



## **Henty Road, Burekup WA**

### **Road Improvements between 0.04 - 11.61 Sk.**

## **Road Safety Audit**

### **Stage 3 - Detailed Design**

**Audit Ref: bbc2025.315.02**

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Report Issue Date: **11/10/2025**

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## **1. INTRODUCTION**

### **1.1 Scope of Audit.**

A Road Safety Audit is a formal, systematic assessment of the potential road safety risks associated with a new road project or road improvement project conducted by an independent, qualified audit team. The assessment considers all road users and suggests measures to eliminate or mitigate any risks identified by the audit team.

This Road Safety Audit has been conducted following the general principles detailed in *Austrroads Guide to Road Safety Part 6 Managing Road Safety Audits and 6A Implementing Road Safety Audit* in accordance with the requirements contained in the Main Roads Western Australia Policy and Guidelines for Road Safety Audit.

This report results from a Stage 3 Detailed Design Road Safety Audit undertaken on the proposed road improvements on Henty Road, between 0.04 - 11.61 SIK.

The background and objectives of the proposed project are to improve the safety of traffic using the road. The audit was undertaken by Brad Brooksby of Brad Brooksby Consulting with reference to the details provided in the Audit Brief.

The audit comprised an examination of the information supplied by Nathan Ryder from the Shire of Dardanup as listed in Appendix D.

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

The audit team has examined and reported only on the road safety implications of the project as presented. It has not examined or verified the compliance of the design with any other criteria.

### **1.2 The Audit Team.**

<b>Auditor No.</b>	<b>Name</b>	<b>Role</b>	<b>Organisation</b>
158 (S)	Bradley Brooksby	Audit Team Leader	Brad Brooksby Consulting
951 (A)	Andrew Coulson	Audit Team Member	Shire of Dardanup

The audit team visited the site on the 1<sup>st</sup> of October 2025 between 16:30 and 19:45. The weather was cool and the existing road surface was dry at the time of the site visit. A night site inspection was undertaken at the same site visit.

### **1.3 Specialist Advisors.**

Shahin Mahmud from the Shire of Dardanup attended the site inspection and provided local knowledge for the proposal.

#### 1.4 Safe System Findings.

Safe System Findings aims to focus the Road Safety Audit process on considering safe speeds and providing forgiving roads and roadsides. This is to be delivered through the Road Safety Audit process by accepting that people will always make mistakes and by considering the known limits to the crash forces the human body can tolerate. This is to be achieved by focusing the Road Safety Audit 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 audit 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 auditor’s 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 (Utilising Table 4.4: Safe System matrix scoring system from Austroads Safe System Assessment Framework – 2016).

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 Safety Audits.

A search of the Road Safety Audit portal for Henty Road showed one result.

Date of Audit 26/08/2025      Detailed Design

The audit team is aware of this audit and its findings.

No previous Road Safety Audits have been undertaken or have been found.

#### 1.6 Crash History.

A study of the recent crash history has been conducted for the Shire of Dardanup for the most current five-year period to the end of December 2024. There have been five reported crashes along Henty Road.

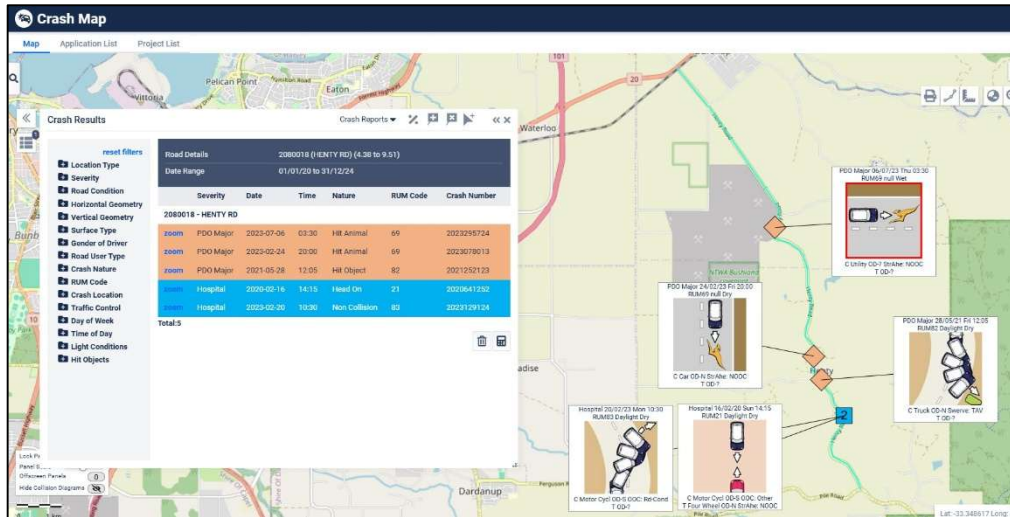


Figure 1 - Crash Map from the Main Roads WA website.

**Henty Road 0.04 – 11.61 SIK.**

- SIK 4.38 RUM 69 Hit Animal – A Utility travelling southbound at 03:30 (Dark Conditions) in Jul 2023 in wet conditions hit a cow resulting in a Property Damage severity crash.
- SIK 7.85 RUM 69 Hit Animal – A Car travelling southbound at 20:00 (Dark Conditions) in Jan 2023 in dry conditions hit a kangaroo resulting in a Property Damage severity crash.
- SIK 8.49 RUM 82 Off Path on Curve – A Truck travelling southbound at 12:05 (Light Conditions) in May 2021 in dry conditions swerved to avoid a vehicle, lost control, and hit a tree, resulting in a Property Damage severity crash.
- SIK 9.51 RUM 21 Head On – A Four Wheel Drive travelling southbound at 14:15 (Light Conditions) in February 2020 in dry conditions approached a group of 6 Motor Cycles travelling northbound at speed on the wrong side of the road around a tight corner with one Motor Cycle being hit resulting in a Hospital severity crash.
- SIK 9.51 RUM 83 Off Path on Curve – A Motor Cycle travelling northbound at 10:30 (Light Conditions) in February 2023 in dry conditions came across gravel on the sealed road pavement, lost control and hit a fence resulting in a Hospital severity crash.

The Shire of Dardanup had 229 recorded crashes on Shire maintained roads for the current 5-year period.

- 23 (10.0%) of these crashes were Off Path type crashes that resulted in 6 Hospitalizations, 2 Medical and 15 Property Damage severity.
- 14 (8.6%) of these crashes were Hit Animal that resulted in 3 Medical and 11 Property Damage severity.

- 7 (3.0%) of these crashes were Head On that resulted 1 Hospital and 10 Property Damage severity.
- 110 (48.0%) of these crashes were Intersection type crashes that resulted in 12 Hospitalizations, 19 Medical and 79 Property Damage severity.

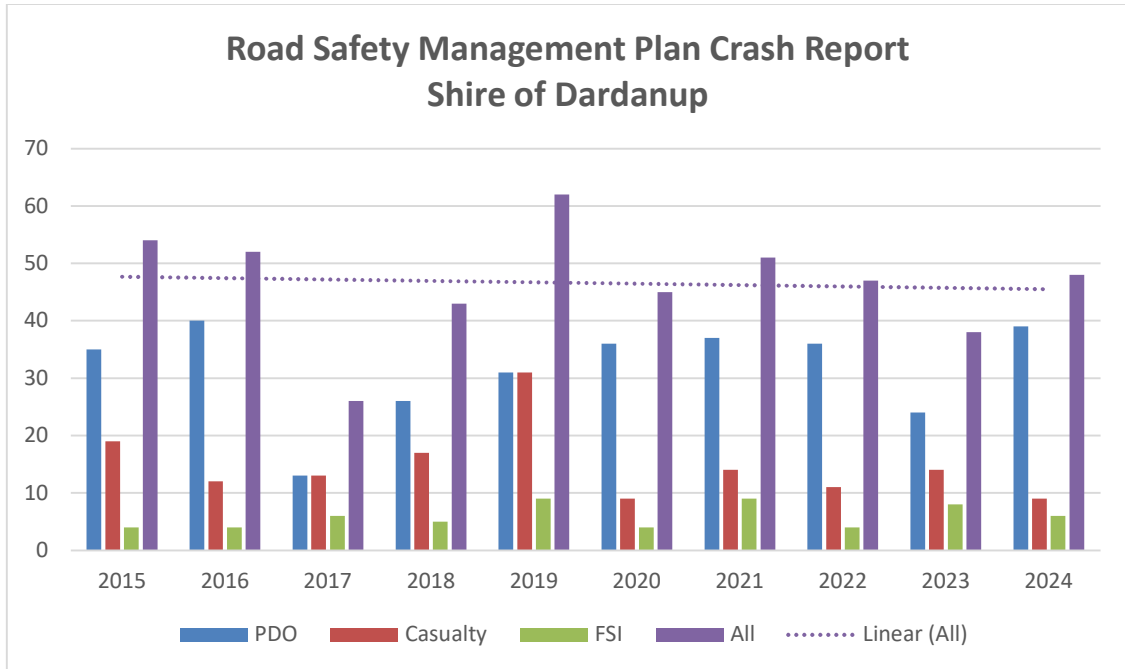


Figure 2 - Graph of recorded crashes with trendline.

The Shire has a low quantity of crashes but a high severity outcome for Off Path crashes. The trendline for all crashes is reducing over time.

**1.7 Traffic and Speed Data.**

The road is not speed zoned. The northern sections of the road has long straights, it is estimated that road users would travel at 100 km/h, and the southern sections where there are numerous vertical and horizontal curves, it is estimated that road users would travel at 70 – 80 km/h. Traffic counts available from the Shire during December 2023 at Slk 6.35 showed 269 vehicles per day with 20% heavy vehicles, with an 85-percentile speed of 99.72 km/h. The peak am traffic was 10:00 - 11:00 with 31 vehicles and the pm peak was closely followed between 12:00 - 13:00 with 27 vehicles.

