



Ardill Payne
& PARTNERS

ENGINEERS PLANNERS SURVEYORS ENVIRONMENTAL PROJECT MANAGEMENT

ROAD SAFETY AUDIT

EXISTING ROAD

Summerland Way / Imbreys Road Intersection,
Sherwood

for:

Kyogle Council



Kyogle
NSW AUSTRALIA

December 2017

BALLINA

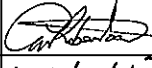

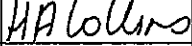
45 River Street
PO Box 20
BALLINA NSW 2478
02 6686 3280

GUNNEDAH

Germane House
285 Conadilly Street
GUNNEDAH NSW 2380
02 6742 9955



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1. Project Information

1.1 Introduction

Kyogle Council (Council) has engaged Ardill Payne & Partners (APP) to undertake a Road Safety Audit (RSA) of an existing intersection – Summerland Way and Imbreys Road at Sherwood – approx. 35km north-west of Kyogle (GPS co-ordinates 28.4308 S, 152.8060 E). The site location is shown in **Figure 1**.

A pre-commencement meeting was held via teleconference between Tony Cromack (APP) and Derryn Nix (Council) on 4 December 2017.

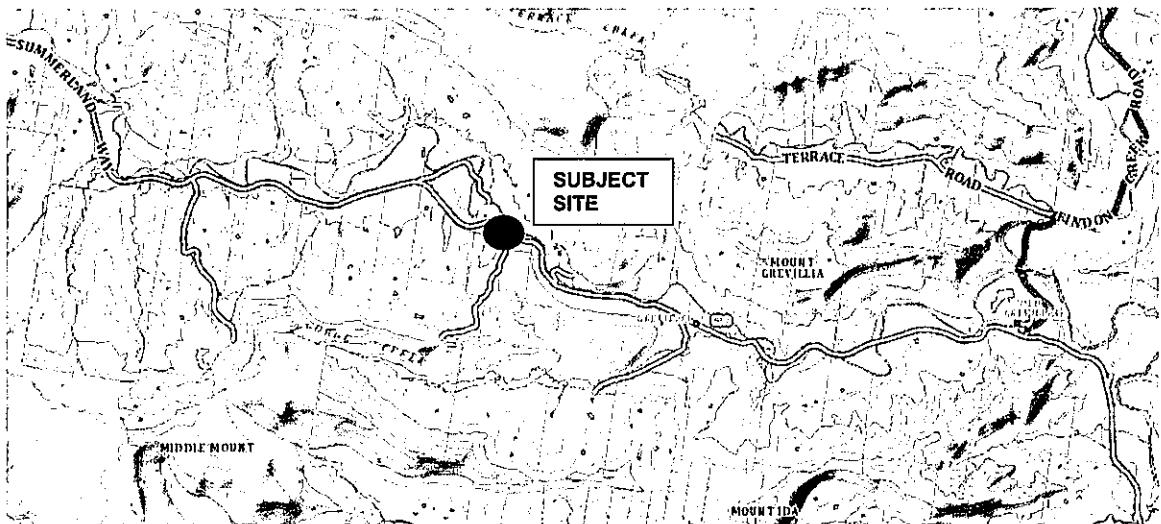


Figure 1: Study Location

1.2 Description of the Site

Summerland Way (RMS route B91) is a two-lane two-way bitumen sealed road. Summerland Way begins in Grafton and travels north to the Queensland border via Casino and Kyogle. A scheduled and school bus service operates past the site. The default speed limit is 100km/hr. There is an advisory 65km/hr 'Winding Road' sign in the eastern approach.

The road is generally of a rural standard with no kerb or guttering. There appear to be no major waterway crossings near the intersection. The road has centre (double barrier) and edge linemarking and road edge guide posts. Sealed and grassed shoulders on the northern side of the road are adequate. Table drains run along both sides of the road.

Travelling north, Imbreys Road intersects from the left. Imbreys Road is a single lane gravel road that serves several residences and some rural activities.

The intersection layout is shown in **Figure 2**. Photographs of the intersection are provided in **Attachment 1**.

