

COR 2018 003063 D19/37435

12 June 2019

Coroners Court cpuresponses@coronerscourt.vic.gov.au



Dear Registrar

### FINDINGS INTO THE DEATH OF DAVID R GREEN

I refer to the findings and recommendations made by Coroner Rosemary Carlin, in relation to the death of David R Green received by Moira Shire Council 18 March 2019.

Please find detailed below response to the recommendations directed to Moira Shire Council.

### Recommendation

Moira Shire Council review the safety of the intersection of Spences Road and Numurkah Road Katunga in light of the circumstances of this collision and comments in connection with the death.

### Response

Existing Conditions Road Safety Audit conducted - final report enclosed.

If you have any queries or wish to discuss this matter further, do not hesitate to contact me on (03) 5871 9222.

Yours sincerely

**Andrew Close** 

General Manager Infrastructure

Moira Shire Council ABN: 20 538 141 700

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# Intersection of Spences Road and Numurkah Road, Katunga, Victoria

Existing Conditions Road Safety Audit

Client:

Moira Shire Council

Project No. 180686

Final Report - 28/05/2019

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	<i>x</i>					

180686: Spences Road - Numurkah Road intersection, Katunga - Existing Conditions Road Safety Audit Final: 28/05/2019



# **TABLE OF CONTENTS**

INTRODUCTION	
Description of the Site	
Supporting Information Used in the Audit	
Road Safety Audit Process	2
FINDINGS AND RECOMMENDATIONS	6
CONCLUSION	23

### INTRODUCTION

Trafficworks has been engaged by Moira Shire Council (Council) to undertake an existing conditions road safety audit of the intersection of Spences Road and Numurkah Road, Katunga. The request by Council for the road safety audit is in response to the recommendation of a Coroner's Report into a fatal crash that occurred at the intersection on Wednesday 27 June 2018.

The audit was conducted by:

Stuart Redman [BEng (Civil)(Hons)]

Senior Road Safety Auditor

and

Bob Citroën [Dip Civil Eng, Grad Dip Road Safety]

Senior Road Safety Auditor

Reviewed by:

Paul Mihailidis [BEng (Civil), GradCert Mgt]

Senior Road Safety Auditor

The audit included an inspection of the site by Stuart Redman and Bob Citroën during the afternoon and evening of Thursday 28 March 2019. The conditions during the day inspection were fine and sunny, and at night, the conditions were clear and calm.

### Description of the Site

### **Existing Conditions**

### Numurkah Road

Numurkah Road is a link road managed by Council, oriented in a north-south direction, providing a connecting route between Numurkah, to the south and Strathmerton to the north.

Near the intersection, Numurkah Road is configured as a two-lane two-way carriageway with a 7.5 m wide seal (2 x 3.75 m traffic lanes) bounded by 1.5 m wide unsealed shoulders. The road is located centrally within a 20 m wide road reservation, with a major irrigation channel located to the west of the road, south from Spences Road. A syphon for a water supply point to the farming property northeast of the intersection crosses Numurkah Road immediately north of the intersection, with syphon infrastructure located in the road reserve shielded by guard fencing.

The speed limit along the road near the intersection is the default rural 100km/h. The clear zone adopted for this audit is 6.5 m<sup>1</sup> based on a design speed of 100km/h and the two-way traffic volume of 888 vehicles per day<sup>2</sup>.

<sup>&</sup>lt;sup>1</sup> Clear zone determined in accordance with the Austroads Guide to Road Design, Part 6 – Roadside Design, Safety & Barriers – Table 4.1 for cut batters 6:1 to flat

<sup>&</sup>lt;sup>2</sup> Traffic Volume Data provided by Moira Shire Council (Collected 18 April to 2 May 2019)

### Spences Road

Spences Road is a rural access road managed by Council, oriented in an east-west direction, providing a connecting route between the Goulburn Valley Highway to the west and Labuan Road to the east.