**1.8 Road Details.**

Henty Road (Road Number 2080018) runs north south starting at South Western Highway and ending at Slk 11.61 at Pile Road. The road services farming properties with some having Farm Stay, Bed and Breakfast etc. The road follows the Henty Brook and has scenic views of the valley with sweeping curves and hilly topography with many horizontal and vertical curves.

The section of road reviewed in this report is a single carriageway with an aggregate sealed surface of 6.4 m with gravel shoulders of approximately 1.0 m in width. The sealed pavement has a painted centre line only in the southern section and is delineated with guide posts.

There are numerous horizontal curves which have warning signage, some with advisory speed. There are several trees close to the road but generally trees and culverts were 3 – 4 m from the edge of the shoulder. The verge batters are generally steep and are 1:1 in several locations.

**1.9 RAV Route.**

Henty Road is not a Restricted Access Vehicle (RAV) route.

**1.10 Restricted Structures.**

There is a narrow bridge No 2080018 at 3.38 Slk Henty Road with a 14-ton load limit.

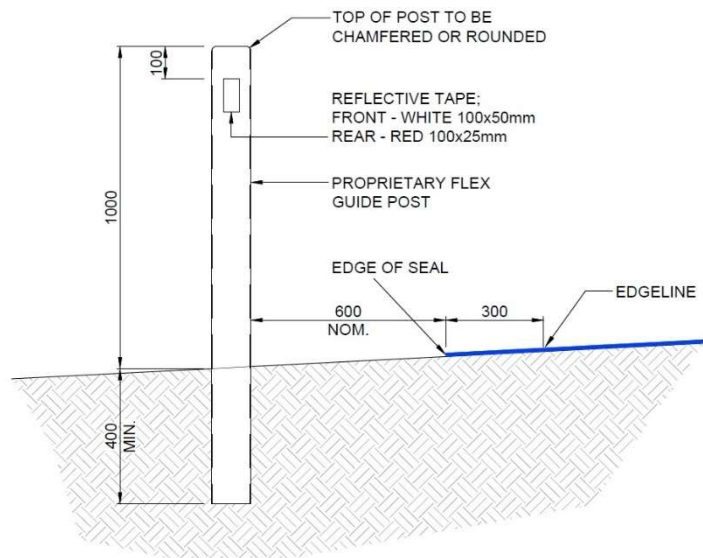
**1.11 Road Upgrade – Rural.**

The design proposal is to achieve a sealed traffic lane of 3.3 m with a shoulder of 0.9 m, of which 0.3 m is sealed.

GUIDE POST NOTES:

1. GUIDE POST DELINEATORS SHALL BE PLACED WITH RED ON THE L.H.S. AND WHITE ON THE R.H.S. AS SEEN BY THE APPROACHING TRAFFIC.
2. U.N.O. GUIDE POSTS SHALL BE INSTALLED AT 150m MAX. CTS. ON STRAIGHT ROADS AND 30m MAX. CTS. TO CURVES STARTING AT THE TANGENT POINT. ADDITIONALLY INSTALL GUIDE POSTS EACH SIDE OF CROSSOVERS AND KERB TERMINALS. GUIDEPOSTS TO BE WHITE IN COLOUR.
3. BLUE GUIDE POSTS ARE TO BE USED TO MARK THE LATERAL LOCATIONS OF CULVERTS.
4. GUIDE POSTS TO BE INSTALLED IN STRICT ACCORDANCE WITH AS 1742.2.

NOTE:  
EXISTING GUIDEPOSTS ARE TO BE STOCKPILED AND RE-USED WHEREVER POSSIBLE.



TYPICAL GUIDE POST DETAIL

**Figure 3 - Detail of Edge Widening.**

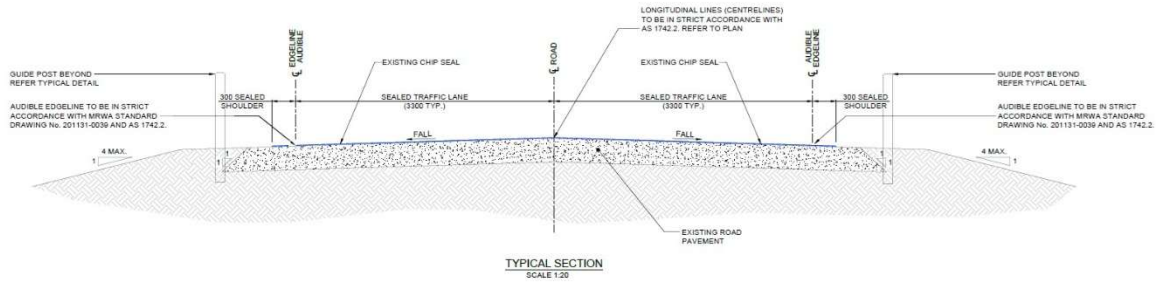


Figure 4 – Typical Road Section.

### 1.12 Horizontal Curve Radius.

Using Crash Map, the following horizontal curves are estimated to have

- 4.2 – 4.3 SIk            220 m radius.
- 4.4 – 4.7 SIk            160 m radius
- 5.3 – 5.4 SIk            250 m radius
- 7.1 - 7.4 SIk            250 m radius
- 7.5 – 7.8 SIk            200 m radius
- 8.1 – 8.4 SIk            220 m radius.
- 8.4 – 8.6 SIk            125 m radius
- 9.4 – 9.6 SIk            120 m radius
- 10.3 – 10.6 SIk        150 & 120 m radius

### 1.13 Appendices.

- Appendix A – Location Plan
- Appendix B – Audit Photographs
- Appendix C – Crash Reports
- Appendix D – List of Documents Provided for the Audit
- Appendix E – Corrective Action Report (CAR)

**2. ITEMS RAISED IN THIS DETAILED DESIGN AUDIT**

**2.1 Finding – Proposed Width of Road.**

The desirable road pavement is 9.2 m, with 3.1 m traffic lanes and a 1.5 m shoulder on rural roads with low traffic volumes.

**Justification of the finding:**

A narrow shoulder may not allow an errant vehicle to sufficiently recover, resulting in an off-path crash.

Drivers also tend to shift closer to the road centre when there is a perception that a fixed hazardous object is too close to the edge of the traffic lane. When there is a perceived fixed hazard, there is a movement by the vehicle towards the opposite lane, which can result in head on crashes.

The design drawings show a proposed 3.3 m sealed traffic lane with a 0.3 m sealed shoulder and a 0.6 m gravel shoulder, a total road pavement width of 8.4 m.

For low traffic volumes of less than 500 vehicles per day, a narrower traffic lane can be acceptable. Table 4.5 below shows for traffic volumes below 500 vehicles per day, a traffic lane of 3.1 m and a shoulder of 1.5 m of which 0.5 m of the shoulder is sealed is acceptable, a total pavement width of 9.2 m. The traffic volume for Henty Road is about 270 vehicles per day. There are steep verge batters and large trees close to the edge of the shoulder.

Austrroads Guide to Road Design Part 3 - Geometric Design (2021) Section 4.2.6 Rural Road Widths provides guidance on the widths of road pavements.

**Table 4.5: Single carriageway rural road widths (m)**

Element	Design AADT				
	1–150	150–500	500–1000	1000–3000	> 3000
Traffic lanes <sup>(1)</sup>	3.7 (1 x 3.7)	6.2 (2 x 3.1)	6.2–7.0 (2 x 3.1/3.5)	7.0 (2 x 3.5)	7.0 (2 x 3.5)
Total shoulder	2.5	1.5	1.5	2.0	2.5
Minimum shoulder seal <sup>(2),(3),(4),(5),(6)</sup>	0	0.5	0.5	1.0	1.5
Total carriageway	8.7	9.2	9.2–10.0	11.0	12.0

1 Traffic lane widths include centrelines but are exclusive of edge-lines.  
 2 Where significant numbers of cyclists use the roadway, consideration should be given to fully sealing the shoulders. Suggest use of a maximum size 10 mm seal within a 20 km radius of towns.  
 3 Wider shoulder seals may be appropriate depending on requirements for maintenance costs, soil and climatic conditions or to accommodate the tracked width requirements for Large Combination Vehicles.  
 4 Short lengths of wider shoulder seal or lay-bys to be provided at suitable locations to provide for discretionary stops.  
 5 Full width shoulder seals may be appropriate adjacent to safety barriers and on the high side of superelevation.  
 6 A minimum 7.0 m seal should be provided on designated heavy vehicle routes (or where the AADT contains more than 15% heavy vehicles).

**Figure 5 - Single carriageway rural road widths (m).**

For a traffic volume of 270 vehicles per day with 20% heavy vehicles, the recommended width is a 3.1 m sealed traffic lane with a 1.5 m shoulder of which 0.5 m is sealed, a total road pavement width of 9.2 m should be achieved.

The design provides a suitable sealed pavement width of 7.5 m, but only a 0.3 m gravel shoulder which is 1.1 m narrower than the 9.2 m road pavement recommended. The widening of the sealed surface may result in road users travelling faster as the road pavement will appear wider.

Of the five recorded crashes along Henty Road, three have been Off Path type crashes. Off path crashes can be reduced by providing a wide shoulder in good condition to allow the driver more time to recover the vehicle from the shoulder into the road.

### ***Recommendation***

The 0.3 m gravel shoulder width should be increased to 0.85 m gravel to allow the driver of an errant vehicle more time to recover the vehicle from the gravel shoulder back to the sealed traffic lane.