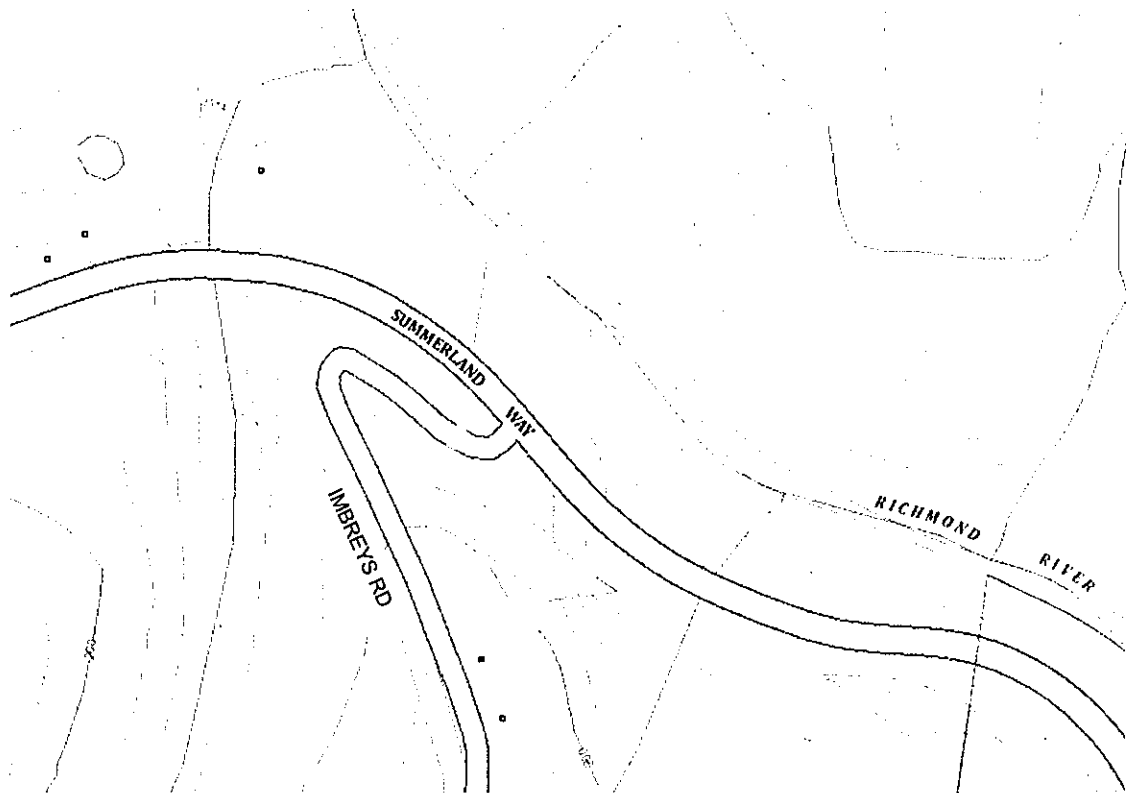


Figure 2: Intersection Layout

Key physical features of the intersection are:

- The intersection is located on a windy section of Summerland Way
- Imbreys Road approaches the intersection with Summerland Way at a relatively steep down grade with two sharp bends
- Imbreys Road is a gravel road
- There is a drainage culvert across the Imbreys Road leg of the intersection
- From Imbreys Road, the sight distance to the west is poor. The sight distance to the east is adequate
- On Summerland Way, approach distances from both directions are just adequate. However, there is a high percentage of heavy vehicles on Summerland Way which require a longer stopping sight distance
- There is not enough room for two cars to pass in Imbreys Road at the intersection

1.3 Information Provided by the Client

The client has provided the following traffic count information:

- Imbreys Road – no counts
- Summerland Way – year 2006 – 7 day count 644 – 23.8% HV

- No crashes recorded at the site in the last 5 years

Note that the crash data was provided after the site inspection, and was not reviewed until after the audit findings were documented.

1.4 Audit Scope and Objective

This report is for the RSA of the existing road intersection Summerland Way and Imbreys Road, Sherwood, located approx. 35km north-west of Kyogle. The scope of the RSA is limited to an assessment of the existing intersection from the perspective of all road users, from all approaches, during day and night conditions.

The objective of this RSA is to identify any potential road safety issues/deficiencies associated with the existing arrangement from the perspective of all road users that may need to be investigated and rectified. Positive aspects of the design have not been recorded.

This RSA is not a design check, although some design issues may be raised during the audit process. APP does not take responsibility for any suggested design changes made in this report.

