment, and apply road safety engineering and crash investigation experience to determine the likelihood of crash occurrence. The likelihood of crash occurrence shall be considered either **“VERY HIGH”**, **“HIGH”**, **“MODERATE”** or **“LOW”** and this additional annotation shall be displayed following the **“IMPORTANT”** annotation on applicable findings.

1.5 Previous Road Safety Inspections

No previous Road Safety Audits or Inspection details known.

1.6 Background Data

1.6.1 Crash History

A study of the recent crash history has been conducted in the location considered in the inspection for the five-year period to the end of December 2022. This showed that there were 0 reported crashes within the extracted data which is summarised below:

A summary of recent traffic data is provided below:

Location	Vehicles per day (% heavy vehicles)	Date	Source
Wingebellup Road	182 (29%)	November 2021	Shire

A summary of recent speed data is provided below:

Location	Average Speed (km/h)	85 th Percentile Speed (km/h)	Date	Source
Speed Data not provided	-----	-----	-----	-----

1.6.2 Appendices

- Appendix A – Road Safety Inspection Findings Location Plan
- Appendix B – Road Safety Inspection Photographs
- Appendix C – Crash Reports
- Appendix D – Corrective Action Report (CAR)

2. ITEMS RAISED IN THIS ROAD SAFETY INSPECTION

2.1 Finding – Insufficient Safe Intersection Sight Distance Wingebellup Road for traffic entering from Poison Hill Road.

A Concealed Driveway advisory sign situated to the east of the intersection of Poison Hill Road partially obscures sight distance for drivers entering Wingebellup Rd.

2.2 *Justification of the finding:*

There is a risk of vehicles failing to give way whilst exiting the intersection which could result in right angle crashes.

A Concealed Driveway ahead advisory sign located on the northern verge east of the intersection on Poison Hill Road partially restricts sightlines to 45 m for vehicles entering Wingebellup Road.

Austrorads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections indicates that Safe Intersection Sight Distance is the minimum distance which should be provided on the major road at any intersection. Using an operating speed of 60 km/h and reaction time of 2.0 seconds the required Safe Intersection Sight Distance is 123 m measured 7.0 m back from the conflict point on the side road.

Australian Standards AS1742.2.2022 states that a Concealed Driveway sign may be used on approach to a single private property driveway where a vehicle entering or leaving a road from, or into, the driveway cannot be seen by a driver approaching the driveway for a distance less than the stopping sight distance for the corresponding 85th percentile speed of approaching traffic. Using an operating speed of 60 km/h and reaction time of 2.0 seconds the required Safe Intersection Approach Distance is 73m.

Recommendation

The Concealed Driveway sign should be relocated or removed if no longer required to provide adequate Safe Intersection Sight Distance in accordance with Austrorads Guidelines.

[IMPORTANT | LOW]

2.2 Finding – Insufficient Guide Posts on curve Wingebellup Road

There are insufficient guide posts on the southern verge of Wingebellup Road throughout the curve between Booka Street and Poison Hill Road to provide sufficient delineation, particularly for night time.

Justification of the finding:

There is a risk that drivers may not react to the curve due to lack of visual clues as to the road geometry especially at night resulting in run off road type crashes

Guide posts are non existent on the approach or throughout the curve on the southern verge to adequately delineate the inside of the curve.

Australian Standard 1742.2-2009: Traffic Control Devices for General Use indicates for curved sections with 300 – 399 m radius, guide posts should be spaced at 20 m on the outside and 40 m on the inside throughout the curve.

Austrorads Guide to Road Design Part 6B: Roadside Environment indicates guide posts provide guidance of the road alignment ahead for drivers, particularly during hours of darkness.

Austrorads Guide to Road Design Part 6 (2018): Roadside Design, Safety and Barriers indicate provision of guide posts is rated medium as an effective treatment for off path crash types.

Recommendation

Guide posts should be installed through the curve in accordance with Australian Standards.

[IMPORTANT | LOW]

2.3 Finding – Pavement Condition – Flushing and polishing

The road surface between Poison Hill Road on Wingebellup Road and 80m to the west on both carriageways has surface flushing and polishing.

Justification of the finding:

There is a risk that drivers could lose control whilst negotiating the curve on the approach to Poison Hill Road resulting in a run off road or right angle crash as a result of reduced braking performance especially in wet conditions.