### **[IMPORTANT | MODERATE]**

## **2.2 Finding – Non-Frangible objects near the traffic lane.**

Several large trees and a culvert headwall are close to the traffic lane.

### ***Justification of the finding:***

There are several large trees and a culvert headwall which are close to the traffic lane that pose a risk to vehicle occupants in the event that an errant vehicle leaves the road.

Hazards close to the traffic lane should be removed or suitably protected from the impact of a vehicle. Austroads: Guide to Road Design Part 6 - Roadside Design Safety and Barriers (2022). “Previously, the clear zone concept was used to define the area beside the road to be evaluated for roadside safety. It was considered that hazards outside the clear zone were acceptable. This is no longer appropriate. The designer must consider all hazards in the road reservation and that a clear area is now considered a mitigating treatment option.”

The basic options include:

- installing barriers,
- installing audio-tactile line markings (ATLM),
- removing the hazard,
- improving the delineation of the road, and
- accepting the risk of the untreated hazard where the frequency of hitting the hazard and the severity are both low. In this case, the risk should be monitored.

Austroads Guide to Road Design Part 6: Roadside Design, Safety and Barriers (2022) provides authorities a process to determine Network Roadside Risk Intervention Threshold (NRRIT) and states “The use of an NRRIT between 1.5 and

2.0 is considered to be reasonable initially, until better information is obtained from the corridor safety vision and associated acceptable roadside cross-sections. A jurisdiction is free to choose any NRRIT.”

The charts provided in the Austroads Guide are dependent on traffic volume and speed, low traffic volumes will result in low NRRIT values. Figure D.1 Risk Score for undivided rural roads with significant background hazards at different offsets and for different operating speeds and road types. As an example, Chart 2 shows a risk score of 1.5 for a hazard offset of 1.0 m with 250 vehicles per day in a rural area at 90 km/h.

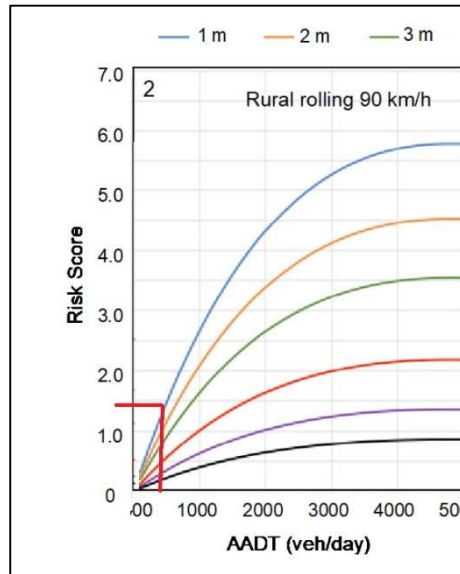


Figure 6 - Chart 2 from Austroads Guide to Road Design.

It should also be noted that road safety barriers also have a risk score when hit by an errant vehicle. Figure D.8, chart 24 shows a risk score of approximately 0.20 for 250 vehicles per day in a rural area at 90 km/h.

The Shire of Dardanup had 229 recorded crashes on Shire maintained roads for the current 5-year period. 23 (10.0%) of these crashes were Off Path type crashes that resulted in 6 Hospitalizations, 2 Medical and 15 Property Damage severity.

Providing a balance between errant vehicles hitting a non-frangible object without being seriously injured and environmental considerations needs to be considered.

If the hazards cannot be removed, then they should have additional delineation to guide the road user past the hazard.

In Western Australia, Main Roads' policies, guidelines and standards take precedence over Austroads Guides. Main Roads WA use the Guide to Road Design Part 6 - Roadside Design Safety and Barriers (2010), Table 4.1: Clear zone distances from the edge of the travelled way suggested a Clear Zone of 4.5 m for a road with less than 750 vehicles per day and an operating speed of 90 km/h.

***Recommendation***

The closest trees should be removed and hazards that cannot be removed should be delineated.

**[IMPORTANT | MODERATE]**

**2.3 Finding – Signs and Guide Posts.**

Several signs were in poor condition or obscured by vegetation and guide posts were missing.

***Justification of the finding:***

The inconsistent or inappropriate application of traffic signs can result in various crash types at various road layouts and locations.

The design drawings indicate that all signage and guide posts will be removed and replaced. Consideration could be given to placing Road Name tags on the major side road advance warning signage, to assist road users which are unfamiliar with the road.

The placement of Width Markers needs attention as the edge of the marker sign should align with the narrowest portion of the road.

The sight board on Pile Road, which defines the intersection for road users travelling southbound on Henty Road, does not align with the approach. The sign should be carefully aligned so approaching traffic can see the sign and slow down for the intersection, which may require the sign to be placed high on the verge.

The street name plate sign at 8.38 Slk is obscured by vegetation. The vegetation should be removed.

Numerous guide posts were missing, damaged or bent over. Guide posts assist the road user by indicating the alignment of the road ahead. The normal spacing of guide posts is 150 m in pairs, one on each side of the formation. This distance should be reduced when hazards cannot be removed, such as steep batters, steep table drains or non-frangible objects are close to the traffic lane.

The School Bus sign at 6.83 Slk is not detailed on the drawing, the sign is old and may not need to be replaced.

Culverts should have a minimum of one guide post located at the approach of the headwall. Where the headwall structure is greater than 5 m, then one at each end of the headwall should be installed.

***Recommendation***

The signage should be replaced and corrected.

Additional guide posts should be installed where hazards cannot be removed.

**[IMPORTANT | MODERATE]**

## 2.4 Finding – Railway Crossing.

The road pavement narrows at the railway crossing.

### **Justification of the finding:**

Railway crossings should avoid reduced road pavement widths. If this occurs, special attention should be given to the signing and marking as well as the rail crossing itself. Substandard geometric features can lead to increased numbers of crashes not involving trains as well as having an effect on the incidence of vehicle/train collisions.

The Australian Standard 1742.7 (2016) Manual of uniform traffic control devices Part 7 Railway crossings details the treatments when roads cross a railway.

At the site inspection, it was noted that the road pavement narrows at the railway crossing. There is no guidance for road users and tyre marks could be seen crossing the rail where there was no road pavement. Normally width markers would be positioned to guide road users.

The proposed widening of the road seal and traffic lane may increase the risk of road users running off the edge of the road pavement at the railway crossing.

The advance signage “Reduce Speed Now – Intersection Ahead” would indicate that road users have previously approached the railway crossing and intersection too fast, resulting in signage being placed as a mitigation.

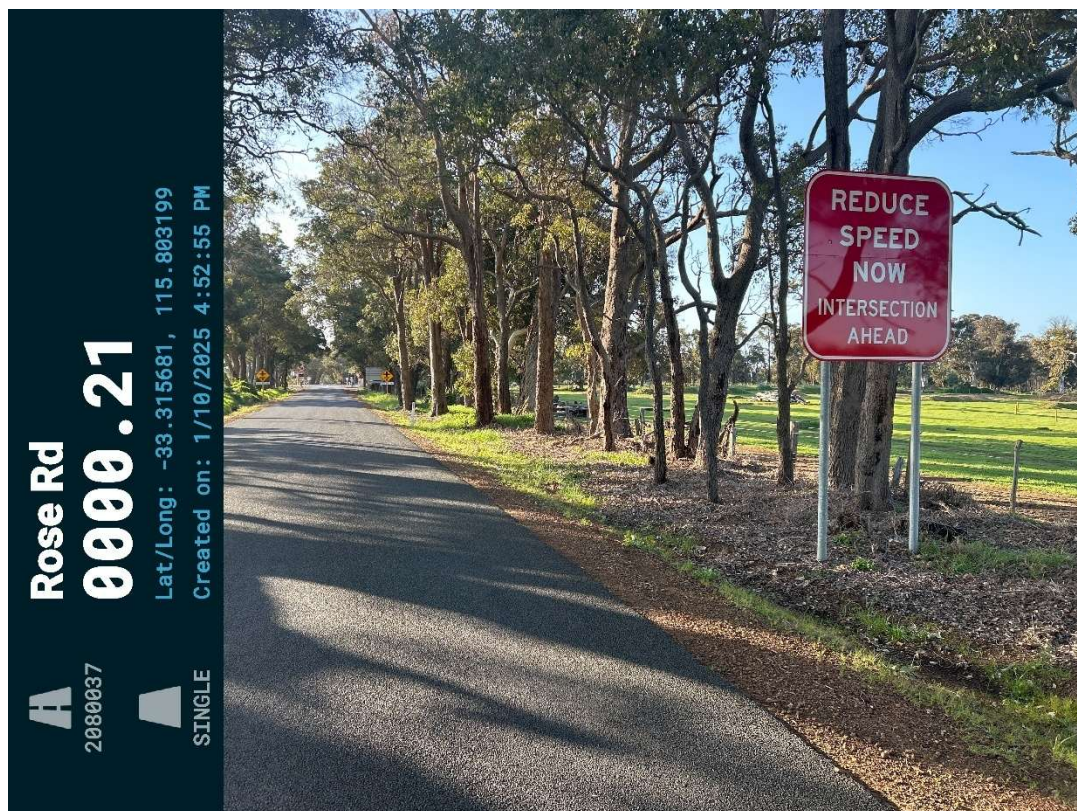
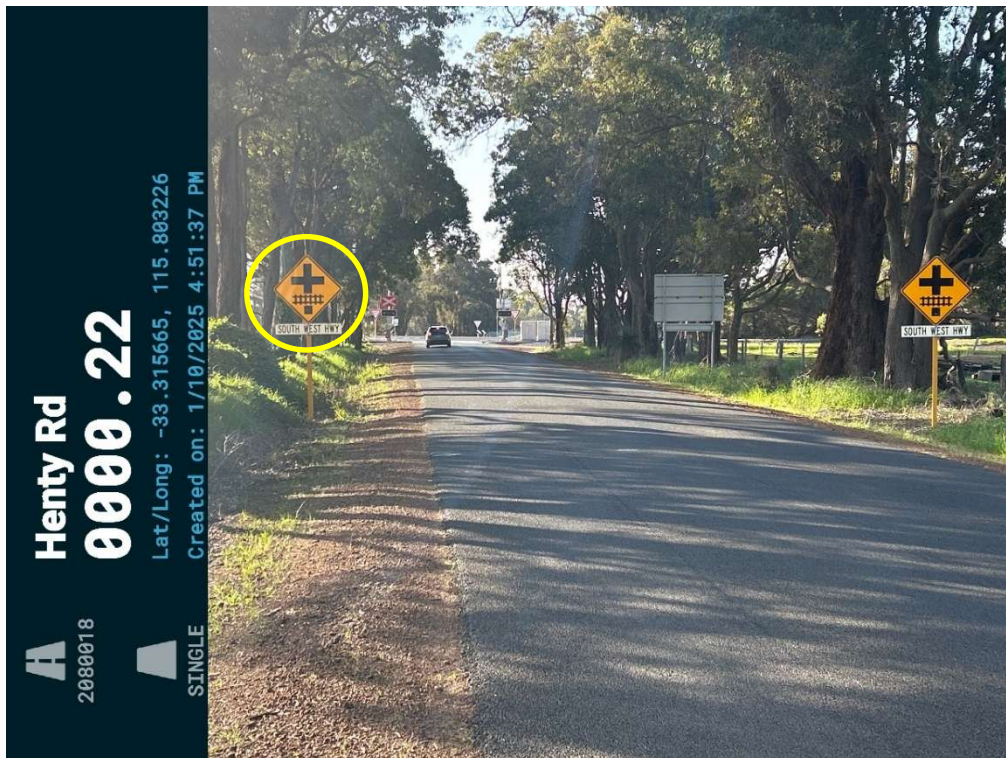