1.5 Audit Team

Lead Auditor – Tony Cromack

- Senior Civil Engineer and Principal at Ardill Payne & Partners, with 30 years' experience in urban and rural road design
- Completed Bachelor of Technology (Engineering) through University of Southern Queensland (1999)
- Technologist Member – Engineers Australia
- Member – Institute of Public Works Engineering Australasia (IPWEA)
- NSW RMS accreditation to Prepare Work Zone Traffic Management Plans
- Completed Road Safety Audit Course through IPWEA (2014)
- Completed Lead Road Safety Audit Course through IPWEA (2017)
- Registered Level 3 Road Safety Auditor (NSW)

Auditor – Graeme Robertson

- Coordinator of Asset Management at Richmond Valley Council, with 7 years' experience in Local Government road management
- Completed Bachelor of Technology (Engineering) through University of Southern Queensland
- Member – Institute of Public Works Engineering Australasia (IPWEA)
- Level 1 Bridge Inspection, ARRB (2012)
- Sprayed Sealing Selection & Design, AAPA (2013)

- Completed Road Safety Audit Course through IPWEA (2014)
- Registered Level 2 Road Safety Auditor (NSW)

In addition, the following person joined the audit team as an observer, for training purposes:

Auditor – Hayley Collins

- Design Officer at Lismore City Council, with 11 years' experience in urban and rural road design (Richmond Valley Council and Lismore City Council)
- Certificate IV in Surveying – Brisbane North Institute of TAFE (2011)
- Diploma Civil Construction Design – TAFE NSW Riverina Institute – Leeton Campus (2013)
- Prepare a Work Zone Traffic Management Plan (2017)
- Implement Traffic Control Plans – RMS (2016)
- Designing for Pedestrians and Bicycle Riders – RMS (2016)
- Conduct Road Safety Audits (RSACRS002A) – IPWEA (2017)

2. Road Safety Audit Program

2.1 Commencement Meeting

The commencement meeting was held via teleconference on 4 December 2017. Derryn Nix represented the client and Tony Cromack represented the audit team.

Issues discussed included:

- Mr. Cromack outlined the scope of the audit, reiterating that the audit is not a design check, and that recommendations will not be provided as part of the audit report
- Mr. Nix confirmed the scope of the audit was the intersection of Summerland Way and Imbreys Road, Sherwood
- There are no existing or previous road safety audits or reports for the site
- There are no concept or design plans for any intersection upgrade
- There are no known environmental effects (fog, drainage, etc.) that will not be evident during the inspection.
- Council will provide road traffic volumes
- Local residents are of the opinion that the site has a crash history, but it is not supported by recorded data
- Further detail and specifics of Council's concerns were not raised or discussed to ensure the audit team could undertake an unbiased RSA.

2.2 Field Audit

The field audit was carried out by the audit team on the afternoon and evening of Monday 11 December 2017. The team drove through the intersection twice in each direction and filmed the drive from the dashboard of the vehicle.

The daylight audit took place between 5:00 and 5:30pm, and the evening audit was undertaken between 8:00 and 8:15pm.

The weather on the day was clear and sunny. There had been no rain in the previous 48 hours prior to the audit, and the road surface was dry.

Photographs of any deficiencies found were taken and notes were made.

2.3 Completion Meeting

A completion meeting generally involves the auditor and the client, and is an opportunity for clarification of aspects of the audit. A completion meeting has not been held at the time of preparing this report.

3. Risk Level Determination

Deficiencies raised in relation to the audit site have been given a risk level based on the associated safety priority, as categorised using **Table 1** to **Table 4**.

Table 1 - Frequency

Frequency	Description
Frequent	Once or more per week
Probable	Once or more per year (but less than once a week)
Occasional	Once every five to ten years
Improbable	Less often than once every ten years

Table 2 - Severity

Severity	Description
Catastrophic	Likely multiple deaths, for example: <ul style="list-style-type: none"> ▪ High-speed multi-vehicle crash ▪ Car runs into crowded bus stop ▪ Bridge collapse
Serious	Likely death or serious injury, for example: <ul style="list-style-type: none"> ▪ High/medium speed two-vehicle collision ▪ High/medium speed single-vehicle collision with fixed roadside object ▪ Pedestrian/cyclist struck at speed
Minor	Likely minor injury, for example: <ul style="list-style-type: none"> ▪ Low speed vehicle collision ▪ Cyclist falls from bike at low speed ▪ Rear-end collision
Limited	Likely trivial injury or property damage only, for example: <ul style="list-style-type: none"> ▪ Low speed vehicle collisions ▪ Car reverses into a post ▪ Pedestrian walks into object (no head injury)