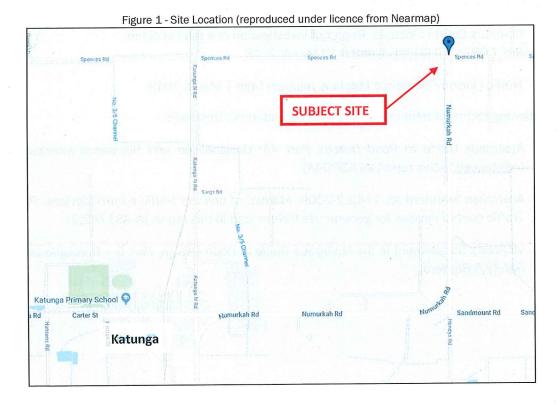
Spences Road is configured as a sealed carriageway bounded by unsealed shoulders, with a:

- 5.2 m wide seal (providing two narrow lanes) west of Numurkah Road
- 4.3 m wide seal (providing a single lane) east of Numurkah Road.

The road is located centrally within a 20 m wide road reservation, with a major irrigation channel located to the north of the road, west from Numurkah Road. This channel crosses Spences Road immediately west of the intersection with Numurkah Road with the syphon extending for the full distance between fence lines.

The speed limit along the road near the intersection is the default rural 100km/h. The clear zone adopted for this audit is  $5.0 \text{ m}^1$  based on a design speed of 100km/h and the two-way traffic volume of 140 vehicles per day<sup>2</sup>.

The intersection and the surrounding road network are shown in Figure 1.



### **Current Conditions**

The scope of the audit involved the intersection of Spences Road and Numurkah Road, located approximately 2.4 km north east of the township of Katunga. Numurkah Road is the through road at the intersection with vehicles in Spences Road facing a yield condition. There are no turn lane treatments present.

The western approach of Spences Road includes an advance Stop Advisory Sign (approximately 110 m in advance of the intersection), a Stop sign (approximately 10 m in advance of the intersection) and a painted (STATCON) stop line at the intersection with Numurkah Road.

The eastern approach of Spences Road includes an advance Give Way Advisory Sign (approximately 110 m in advance of the intersection), a Give Way sign (approximately 10 m in advance of the intersection) and a painted (STATCON) give way dashed line at the intersection with Numurkah Road.

There is no street lighting present at the intersection.

## Supporting Information Used in the Audit

The following information was used when conducting the audit:

- Coroners Court of Victoria, Report of investigation of a fatal accident Ref: COR 2018 003063, dated 13 March 2019
- Traffic Liaison Committee Meeting, minutes from 7 March 2019.

The following technical references were used to undertake this audit:

- Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections (referenced in this report as AGRD4A)
- Australian Standard AS 1742.2-2009, Manual of uniform traffic control devices, Part 2: Traffic control devices for general use (referenced in this report as AS1742.2)
- VicRoads Supplement to the Austroads Guide to Road Design, Part 6 Roadside Design, Safety & Barriers.

### **Road Safety Audit Process**

This Road Safety Audit has been conducted in accordance with the procedures set out in the Austroads Guide to Road Safety Part 6A: Implementation of Road Safety Audits (2019). It has reviewed the site and the details contained within the supporting documentation to identify issues which affect road user safety. The auditor cannot guarantee that every issue that affects road user safety has been identified. Although the adoption of the audit recommendations will improve the level of safety of the site it will not, however, eliminate all the road user safety risks.

The findings included within the audit have been given a risk rating based on the <u>likelihood</u> of a crash occurring because of the deficiency together with the potential <u>consequence</u> of that crash.

The risk ratings adopted are as follows:

- Intolerable
- High
- Medium
- Low

Trafficworks also denotes a risk rating of "Note only" for drafting errors, omissions, issues recognised to be outside the scope of works, and items to be noted within the scope of works that do not constitute a road safety risk. Tables 1 – 3 demonstrate the risk rating assessment process.