Worn pavement can lead to reduced skid resistance, thereby causing loss of traction and affect braking performance, particularly on curved sections during wet conditions.

Austroads Guide to Road Design Part 6 (2018): Roadside Design, Safety and Barriers indicate road resurfacing is rated medium as an effective treatment for off path on curve crash types.

Recommendation

The road surface should be repaired to eliminate flushing and polishing in accordance with Austroads guidelines.

[IMPORTANT | LOW]

2.4 Finding – Speed Limit change part way through curve Wingebellup Road

The speed limit on Wingebellup Road changes from 90km/h to 60km/h approximately 50m west of the intersection of Poison Hill Road. This speed change occurs within a 350m radius curve.

Justification of the finding:

There is a risk that drivers may not observe or immediately comply with the lower speed environment resulting in high-speed right angle crashes involving vehicles travelling from the west on Wingebellup Road with vehicles exiting from Poison Hill Road.

There is a further risk that drivers may lose control due to combination of braking and negotiating the curve as they are travelling downhill and especially in wet conditions resulting in run off road type crashes

Australian Standard 1742.4-2008: Speed Controls indicates a change from a lower to a higher zoned speed limit should be avoided in advance of a section of low-speed value alignment. The lower limit should be carried through or past the section.

Recommendation

The existing 60km/h speed zone should be extended approximately 250m further to the west to provide adequate distance prior to the curve and intersecting road in accordance with Australian Standards.

[IMPORTANT | LOW]

2.5 Finding – Non recoverable embankment located on outside of curve

A steep unprotected embankment with a batter slope of 3:1 is located to the east of the intersection of Wingebellup and Poison Hill Road.

.Justification of the finding:

There is a risk that an errant vehicle may leave the travel way and travel down the embankment and rollover or hit trees located at the bottom of the embankment.

Austroads Guide to Road Design Part 6 (2018): Roadside Design, Safety and Barriers indicate fill batters greater than 1.0 m in height and steeper grade than 3:1 require a treatment to protect errant vehicles. Treatment of the hazard through flattening of batters where practical or protection by safety barriers should be evaluated.

Recommendation

Suitable protection for errant vehicles should be provided in accordance with Austroads guidelines.

[IMPORTANT | LOW]

2.6 Finding – Non-Crashworthy crash barrier terminals Frankland River Bridge

The leading and trailing ends of the crash barrier situated on Wingebellup Road across the Franklin River Bridge have non-crashworthy barrier terminals installed.

Justification of the finding:

There is a risk that when vehicles collide with non-crashworthy barrier terminals the barrier may penetrate the occupant space, or the vehicle may be launched and rollover which can have serious consequences for vehicle occupants.

Austroads Guide to Road Design Part 6 (2018): Roadside Design, Safety and Barriers indicates that once a barrier has been located longitudinally and laterally to accommodate dynamic deflection and sight distance, suitable leading and trailing terminal treatments must be selected.

Recommendation

Crashworthy barrier terminals should be installed in accordance with Austroads guidelines.

3. ROAD SAFETY INSPECTION TEAM STATEMENT

I hereby certify that the inspection team have examined the identified location in undertaking this Road Safety Inspection. I also confirm that this inspection has been conducted following the general principles detailed in *Austroads Guide to Road Safety Part 6: Road Safety Audit*

The inspection has been carried out for the sole purpose of identifying any features of the existing road environment which could be altered or removed to improve the safety of the road infrastructure. The identified issues have been noted in this report. The accompanying findings and recommendations are put forward for consideration by the asset owner for implementation.

Inspection Team Leader

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Paul Starling

Signature

6/07/2023

Date

Disclaimer

This report contains findings and recommendations based on examination of the site and/or relevant documentation. The report is based on the conditions viewed on the day of inspection and is relevant at the time of production of the report. Information and data contained within this report is prepared with due care by the Road Safety Inspection Team. While the Road Safety Inspection Team seeks to ensure accuracy of the data, it cannot guarantee its accuracy.

Readers should not solely rely on the contents of this report or draw inferences to other sites. Users must seek appropriate expert advice in relation to their own particular circumstances.