Photo 1 – Advance warning signage installed at the approach to the intersection.

Advance warning signage has also been installed for the rail crossing. Side Road signs have been used which are not technically correct, but do provide the road user a clear guide of the crossing and crossroad ahead. Crossroad signs are not to be used on the approach to a Give way or Stop sign (AS 1742.2).



**Photo 2 – Advance warning signage using Side Road signage installed at the approach to the railway crossing and intersection.**

Width markers could be installed to alert road users of the narrow road pavement at the railway crossing. It was also noted at the site inspection, that the road pavement has undulations at the culvert crossing close to the railway crossing. This could result in loads on vehicles moving, making the vehicle unstable.

The road is not speed zoned and traffic count information showed the 85<sup>th</sup> percentile speed at 99.72 km/h. The usual speed approach to a railway crossing is 80 km/h. Main Roads WA should be approached to place a suitable speed zone on the approach to the railway crossing once the works of widening the traffic lane, marking the centre line and edge lines have been completed.

***Recommendation***

The narrow road pavement at the railway crossing should match the width of the proposed works, or width marker signage and additional guide posts should be installed to guide the road user.

Main Roads WA should be requested to install an appropriate speed zone on the approach to the railway crossing.

The undulating road pavement should be made smooth.

**[IMPORTANT | MODERATE]**

## 2.5 Finding – Aquaplaning Potential.

Stormwater flows across the sealed traffic lanes in several locations.

### ***Justification of the finding:***

The water crossing the road surface may cause vehicles to aquaplane, resulting in a loss of grip and an off path crash.

Austroroads Guide to Road Design Part 5A: Drainage – Road Surface, Networks, Basins and Subsurface (2013) section 4.10 Assessment – Aquaplaning Potential details the issues of water on the pavement.

At approximately 8.40 Slk, there is a dead tree stump and a log which has blocked the natural table drain. The stormwater now flows across the road pavement near the curve. This could result in loss of grip between the tyre and the sealed surface in wet conditions, the driver losing control of the vehicle and running off the road.

At other locations, the road pavement has sunk or undulates resulting in water travelling along the sealed surface rather than directly towards to shoulder.

At the intersection of Pile Road, it could be seen that water does not shed off the shoulder but has scoured the gravel along the bitumen edge and then travels across the road due to the crossfall.

Sections of road that have undulations should be made smooth to ensure water sheds correctly. Sections where the water travels over the road could be treated using kerbing or even an asphalt mound to redirect the water flow away from the road surface.

### ***Recommendation***

The design should address areas of the sealed pavement where stormwater does not freely flow off the road.

**[IMPORTANT | MODERATE]**

## 2.6 Finding – Centre Line Marking.

The painted centre line reflects the existing line making.

### ***Justification of the finding:***

Painted centre lines assist in guiding the road user, particularly in dark conditions reducing off path crashes and provides guidance for overtaking opportunities preventing head on crashes.

Australian Stand 1742.2 Traffic Control and Devices for General Use indicates that clear and effective pavement marking is essential to provide guidance and may supplement other traffic devices to define desired travel paths.

Austrroads Guide to Road Design Part 6: Roadside Design, Safety and Barriers indicate providing effective pavement marking is rated as a medium effective treatment to prevent an Off Path incident on a curve.

The centre line marking on the approach to the railway crossing is shown as a broken line. The AS 1742.7 suggests that the centre line should be solid on approach from the first warning sign, approximately 0.29 SLK.

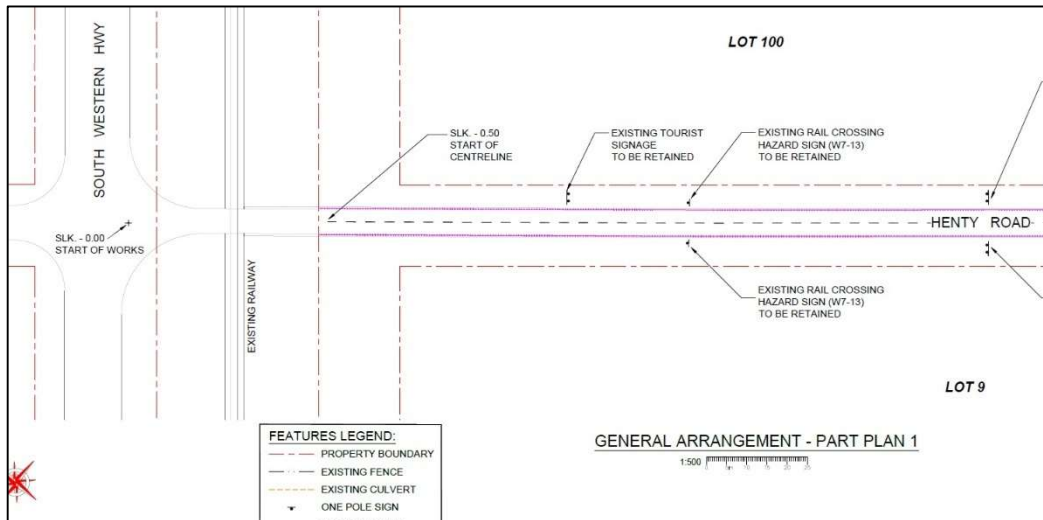


Figure 7 - Part of the design drawing.

The design drawings do not show the horizontal alignment of the road, so determining where barrier line marking should start and stop is challenging. Prior to the centre line marking being installed, the start and stop points of barrier line marking should be confirmed.

Consideration could be given to installing Raised Reflective Pavement Markers on the approach to the railway crossing and Pile Road intersection. The railway crossing / intersection of South Western Highway has additional advance signage, which indicates there may have been issues with road users realising they were approaching an intersection where they may be required to stop. Similarly, the Pile Road intersection is hidden by a curve on approach.

**Recommendation**

The painted centre line should be installed to Main Roads WA requirements.

**[IMPORTANT | MODERATE]**

## 2.7 Finding – Insufficient Safe Intersection Sight Distance.

Some accesses have restricted sight distances due to vegetation along the edge of the Henty Road.

### ***Justification of the finding:***

The limited sight distance can result in restart crash where the driver stops at the traffic lane, then restarts resulting in a crash. Restart crashes can be the result of insufficient Safe Intersection Sight Distance (SISD), drivers pulling out in front of an approaching vehicle, hidden by vegetation resulting in a right-angle crash.

Austrroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersection section 3.4 indicates that sight distances at accesses should comply with the sight distance requirements for intersections.

Using an operating speed of 100 km/h and a reaction time of 2.0 seconds, the required Safe Intersection Sight Distance is 165 m measured 3 m back from the edge of the traffic lane.

### ***Recommendation***

The vegetation should be trimmed to provide Safe Intersection Sight Distance at the accesses.

**[IMPORTANT | MODERATE]**

## 2.8 Finding – Vegetation Over the Traffic Lane.

Branches from the trees on the verge encroach over the road, resulting in drivers shying away from the tree and not remaining lane correct.

### ***Justification of the finding:***

Vehicles travelling closer to the centre line are more likely to be involved in sideswipe or head on crashes.

Large trucks can veer away from overhanging branches, it was evident at the site inspection that vehicles had left the sealed traffic lane and travelled on the gravel shoulder to avoid overhanging branches. The design shows that the traffic lane will be slightly wider and a section of the shoulder will be sealed, which may allow the trucks to remain on the sealed surface. The trimming of the overhanging branches would provide a clear envelope for trucks to travel in a safe manner.

### ***Recommendation***

The overhanging branches should be pruned to provide clear access along the road for vehicles to pass without moving from the traffic lane.

**[IMPORTANT | MODERATE]**

**2.9 Finding – Swept path at the Pile Road Intersection.**

The sealed edge of the intersection appears to restrict the turning path for large vehicles entering Henty Road.