Table 1: Likelihood of a crash (source: Austroads Guide to Road Safety Part 6: Road Safety Audit)

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: Likely severity of a crash (source: Austroads Guide to Road Safety Part 6: Road Safety Audit)

Severity	Description	Examples
Catastrophic	Likely multiple deaths	High speed, multi-vehicle crash on a freeway
	9	Car runs into crowded bus stop
		Bus and petrol tanker collide
		Collapse of a bridge or tunnel
Serious	Likely deaths or	High or medium speed vehicle/vehicle collision
	serious injury	High or medium speed collision with a fixed roadside object
	*	Pedestrian or cyclists struck by a car
Minor	Likely minor injury	Some low speed vehicle collisions
		Cyclist falls from bicycle at low speed
	v.	Left-turn rear-end crash in a slip lane
Limited	Likely trivial injury or	Some low speed vehicle collisions
	property damage only	Pedestrian walks into object (no head injury)
		Car reverses into post

Table 3: Resulting level of risk (source: Austroads Guide to Road Safety Part 6: Road Safety Audit)

	Frequent	Probable	Occasional	Improbable
Catastrophic	Intolerable	Intolerable	Intolerable	High
Serious	Intolerable	Intolerable	High	Medium
Minor	Intolerable	High	Medium	. Low
Limited	High	Medium	Low	Low

The Safe System Approach has been formally adopted by VicRoads and Austroads. Research has found the chances of surviving a crash decrease markedly above certain speeds, depending on the type of crash:

•	Pedestrian struck by vehicle	20 to 30 km/h
•	Motorcyclist struck by vehicle (or falling off)	20 to 30 km/h
•	Side-impact vehicle striking a pole or tree	30 to 40 km/h
•	Side-impact vehicle to vehicle crash	50 km/h
•	Head-on vehicle to vehicle (equal mass) crash	70 km/h

Road Safety Audits are a formal process and the audit findings and recommendations should be responded to by the client in writing. If recommendations are not accepted by the client, then reasons should be included within the written response. A client is under no obligation to accept all the audit findings and recommendations and should consider these in conjunction with all other project considerations. It is not the role of the auditor to approve the client's response to the audit.

# FINDINGS AND RECOMMENDATIONS

Audit Findings	Audit Recommendations	Risk Rating		Reasons / Comments
SITE ISSUES				
Road alignment and cross-section	*			
When approaching the intersection from both approaches on Spences Road the location of Numerickah Road is hard to see due to a lack of	Consider installing transverse rumble strips and associated warning signs on both Spences		-	
identifying features and visual cues at the intersection. This may result in the approaching driver seeing through/past the intersection.	Road approaches.  It is likely that the rumble strips will need to be installed for the full width			
This could result in a vehicle on Spences Road misjudging and overshooting the intersection, potentially colliding with a through vehicle on	of the road due to the narrow seal widths on both approaches.	Likelihood:		
		Severity: Serious		
		Risk Rating: HIGH		
	Road alignment and cross-section  When approaching the intersection from both approaches on Spences Road the location of Numurkah Road is hard to see due to a lack of identifying features and visual cues at the intersection. This may result in the approaching driver seeing through/past the intersection.  This could result in a vehicle on Spences Road misjudging and overshooting the intersection, potentially colliding with a through vehicle on Numurkah Road.		Consider installing transverse rumble strips and associated warning signs on both Spences Road approaches.  It is likely that the rumble strips will need to be installed for the full width of the road due to the narrow seal widths on both approaches.  Likelihood: Occasional Severity: Serious Risk Rating: HIGH	Consider installing transverse rumble strips and associated warning signs on both Spences Road approaches.  It is likely that the rumble strips will need to be installed for the full width of the road due to the narrow seal widths on both approaches.