Table 3 - Risk

Severity	Frequency			
	Frequent	Probable	Occasional	Improbable
Catastrophic	Intolerable	Intolerable	Intolerable	
Serious	Intolerable	Intolerable		Medium
Minor	Intolerable		Medium	Low
Limited		Medium	Low	Low




Table 4 - Treatment

Risk	Suggested Treatment Approach
Intolerable	Must be corrected
	Should be corrected or the risk significantly reduced, even if the treatment cost is high.
Medium	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.
Low	Should be corrected or the risk reduced, if the treatment cost is low.

4. Findings

The following audit findings were identified during the inspection. Audit findings are a listing of identified safety deficiencies: what is potentially dangerous about the road or what could lead to crashes occurring or injury resulting.

Table 5 – Audit Findings

Number	Description	Risk Rating
01	<p>Sight distance from Imbreys Road – west</p> <p>Sight distance to the west is poor.</p> <p>There is a risk that vehicles exiting Imbreys Road could collide with through traffic. Or through vehicles from the east could collide with right turning traffic.</p> <p>Refer to Photo No. 8.</p>	<p>Frequency: Occasional</p> <p>Severity: Serious</p> <p>Risk: </p>
02	<p>Approach sight distances on Summerland Way</p> <p>Sight distance from both directions is just adequate.</p> <p>There is a risk that approaching vehicles, especially heavy vehicles and at night, will not see stopped or turning vehicles in sufficient time to stop, resulting in a collision.</p>	<p>Frequency: Occasional</p> <p>Severity: Serious</p> <p>Risk: </p>
03	<p>'Intersection Ahead' signs on Summerland Way – no distance</p> <p>There is no distance shown on the 'Intersection Ahead' signs on Summerland Way, in the approach to the intersection.</p> <p>There is a risk that through vehicles could misjudge the proximity of the intersection and collide with turning traffic.</p> <p>Refer to Photo No. 2.</p>	<p>Frequency: Improbable</p> <p>Severity: Serious</p> <p>Risk: Medium</p>
04	<p>Imbreys Road – standard and width</p> <p>Imbreys Road is a gravel formation and the approach to Summerland Way is narrow and steep. Vehicles entering Imbreys Road could lose control in the gravel. Vehicles coming to a stop in Imbreys Road could have traction problems. There is insufficient room for two vehicles to pass in Imbreys Road.</p> <p>There is a risk that turning vehicles could lose control and collide with another vehicle, or run off the road. Vehicles turning left off Summerland Way may have to stop in the through lane to wait for exiting vehicles. Stopping vehicles in Imbreys Road could slide into the through lane.</p> <p>Refer to Photo Nos. 3, 5 and 6.</p>	<p>Frequency: Occasional</p> <p>Severity: Serious</p> <p>Risk: </p>

<p>05</p>	<p>Approach sight distance in Imbreys Road</p> <p>The approach sight distance in Imbreys Road is substandard, mainly due to the tight bends and roadside vegetation in the approaches.</p> <p>There is a risk that a driver could misjudge the proximity of the intersection and collide with stopped traffic, oncoming traffic and/or roadside hazards.</p> <p>Refer to Photo No. 6.</p>	<p>Frequency: Improbable</p> <p>Severity: Serious</p> <p>Risk: Medium</p>
<p>06</p>	<p>Poor definition of Imbreys Road at night</p> <p>The road edges of Imbreys Road, in the approach to the intersection, are not well defined at night.</p> <p>There is a risk that a driver could lose control and collide with oncoming traffic and/or roadside hazards.</p> <p>Refer to Photo No. 7.</p>	<p>Frequency: Improbable</p> <p>Severity: Serious</p> <p>Risk: Medium</p>
<p>07</p>	<p>No advance warning signs in Imbreys Road</p> <p>There is no advance warning signage in Imbreys Road to alert drivers of the approaching intersection.</p> <p>There is a risk that a driver could misjudge the proximity of the intersection and collide with stopped traffic, oncoming traffic and/or roadside hazards.</p> <p>Refer to Photo No. 6.</p>	<p>Frequency: Improbable</p> <p>Severity: Serious</p> <p>Risk: Medium</p>

5. Concluding Statement

The audit has been carried out for the sole purpose of identifying any features of the intersection which could be altered or removed to improve the safety of the intersection. The accompanying findings are put forward for consideration by Council for implementation.