***Justification of the finding:***

There is a risk that large turning vehicles may sideswipe a vehicle on Henty Road.

Austrroads Guide to Road Design Part 4 Intersections and Crossings – General indicates that turning paths of design vehicles form the basis of the turning widths required at intersections. All intersection layouts must be checked to ensure that they can accommodate the turning path envelope (swept path) for the design vehicle plus any necessary clearances.

At the site inspection, there was a deep rut in the gravel shoulder along the edge of the sealed pavement. Large and even small vehicles that travel through the rut could have their load shift or find controlling the vehicle difficult.

To prevent vehicles from travelling onto the gravel shoulder to increase speed when entering Henty Road from Pile Road, the turn out could be kerbed. Kerbing at intersections can result in stormwater issues and needs to be carefully assessed.

***Recommendation***

The swept path of all permitted vehicles should be confirmed in accordance with Austrroads guidelines.

**[IMPORTANT | MODERATE]**

### 3. AUDIT TEAM STATEMENT

I hereby certify that the audit team have examined the documents listed in Appendix D and have inspected the site in undertaking this Road Safety Audit. I also confirm that this audit has been carried out independently of the design team following the general principles detailed in *Austroads Guide to Road Safety Part 6: Road Safety Audit* and in accordance with Main Roads Policy and Guidelines for Road Safety Audit.

The audit has been carried out for the sole purpose of identifying any features of the design which could be altered or removed to improve the safety of the proposal. The identified issues have been noted in this report. The accompanying findings and recommendations are put forward for consideration by the Client for implementation.

#### **Audit Team Leader**

Brad Brooksby  
Traffic Consultant  
Brad Brooksby Consulting  
Mob 0435 164 175 – Email Brad.Brooksby@bigpond.com

#### **Disclaimer**

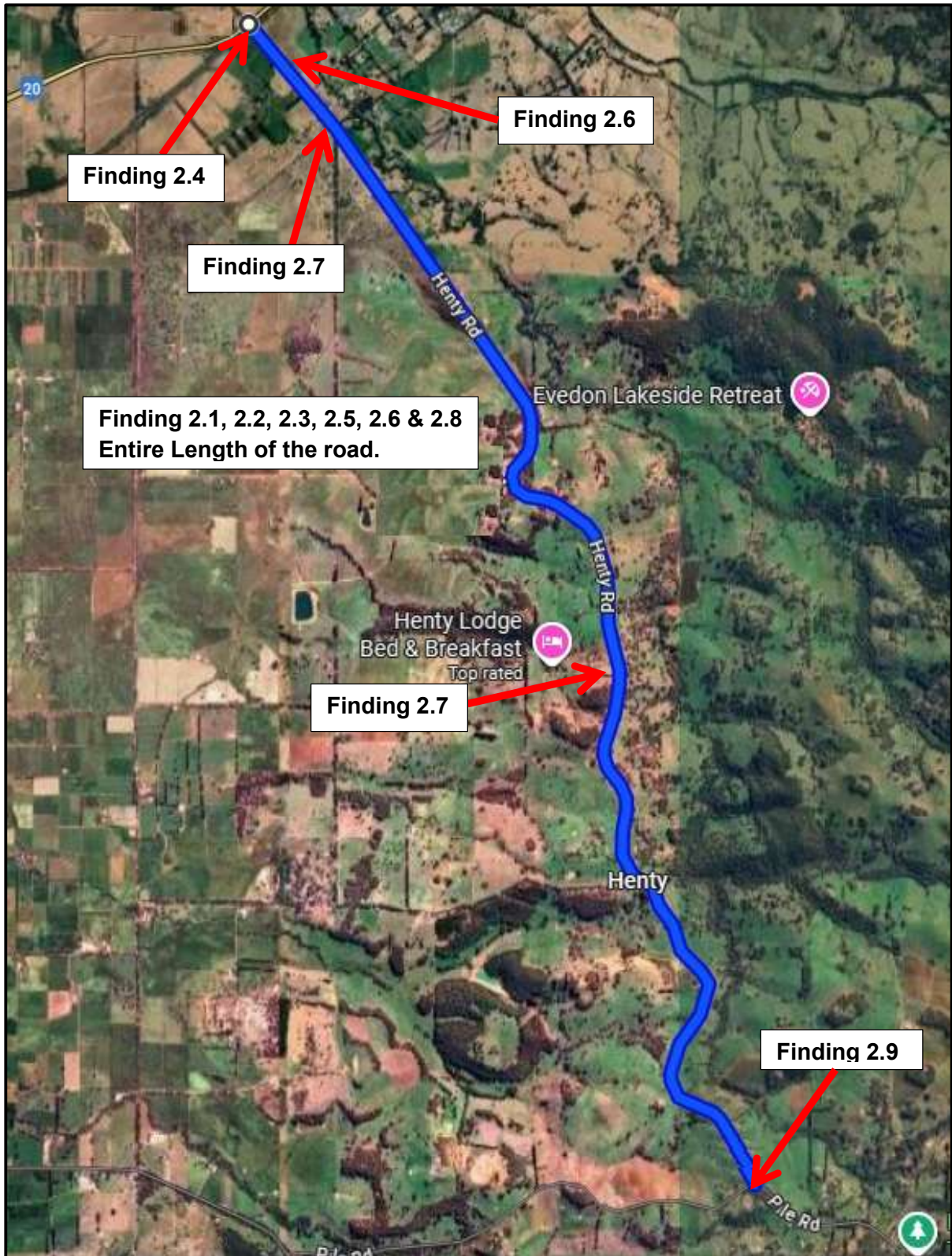
*This report contains findings and recommendations based on an examination of the site and/or relevant documentation. The report is based on the conditions viewed on the day of the inspection and is relevant at the time of production of the report. Information and data contained within this report are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

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

*The Road Safety Audit 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 Audit 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.*

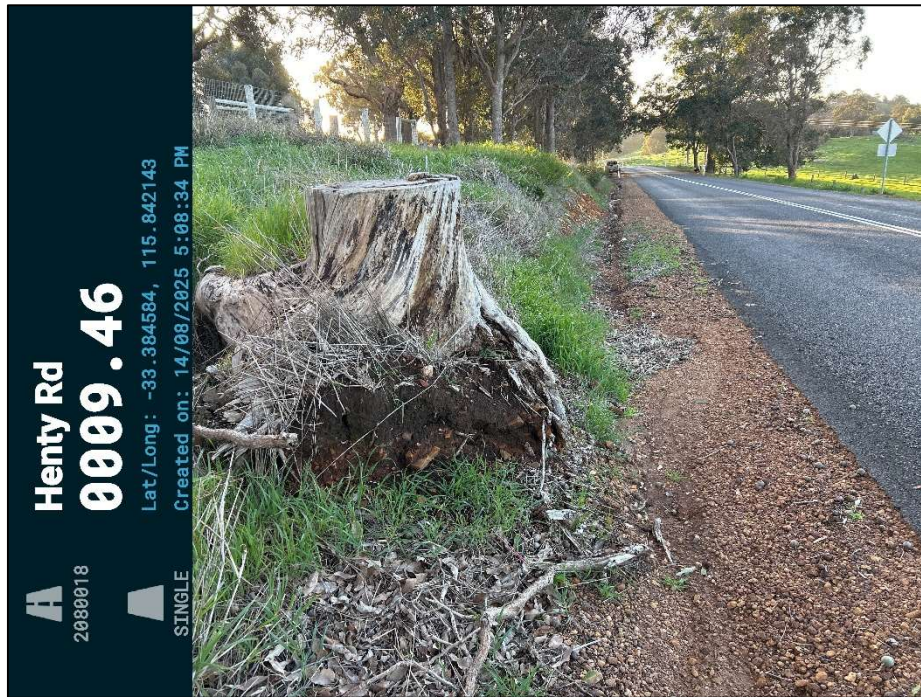
**APPENDIX A**  
**AUDIT FINDINGS LOCATION PLAN**



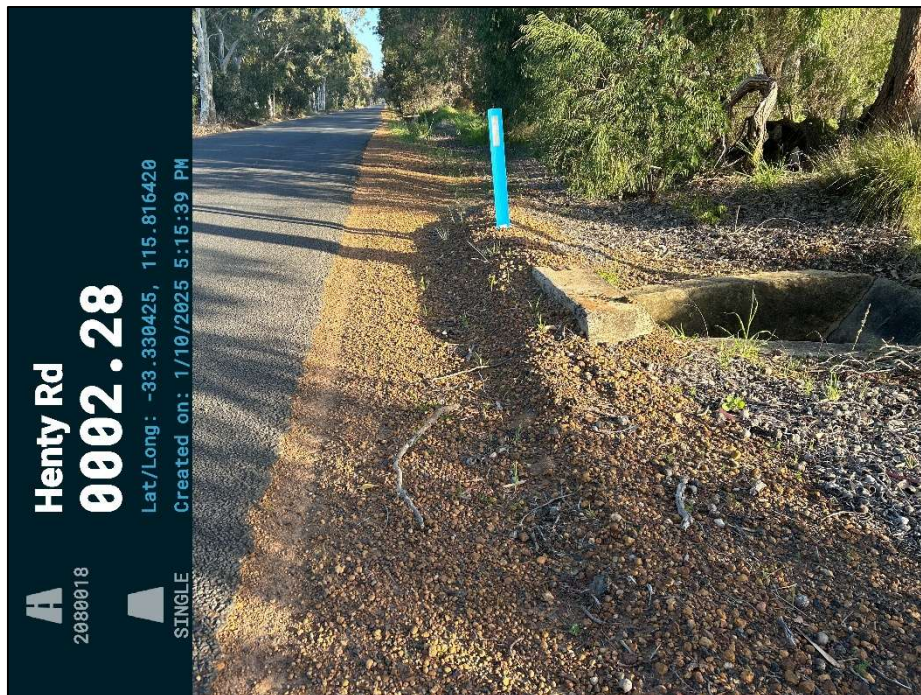
**Location Plan**

(Some findings are included throughout the length of the road).