		,	1.2.1	1.2	No
It should be noted that sightlines are in excess of 300 m looking north from the eastern approach at 5.0 m set back from the edge of seal on Numurkah Road.	This could obscure a vehicle on the Numurkah Road northern approach from the view of a vehicle waiting to enter the intersection from the Spences Road eastern approach and could result in a collision between the two vehicles at the intersection.		There is vegetation around the irrigation farm channel (and associated infrastructure) on the northeast quadrant of the intersection behind the guard fence. This restricts visibility to oncoming vehicles of some looking to the north on Numurkah Road.	Intersections	Audit Findings
3			Trim/remove the vegetation in the northeast quadrant of the intersection to ensure sightlines are maintained.	el el	Audit Recommendations
		NOTE ONLY		×	Risk Rating
			v		Accept: Yes / No
					Client Response Reasons / Comments

180686: Spences Road - Numurkah Road intersection, Katunga - Existing Conditions Road Safety Audit Final: 28/05/2019

180686: Spences Road - Numurkah Road intersection, Katunga - Existing Conditions Road Safety Audit Final: 28/05/2019

,				This restricts the vision of drivers on the western approach when looking to the north along Numurkah Road.	
	•	NOTE ONLY			
			No action required	Running parallel with Spences Road, on the north side of the road reserve is a 20 m to 25 m wide irrigation supply channel (including earth embankments).	1.2.3
	а			However, to further ameliorate the risk of collisions at the intersection, some vegetation clearing is recommended.	
	ē			It is concluded that the minimum SISD criterion is satisfied.	
				This is the desirable location from which to assess Safe Intersection Sight Distance (SISD) as specified in Figure 3.2 of AGRD4A	
	4	Refer above	Refer above	It should be noted that sightlines are in excess of 300 m looking north from the eastern approach at 5.0 m set back from the edge of seal on Numurkah Road.	1.2.2 Cont.
Reasons / Comments	Accept: Yes / No	Risk Rating	Audit Recommendations	Audit Findings	No
Client Response					

It is concluded that the minimum SISI satisfied  There is a power pole on the south we the intersection, however this does no vision of drivers on the eastern app looking south along Numurkah Road. It should be noted that sightlines are 300 m looking south from the weste at 5.0 m set back from the edge Numurkah Road.	specified in Figure 3.2 of AGRD4A.	excess of 300 m loc approach at 5.0 m s on Numurkah Road. This is the desirable Safe Intersection	However, it sho		
It is concluded that the minimum SISD criterion is satisfied  There is a power pole on the south west corner of the intersection, however this does not impact the vision of drivers on the eastern approach when looking south along Numurkah Road.  It should be noted that sightlines are in excess of 300 m looking south from the western approach at 5.0 m set back from the edge of seal on Numurkah Road.	of AGRU4A.	excess of 300 m looking north from the western approach at 5.0 m set back from the edge of seal on Numurkah Road.  This is the desirable location from which to assess Safe Intersection Sight Distance (SISD) as a profiled in Figure 3.2 of ACBDAA	However, it should be noted that sightlines are in	Audit Findings	
No action required			Refer above	Audit Recommendations	
NOTE ONLY			Refer above	Risk Rating	
				Accept: Yes / No	
				Reasons / Comments	Client Response

180686: Spences Road - Numurkah Road intersection, Katunga - Existing Conditions Road Safety Audit Final: 28/05/2019

12.5	1.2.4 Cont.
The Spences Road western approach to Numurkah Road is STOP sign controlled.  For a posted speed limit on the major road (Numurkah Road) of 100km/h the sight distance threshold along the major road (at 3.0m from the edge of the through lane) is 95m, below which a Stop sign should be used.  The sightlines for Numurkah Road are more than 300m in both directions for the western approach indicating Give Way to be the appropriate control. The sight distance is greater than that shown in Figure 2.2 and therefore, a STOP sign is not required.	Audit Findings  Audit Findings
Review the appropriateness of the STOP sign on the Spences Road west approach with a view to replacing it with a GIVE WAY sign, and markings.	Audit Recommendations Refer above
NOTE ONLY	Risk Rating Refer above
× .	Accept: Yes / No
	Client Response  Reasons / Comments