The Road Safety Inspection Team does not warrant, guarantee or represent that this report is free from errors or omissions or that the information is exhaustive. Information contained within may become inaccurate without notice and may be wholly or partly incomplete or incorrect. Before relying on the information in this report, users should carefully evaluate the accuracy, completeness and relevance of the data for their purposes.

Subject to any responsibilities implied in law which cannot be excluded, the Road Safety Inspection Team is not liable to any party for any losses, expenses, damages, liabilities or claims whatsoever, whether direct, indirect or consequential, arising out of or referable to the use of this report, howsoever caused whether in contract, tort, statute or otherwise.

APPENDIX A

ROAD SAFETY INSPECTION FINDING'S LOCATION PLAN

Inspection Findings Location Plan



APPENDIX B

ROAD SAFETY INSPECTION PHOTOGRAPHS



3.1 Finding 2.1 – Insufficient Safe Intersection Sight Distance Wingebellup Road for traffic entering from Poison Hill Road.



Finding 2.2 – Insufficient Guide Posts Wingebellup Road



Finding 2.3 – Flushing and Polishing of the Road Surface



Finding 2.4 – Speed Limit change within the curve



Finding 2.5 - Non recoverable embankment located on outside of curve



Finding 2.6 – Non-Crashworthy barrier terminals

APPENDIX C

CRASH REPORTS

No Crash Data

APPENDIX D

CORRECTIVE ACTION REPORT

Corrective Action Report – Wingebellup Road and Poison Hill Road Intersection Road Safety Inspection

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
2.1 – Finding – Insufficient Safe Intersection Sight Distance Wingebellup Road for traffic entering from Poison Hill Road. Insufficient Safe Intersection Sight Distance Wingebellup Road for traffic entering from Poison Hill Road.	Choose an item.		
Recommendation The Concealed Driveway sign should be relocated or removed if no longer required to provide adequate Safe Intersection Sight Distance in accordance with Austroads Guidelines. [IMPORTANT LOW]	Choose an item.		

2.2 – Finding - Insufficient Guide Posts on curve Wingebellup Road	Choose an item.		
Recommendation Guide posts should be installed through the curve in accordance with Australian Standards. [IMPORTANT LOW]	Choose an item.		
2.3 – Finding - Pavement Condition Flushing and polishing The road surface between Poison Hill Road on Wingebellup Road and 80m to the west on both carriageways has surface flushing and polishing.	Choose an item.		
Recommendation The road surface should be repaired to eliminate flushing and polishing in accordance with Austroads guidelines. [IMPORTANT LOW]	Choose an item.		
2.4 – Finding - Speed Limit change part way through curve Wingebellup Road The speed limit on Wingebellup Road changes from 90km/h to 60km/h approximately 50m west	Choose an item.		

of the intersection of Poison Hill Road. This speed change occurs within a 350m radius curve.			
Recommendation The existing 60km/h speed zone should be extended approximately 250m further to the west to provide adequate distance prior to the curve and intersecting road in accordance with Australian Standards. [IMPORTANT LOW]	Choose an item.		
2.5 – Finding - Non recoverable embankment located on outside of curve An unprotected embankment with a batter slope of 3:1 is located to the east of the intersection of Wingebellup and Poison Hill Road.	Choose an item.		
Recommendation Suitable protection for errant vehicles should be provided in accordance with Austroads guidelines. [IMPORTANT LOW]	Choose an item.		

2.6 – Finding – Non-Crashworthy crash barrier terminals Frankland River Bridge The leading and trailing ends of the crash barrier situated on Wingebellup Road across the Franklin River Bridge have non-crashworthy barrier terminals installed.	Choose an item.		
Recommendation Crashworthy barrier terminals should be installed in accordance with Austroads guidelines.	Choose an item.		

Corrective Action Report - Wingebellup Road and Poison Hill Road Intersection Road Safety Inspection

NOTE:

- This Corrective Action Report is to be read in conjunction with the full Road Safety Inspection Report and its findings and recommendations.
- The asset owners (MRWA and/or LGA) **must** be informed of these findings, recommendations and proposed actions.
- Items not under the responsibility of this project representative must be forwarded to the persons / agencies who are responsible.

These findings and recommendations have been considered, and the actions listed will be taken accordingly.

Responsible Project Representative	Company / Agency / Division	Position	Date

Asset Owner Representative	Company / Agency / Division	Position	Date