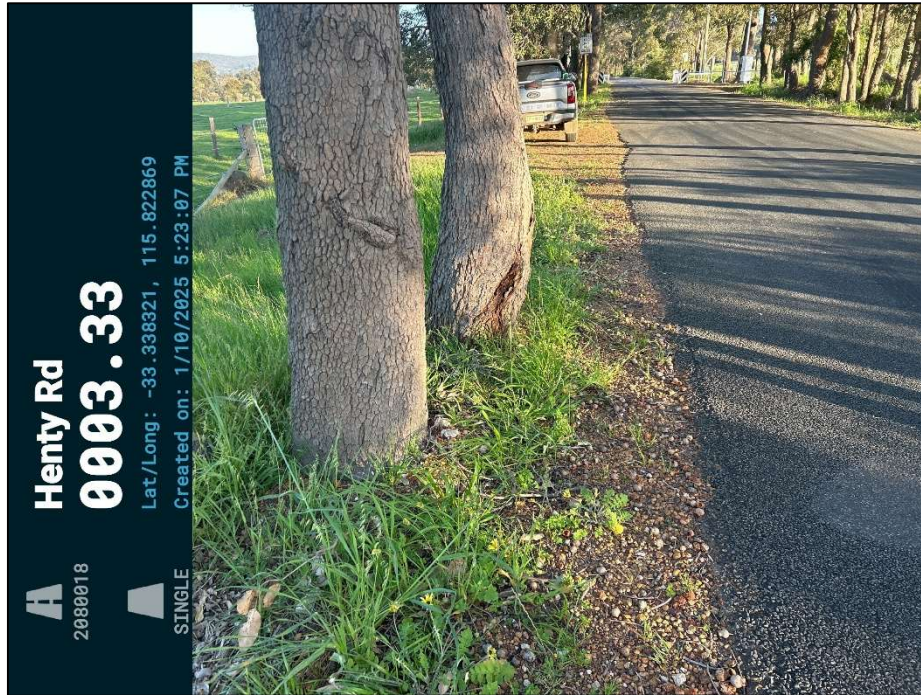
**APPENDIX B**  
**AUDIT PHOTOGRAPHS**



**Finding 2.2 – The large tree stump is close to the traffic lane and should be removed.**



**Finding 2.2 – The culvert headwall will be close to the traffic lane and should be delineated if not relocated.**



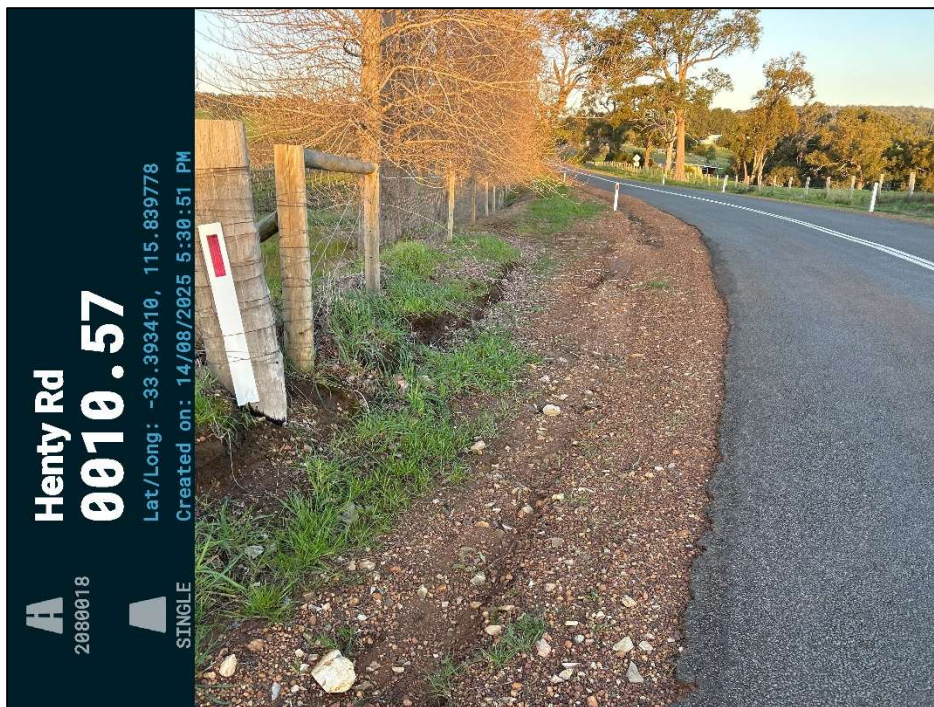
Finding 2.2 – The large trees are close to the traffic lane and should be removed.



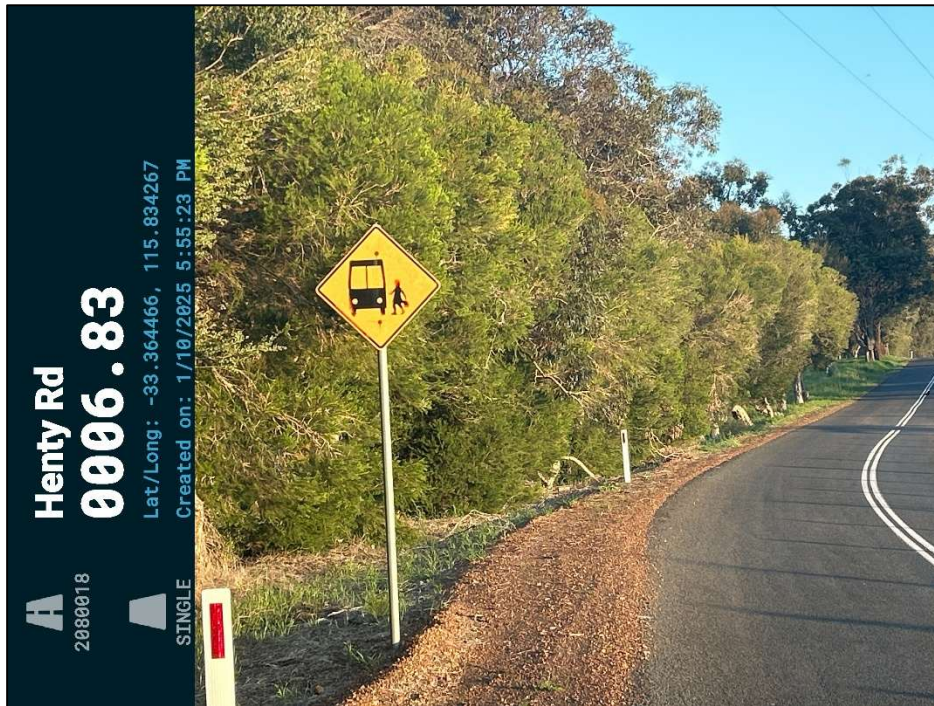
Finding 2.2 – The large tree stump is close to the traffic lane and should be removed.



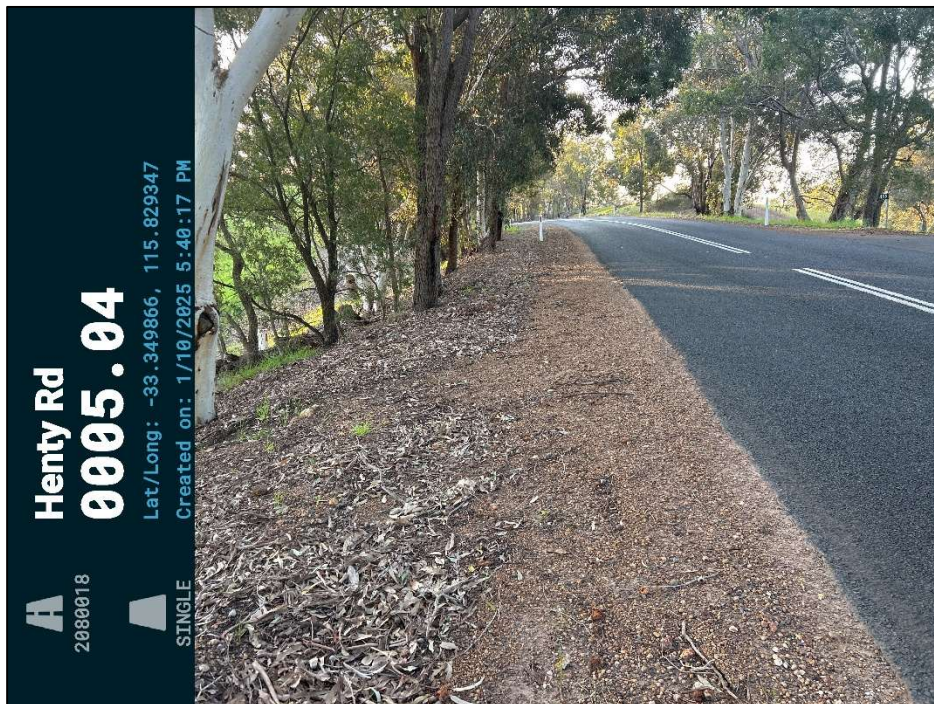
**Finding 2.2 – The existing W Beam road safety barrier is not compliant to current standards (particularly the end treatments), however with new delineation provides a suitable treatment. If the barrier was damaged, then a new barrier to the current standard should be installed.**