		1.2.5 Cont.	No
where poor sight distance is not a factor can lead to driver non-compliance, and a lack of credibility of STOP signs where they are appropriate.	Spences Road looking north (western approach).  It should be noted that the use of STOP signs	Spences Road looking south (western approach).	Audit Findings
		Refer above	Audit Recommendations
		Refer above	Risk Rating
			Accept: Yes / No
			Client Response Reasons / Comments

1.2.6 Z misjudging the intersection and overshooting, potentially colliding with through traffic on The STATCON line marking at the intersection is intersection from both approaches on Spences This could result in a vehicle on Spences Road faded and does not delineate the intersection. Numurkah Road. This makes it hard to see when approaching the **Audit Findings** 1.2.4. following the review noted in Item Refresh all the STATCON linemarking at the intersection Refresh Risk Rating: MEDIUM Improbable Likelihood: **Risk Rating** Severity: Serious Accept: Yes / No **Client Response** Reasons / Comments

180686: Spences Road - Numurkah Road intersection, Katunga - Existing Conditions Road Safety Audit Final: 28/05/2019

1.3.1 1.3.2 1.3 Advance warning signs on both minor approaches The provision of street lighting (a "Flag" light) on otherwise unlit roads of an intersection may be warranted to alert approaching motorists to the Signs and Lighting message the sign is There is no overshooting, driver misjudging the difficult for an approaching driver to are faded and are in poor condition. suddenly and could result in a loss of control. Without the flag light, a vehicle may have to brake presence of the intersection from a safe distance. intersection. with through traffic on displaying. clearly read potentially intersection Numurkah Road. This may result in the This could make it colliding street lighting present at **Audit Findings** and the Replace the signs and consider installing a duplicate on the "Flag" lighting should be considered opposite side of Spences Road. to indicate location of the intersection. **Audit Recommendations** the presence and Risk Rating: MEDIUM Risk Rating: Improbable Risk Rating Likelihood: Improbable Likelihood: Serious Severity: Severity: Minor Accept: Yes / No **Client Response** Reasons / Comments

180686: Spences Road - Numurkah Road intersection, Katunga - Existing Conditions Road Safety Audit Final: 28/05/2019

	*	
a a	1.3.3	N <sub>o</sub>
	Crossroad warning signs are present on both major approaches and are in good condition.  Northern Approach  Southern Approach  Southern Approach  No further action required.	Audit Findings
	No action required	Audit Recommendations
a.	NOTE ONLY	Risk Rating
		Accept: Yes / No
		Client Response Reasons / Comments

1.4.2	*	1.4.1	1.4	No
The narrow seal of Spences Road precludes the installation of longitudinal line markings, apart from the single continuous dividing line at the approach to the STATCON markings at each yield point.  The single continuous dividing line marking at the intersection is faded, reducing visibility of the intersection, particularly in dark and inclement weather conditions on the western approach.	Edgelines delineate the edge of the road and can discourage traffic from travelling on shoulders. No edgelines are present along Numurkah Road.	Numurkah Road only has a centreline marked in the vicinity of the Spencer Road intersection. At the intersection this centre line is faded.	Markings and Delineation	Audit Findings
Refresh the single continuous dividing line to the STATCON markings on the western minor approach.	installation of edgelines.	Refresh the centre line along Numurkah Road through the intersection and consider the		Audit Recommendations
Likelihood: Improbable Severity: Serious Risk Rating: MEDIUM	Likelihood: Improbable Severity: Minor Risk Rating: LOW			Risk Rating
				Accept: Yes / No
			\.	Client Response Reasons / Comments

180686: Spences Road - Numurkah Road intersection, Katunga - Existing Conditions Road Safety Audit Final: 28/05/2019