The alignment and surface of the Imbreys Road approach to the intersection is sub-standard – tight bends, narrow pavement, steep approach grade, and gravel surface.

The sight distance from Imbreys Road to the west is inadequate. Approach sight distance from both directions on Summerland Way is just adequate. However, there is a high percentage of heavy vehicles on Summerland Way which require a longer stopping sight distance.

Advance intersection warning signage in Imbreys Road is missing. Imbreys Road is also not well defined, especially at night.

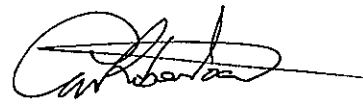
It should be noted that while every effort has been made to identify potential safety hazards, there is no guarantee that every deficiency has been identified.

No 'intolerable' risks were identified during the audit. As per **Table 4**, risks with a medium ranking '*should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.*' Risks with a high ranking '*should be corrected or the risk significantly reduced, even if the treatment cost is high.*' It is recommended that audit findings be investigated with satisfactory corrective actions identified and implemented.



15/12/2017

Tony Cromack, Senior Civil Engineer (APP)
AUDIT TEAM LEADER



15/12/2017

Graeme Robertson, Asset Management Coordinator (RVC)
AUDIT TEAM MEMBER



15/12/2017

Hayley Collins, Design Officer (LCC)
AUDIT TEAM MEMBER

Attachments

- | | |
|--------------|--------------------------------------|
| Attachment 1 | Site Photographs (taken 11/12/2017) |
| Attachment 2 | General Comments and Recommendations |

ATTACHMENT 1

Attachment 1: Site Photographs
(taken 11/12/2017)

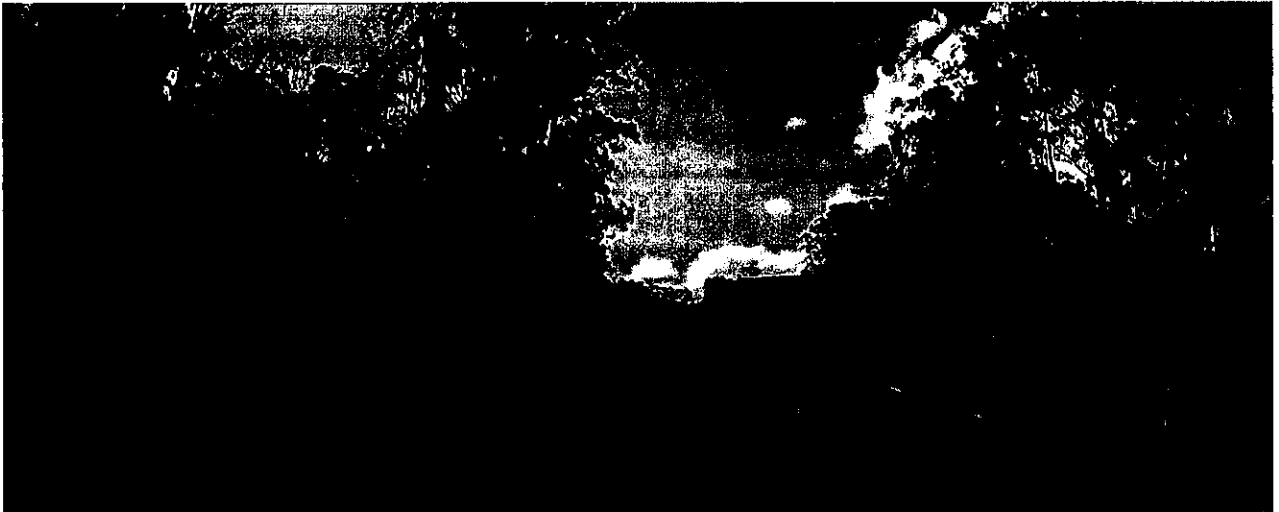


Photo No. 1: Summerland Way, westbound



Photo No. 2: Summerland Way, eastbound ('intersection right' sign)



Photo No. 3: Summerland Way, eastbound (at intersection)