**Finding 2.3 – Guide posts should be installed at a consistent distance from the edge of the road and be straight.**



**Finding 2.3 – The Bus Stop sign is old and may not be warranted. This sign is not detailed on the design drawings.**



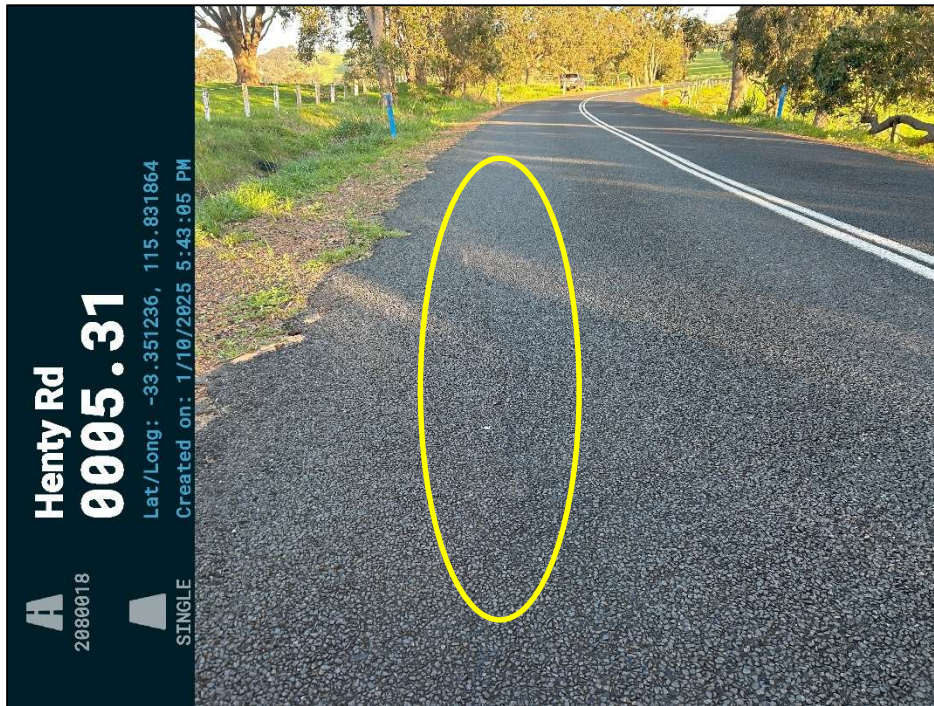
**Finding 2.3 – Where the verge is steep, or objects are close to the traffic lane, additional guide posts should be installed at closer spacing to assist guiding the road user past the hazard.**



**Finding 2.4 – The railway crossing is narrower than the sealed road pavement. Drivers may not realise the narrow section and drive over the rails.**



**Finding 2.4 – The railway crossing has a dip where the culvert is located, this should be made smooth.**



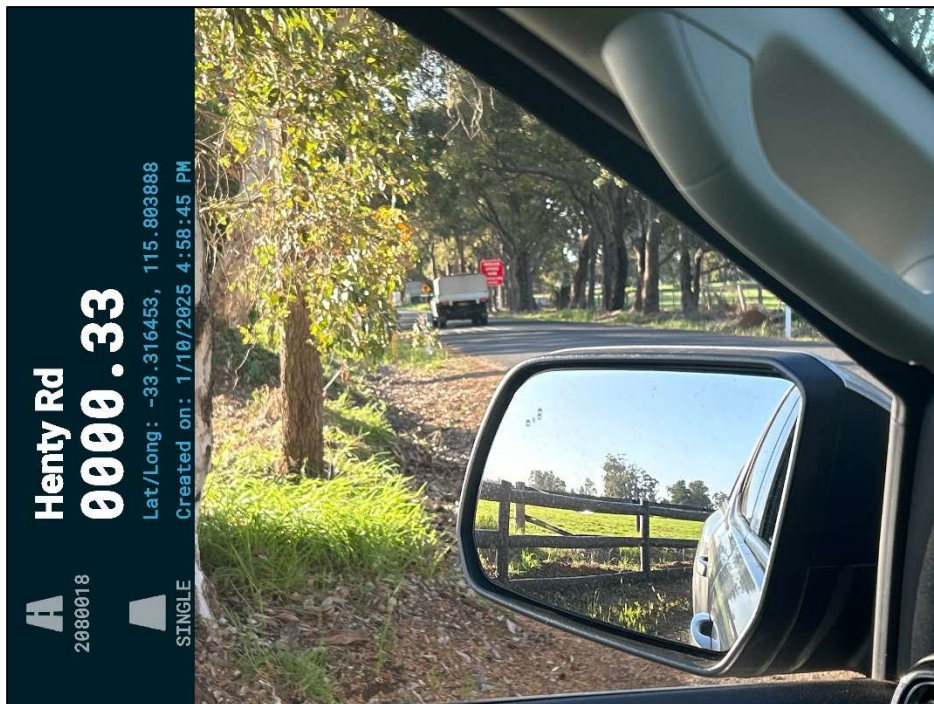
**Finding 2.5 – The sealed pavement undulates resulting in stormwater running down the road rather than off the road towards the shoulder. This can result in excessive water on the sealed pavement and vehicles aquaplaning on the sealed surface.**



**Finding 2.5 – The table drain is blocked, causing the water to flow over the road.**



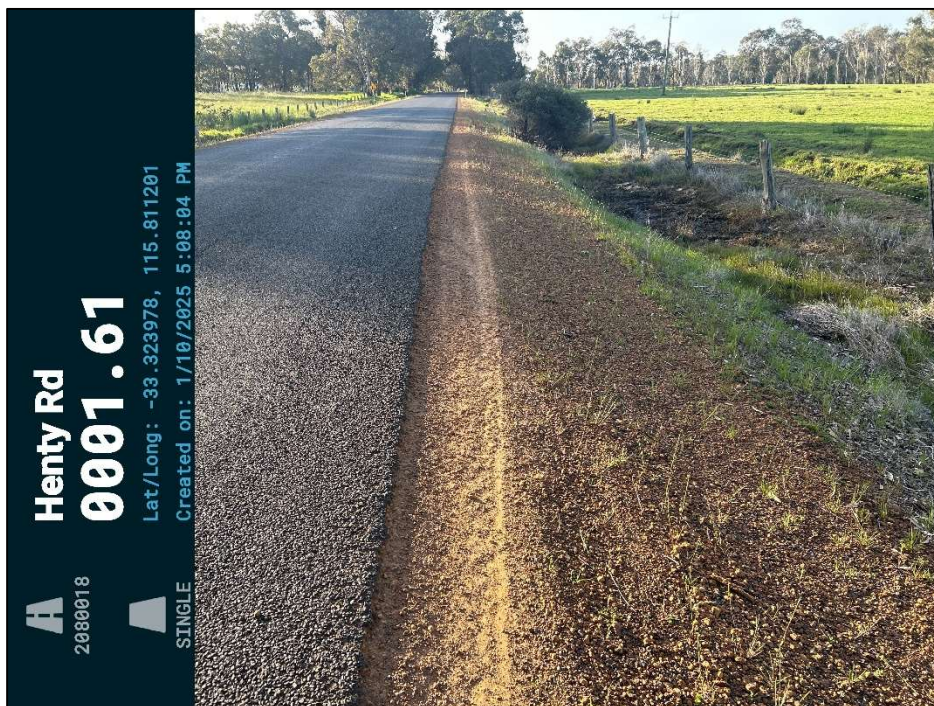
**Finding 2.6 – On approach to the rail crossing, a solid painted centre line should be installed from the first warning sign of the rail crossing. The design drawings show a dashed centre line to be installed, this should be corrected to Main Roads requirements.**



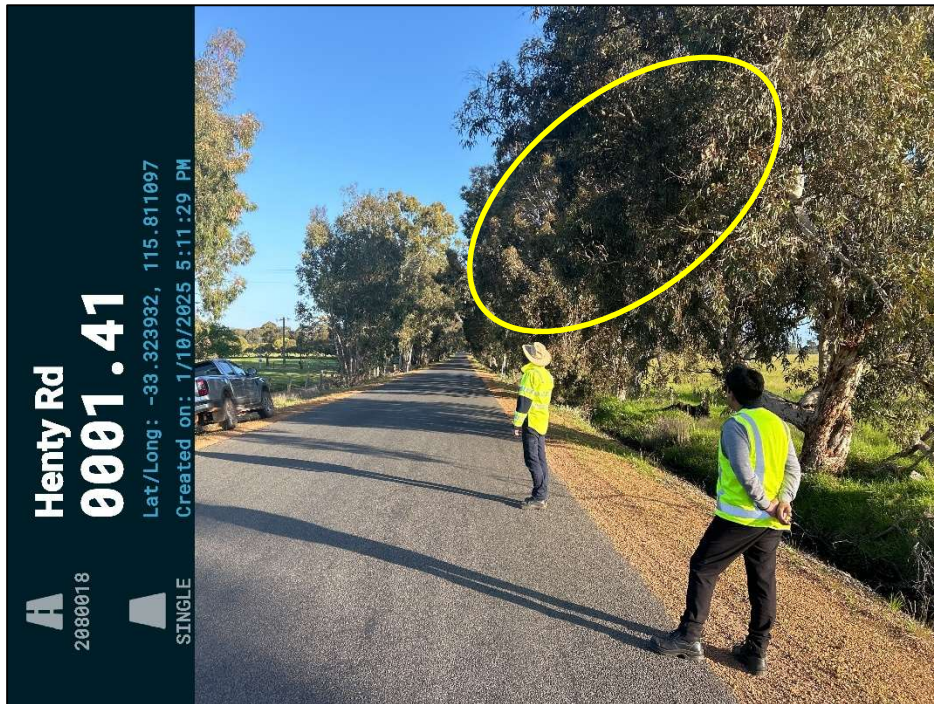
**Finding 2.7 – The access at this location has a restricted sight distance due to the vegetation. The vegetation should be trimmed to provide suitable sight distance.**