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1. 4.3	1.4.2 Cont.	No
Near the intersection along both Spencer Road and Numurkah Road, guideposts are only installed to mark cross culverts and other roadside structures.	This could result in a vehicle on Spences Road misjudging the intersection and overshooting, potentially colliding with through traffic on Numurkah Road.	Audit Findings
Consider installing additional guideposts on the approaches to the Spencer Road/Numurkah Road intersection to enhance delineation of the intersection.	Refer above	Audit Recommendations
Likelihood: Improbable Severity: Minor Risk Rating: LOW	Refer above	Risk Rating
		Accept: Yes / No
		Client Response Reasons / Comments

• ,	1.5.1	1.5	1.4.3 Cont.	No
	Located near the Stop sign on the western approach to Numurkah Road is an obsolete (old style) guidepost. This is not considered frangible and present a hazard to an errant vehicle on the western approach to the intersection.	Crash Barrier and Clear Zones	Guideposts delineate the road edge and assist the road user by indicating the alignment of the road ahead and under some circumstances, by providing a gauge with which to assess available sight distance.	Audit Findings
	Remove the obsolete guidepost and replace it with a frangible guidepost as required.		Refer above	Audit Recommendations
Likelihood: Improbable Severity: Minor Risk Rating: LOW			Refer above	Risk Rating
•				Accept: Yes / No
				Client Response  Reasons / Comments

180686: Spences Road - Numurkah Road intersection, Katunga - Existing Conditions Road Safety Audit Final: 28/05/2019

	.1. .5. .ω	N <sub>o</sub>
This is considered a hazard should an errant vehicle run-off the road at this location.	There is a power pole located on the south west quadrant of the intersection, at a 2.2 m offset from the edge of seal.	Audit Findings
	Consider the following course of action (in order of priority):  1. remove / relocate the power pole  2. mitigate the residual risk by shielding the pole	Audit Recommendations
	Likelihood: Occasional Severity: Serious Risk Rating: HIGH	Risk Rating
		Accept: Yes / No
		Client Response Reasons / Comments

180686: Spences Road - Numurkah Road intersection, Katunga - Existing Conditions Road Safety Audit Final: 28/05/2019

		Likelihood: Improbable Severity: Serious Risk Rating: MEDIUM	Install RRPM's along the centre line on Numurkah Road to improve delineation.	Raised Reflective Pavement Markers (RRPMs) are not present on Numurkah Road.  These should be included to improve delineation of the pavement markings in inclement weather or night time conditions.	2.1.2
		Likelihood: Improbable Severity: Serious Risk Rating: MEDIUM	Replace the signs and consider installing a duplicate on the opposite side of Spences Road to enhance the visibility of the signs.	The advance warning signs on the east and west approaches to the intersection are faded, impacting reflectivity.  This may result in the driver misjudging the intersection and overshooting, potentially colliding with through traffic on Numurkah Road.	2.1.1
		-		NIGHT ISSUES	2.1
Client Response  Reasons / Comments	Accept: Yes / No	Risk Rating	Audit Recommendations	Audit Findings	No

Client response completed by:

Signed: ...... Date: .......

Name:.....

# CONCLUSION

This Road Safety Audit has been conducted in accordance with the procedures set out in the Austroads Guide to Road Safety Part 6A: Implementation of Road Safety Audits (2019). The site has been inspected and the supporting documentation has been examined. The findings and recommendations are provided for consideration by the client and any other interested parties.

Auditors:

(Tuesday 28 May 2019)

Bob Citroën [Dip Civil Eng, Grad Dip Road Safety]

**Senior Road Safety Auditor** 

...... (Tuesday 28 May 2019)

Stuart Redman [BEng (Civil)(Hons)] Senior Road Safety Auditor

Reviewer:

...... (Tuesday 28 May 2019)

Paul Mihailidis [BEng (Civil), GradCert Mgt]

**Senior Road Safety Auditor**