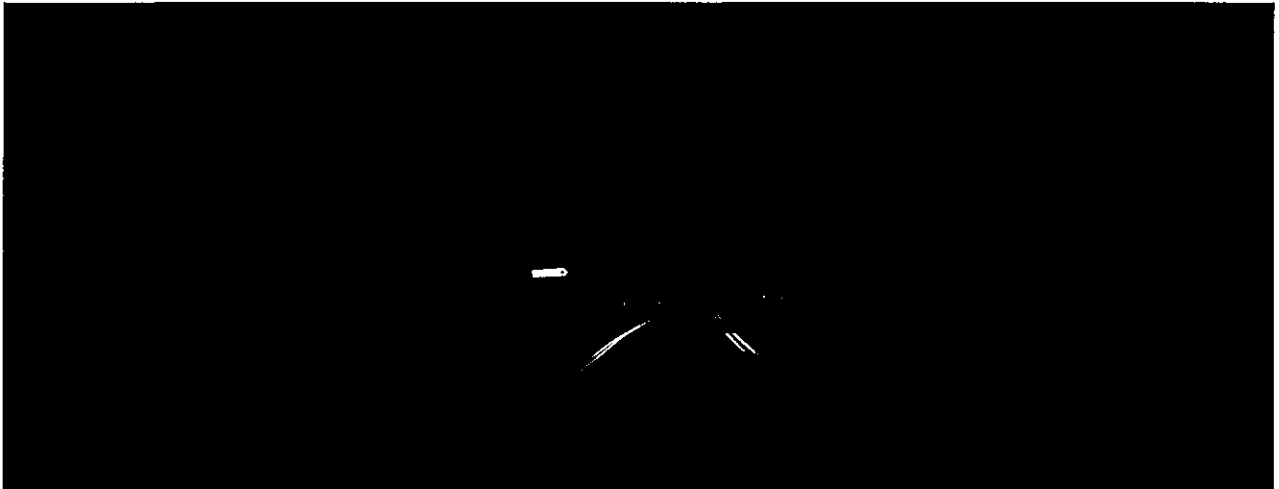


Photo No. 4: Summerland Way, eastbound (at night)