**Finding 2.7 – The access at this location has a restricted sight distance due to the vegetation. The vegetation should be trimmed to provide suitable sight distance.**



**Finding 2.8 – High vehicles are veering away from overhanging branches resulting in them travelling on the existing gravel shoulder. The design will provide additional sealed pavement, but the removal of the overhanging branches would allow drivers to remain lane correct.**



**Finding 2.8 – High vehicles are veering away from overhanging branches highlighted on the photo, results in them travelling on the existing gravel shoulder.**



**Finding 2.9 – A section of the existing shoulder has deteriorated due to vehicles cutting the corner. The swept path for the design vehicle should be confirmed and widened if required. If vehicles are using the gravel shoulder to travel faster through the curve, then kerbing should be considered to keep the vehicles on the correct alignment. Note, drivers may be travelling too fast from Pile Road into Henty Road due to other vehicles following them and the lack of a deacceleration lane on Pile Road.**

**APPENDIX C**  
**CRASH REPORTS**

Summary Crash History					
Selection Criteria		Value			
Road	HENTY RD (2080018)				
Date	01/01/2020 to 31/12/2024				
Road SJK	0.00 to 11.01				

Severity	Count	Percentage	MR Type	Count	Percentage
Fatal	0	0.0%	Involving Overtaking	0	0.0%
Hospital	2	40.0%	Involving Parking	0	0.0%
Medical	0	0.0%	Involving Animal	2	40.0%
PDO Major	3	60.0%	Involving Pedestrian	0	0.0%
PDO Minor	0	0.0%	Entering / Leaving Driveway	0	0.0%
Other / Unknown	0	0.0%	Other / Unknown	3	60.0%
<b>Total:</b>	<b>5</b>	<b>100.0%</b>	<b>Total:</b>	<b>5</b>	<b>100.0%</b>

Light Conditions	Count	Percentage	Object Hit	Count	Percentage
Daylight	3	60.0%	SEC Pole	0	0.0%
Dawn Or Dusk	0	0.0%	Traffic Light Post	0	0.0%
Dark - Street Lights On	0	0.0%	Traffic Sign	0	0.0%
Dark - Street Lights Off	0	0.0%	Commercial Sign Post	0	0.0%
Dark - Street Lights Not Provided	0	0.0%	Tree	2	40.0%
Other / Unknown	2	40.0%	Other	3	60.0%
<b>Total:</b>	<b>5</b>	<b>100.0%</b>	<b>Total:</b>	<b>5</b>	<b>100.0%</b>

Road Grade	Count	Percentage	Road Alignment	Count	Percentage
Level	0	0.0%	Curve	2	40.0%
Crest Of Hill	1	20.0%	Straight	0	0.0%
Slope	1	20.0%	Other / Unknown	3	60.0%
Other / Unknown	3	60.0%	<b>Total:</b>	<b>5</b>	<b>100.0%</b>
<b>Total:</b>	<b>5</b>	<b>100.0%</b>			

Speed a Factor	Count	Percentage	Road Condition	Count	Percentage
Yes	1	20.0%	Wet	1	20.0%
No	0	0.0%	Dry	4	80.0%
Other / Unknown	4	80.0%	Other / Unknown	0	0.0%
<b>Total:</b>	<b>5</b>	<b>100.0%</b>	<b>Total:</b>	<b>5</b>	<b>100.0%</b>

MR Nature	Count	Percentage
Rear End	0	0.0%
Head On	1	20.0%
Sideswipe Opposite Dirn	0	0.0%
Sideswipe Same Dirn	0	0.0%
Right Angle	0	0.0%
Right Turn Thru	0	0.0%
Hit Pedestrian	0	0.0%
Hit Animal	2	40.0%
Hit Object	1	20.0%
Non Collision	1	20.0%
Other / Unknown	0	0.0%
<b>Total:</b>	<b>5</b>	<b>100.0%</b>

Figure 8 - Detailed Crash History from Main Roads Crash data.

**APPENDIX D**  
**LIST OF DOCUMENTS PROVIDED FOR THE AUDIT**



**APPENDIX E**  
**CORRECTIVE ACTION REPORT**

**Corrective Action Report – Stage 3 Detailed Design – Henty Road, Burekup, WA  
Road Improvements between 0.04 - 11.61 Slk.**

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
<p><b>3.1 Finding – Proposed Width of Road.</b></p> <p>The desirable road pavement is 9.2 m, with 3.1 m traffic lanes and a 1.5 m shoulder on rural roads with low traffic volumes.</p>			
<p><b>Recommendation</b></p> <p>The 0.3 m gravel shoulder width should be increased to 0.85 m gravel to allow the driver of an errant vehicle more time to recover the vehicle from the gravel shoulder back to the sealed traffic lane.</p> <p align="center"><b>[IMPORTANT   MODERATE].</b></p>	<p>Agree in principle</p>		<p>Agree this is desirable, but increasing the pavement width beyond what is on the drawings may not be achievable in all areas along the road.</p>
<p><b>3.2 Finding – Non-Frangible objects near the traffic lane.</b></p> <p>Several large trees and a culvert headwall are close to the traffic lane.</p>			
<p><b>Recommendation</b></p> <p>The closest trees should be removed and hazards that cannot be removed should be delineated.</p> <p align="center"><b>[IMPORTANT   MODERATE]</b></p>	<p>Agree</p>		<p>Trees very close to the road will be referred to DWER for removal. If not able to be removed as part of the project, they will be delineated until a NVCP can be obtained.</p>

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
<p><b>3.3 Finding – Signs and Guide Posts.</b></p> <p>Several signs were in poor condition or obscured by vegetation and guide posts were missing.</p>			
<p><b>Recommendation</b></p> <p>The signage should be replaced and corrected.</p> <p>Additional guide posts should be installed where hazards cannot be removed.</p> <p><b>[IMPORTANT   MODERATE]</b></p>	Agree		Review signage and replace as required. Review guide posts and straighten/replace as required under the project.
<p><b>3.4 Finding – Railway Crossing.</b></p> <p>The road pavement narrows at the railway crossing.</p>			
<p><b>Recommendation</b></p> <p>The narrow road pavement at the railway crossing should match the width of the proposed works, or width marker signage and additional guide posts should be installed to guide the road user.</p> <p>Main Roads WA should be requested to install an appropriate speed zone on the approach to the railway crossing.</p> <p>The undulating road pavement should be made smooth.</p> <p><b>[IMPORTANT   MODERATE]</b></p>	Agree in principle		This section is out of the scope of the project. Hazard markers should be placed to advise the road users of the change in width.

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
<p><b>3.5 Finding – Aquaplaning Potential.</b></p> <p>Stormwater flows across the sealed traffic lanes in several locations.</p>			
<p><b>Recommendation</b></p> <p>The design should address areas of the sealed pavement where stormwater does not freely flow off the road.</p> <p><b>[IMPORTANT   MODERATE]</b></p>	Agree		Tree stump and log will be removed and table drain formed away from edge of the shoulder as part of the works.
<p><b>3.6 Finding – Centre Line Marking.</b></p> <p>The painted centre line reflects the existing line making.</p>			
<p><b>Recommendation</b></p> <p>The painted centre line should be installed to Main Roads WA requirements.</p> <p><b>[IMPORTANT   MODERATE]</b></p>	Agree		Shire installed the centreline in 2019 at its cost. The existing double barrier line will be remarked under the project.

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
<p><b>3.7 Finding – Insufficient Safe Intersection Sight Distance.</b></p> <p>Some accesses have restricted sight distances due to vegetation along the edge of the Henty Road.</p>			
<p><b>Recommendation</b></p> <p>The vegetation should be trimmed to provide Safe Intersection Sight Distance at the accesses.</p> <p><b>[IMPORTANT   MODERATE]</b></p>	Agree		Vegetation trimming can be addressed under the project on a case by case basis.
<p><b>3.8 Finding – Vegetation Over the Traffic Lane.</b></p> <p>Branches from the trees on the verge encroach over the road, resulting in drivers shying away from the tree and not remaining lane correct.</p>			
<p><b>Recommendation</b></p> <p>The overhanging branches should be pruned to provide clear access along the road for vehicles to pass without moving from the traffic lane.</p> <p><b>[IMPORTANT   MODERATE]</b></p>	Agree		Pruning of trees to reinstate the clearance envelope will be carried out under the project.

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
<p><b>3.9 Finding – Swept path at the Pile Road Intersection.</b></p> <p>The sealed edge of the intersection appears to restrict the turning path for large vehicles entering Henty Road.</p>			
<p><b>Recommendation</b></p> <p>The swept path of all permitted vehicles should be confirmed in accordance with Austroads guidelines.</p> <p><b>[IMPORTANT   MODERATE]</b></p>	Agree		Widening of the seal at the intersection of Henty Road and Pile can be carried out under the project as a variation.

**Corrective Action Report – Stage 3 Detailed Design – Henty Road, Burekup, WA  
Road Improvements between 0.04 - 11.61 Slk.**

NOTE:

- This Corrective Action Report is to be read in conjunction with the full Road Safety Audit 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.**

Nathan Ryder	Shire of Dardanup	Manager Infrastructure Planning and Design	09/02/26
<b>Responsible Project Representative</b>	<b>Company / Agency / Division</b>	<b>Position</b>	<b>Date</b>

Theo Naude	Shire of Dardanup	Director Infrastructure	
<b>Asset Owner Representative</b>	<b>Company / Agency / Division</b>	<b>Position</b>	<b>Date</b>