Photo No. 5: Imbreys Road approach, at intersection



Photo No. 6: Imbreys Road approach, just before last bend

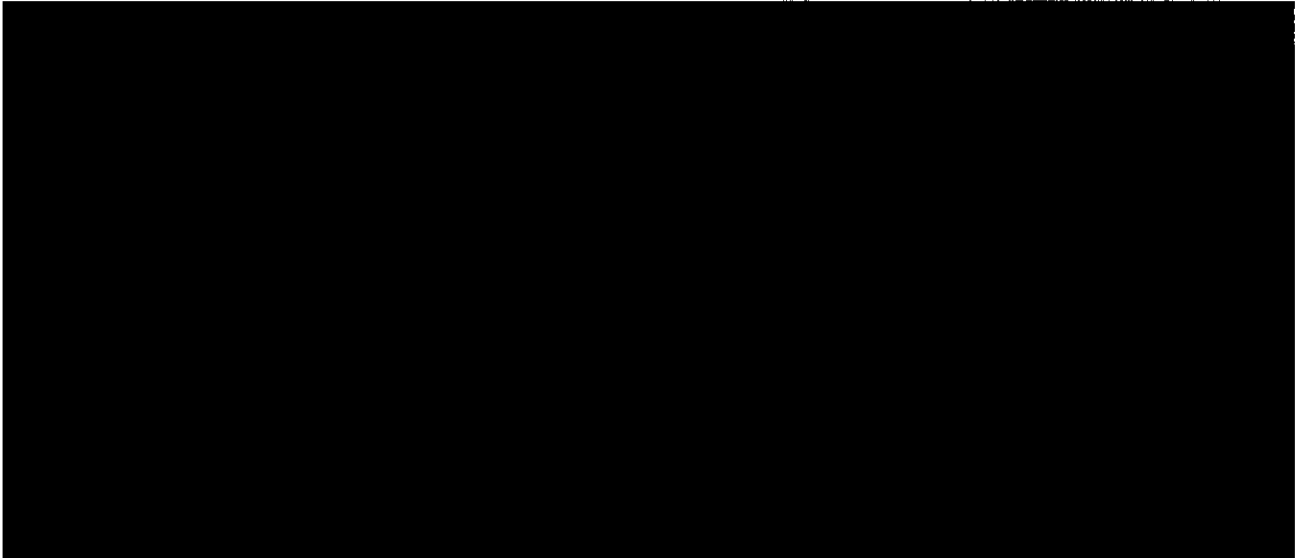


Photo No. 7: Imbreys Road approach at night

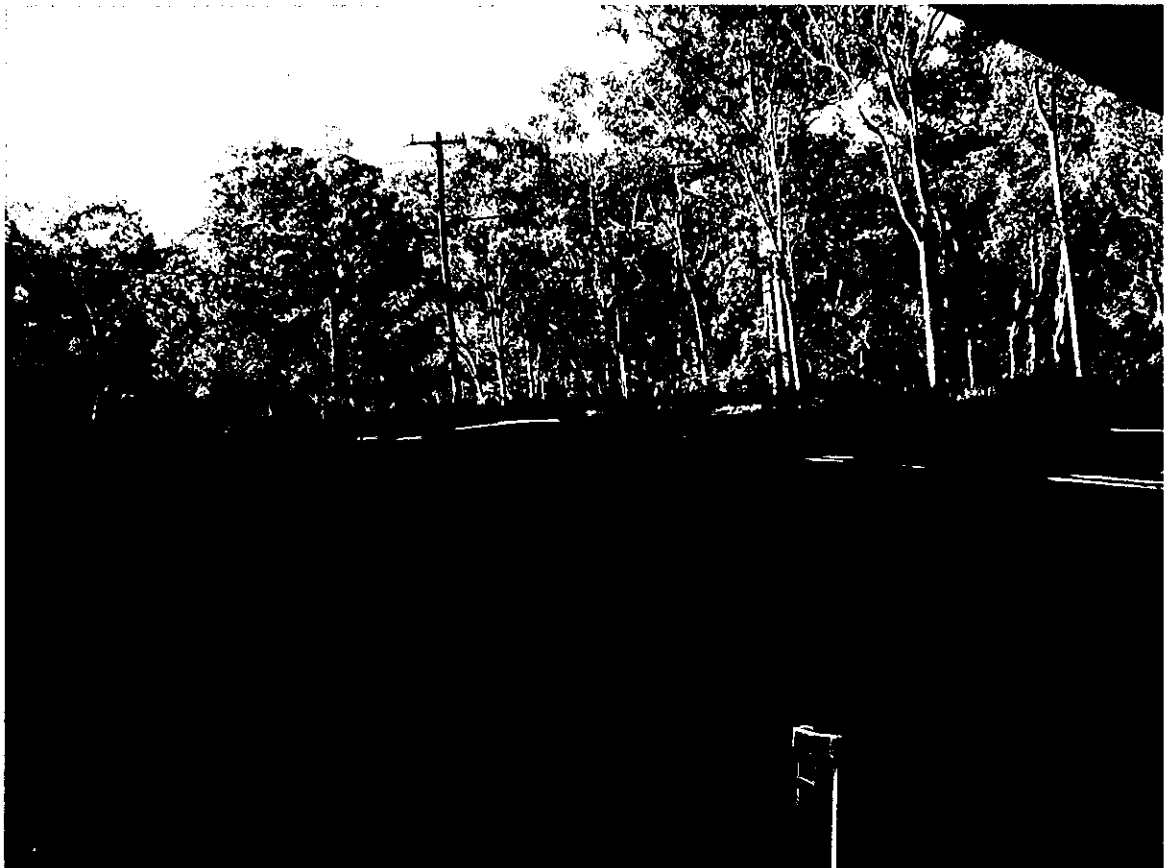


Photo No. 8: Sight distance west from Imbreys Road

ATTACHMENT 2

Attachment 2: General Comments and
Recommendations

General Comments and Recommendations

Following is a list of general comments and observations made by the audit team during the audit inspection which may be of some use to Council:

- Imbreys Road could be widened and sealed for a short distance to provide for two lanes
- An 'Intersection Ahead' sign should be provided in Imbreys Road
- Road edge guide posts should be provided on Imbreys Road in the approach to the intersection
- Advance warning signage on Summerland Way could be provided to improve the visibility of the intersection
- Distances could be added to the 'Side Road Intersection' signs in the approach to the intersection
- If the intersection were to be sealed, the Summerland Way edge lines could be turned in to Imbreys Road to improve the visibility of the intersection
- Vegetation in Imbreys Road, in the vicinity of the intersection, could be pruned or removed to improve sight distance.