

WINNING TRAFFIC SOLUTIONS

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ROAD SAFETY AUDIT REPORT

Stage 5 (Existing Road)

GREENDALE ROAD, GREENDALE
(The Northern Road to Park Road)

JULY 2012

CLIENT

Peter Georgopolous

Road Safety Audit Summary

Stage 5 (Existing Road)

GREENDALE ROAD, GREENDALE (The Northern Road to Park Road)

Report No.	RSA No. WTS LIV- 1
Audit For	Liverpool City Council
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Audit Team	Terry Winning (WTS) Sue Park (WTS)
Audit Type	Stage 5 – Existing Road
Commencement Meeting	Thursday 28 June 2012
Audit Date	Tuesday 3 July 2012
Completion Meeting	Monday 16 July 2012
Previous audit No.	Not Known

Summary of Audit

This audit is being undertaken at the request of Mr. Ryan Bennett (Pikes Verekers Lawyers) who act for the client in respect of DA 1133/2010 for the construction of a multi-denominational lawn cemetery and associated works on land located at 321 Greendale Road, Greendale. This application is to be determined by the Sydney West Joint Regional Planning Panel.

Assessment of the DA application was deferred for determination on the basis of, among other things, a direction from the Sydney West Joint Regional Planning Panel to Council that the applicant be directed to prepare a Road Safety Audit of the existing Greendale Road.

Relevant to the findings of this audit is that Greendale Road is administered by three (3) local government agencies each having responsibility for those sections of road within each of the local government administrative areas (refer Appendix 1).

This audit addresses the physical features of Greendale Road, Greendale from The Northern Road, in the south to Park Road in the north that may impact road user safety and is sought to identify potential safety hazards.

There are a number of issues that are considered to be high risk to road users and require review against the overall operational safety aspects of the constructed works.

Of greatest concern arising from the Audit is:

- Generally and for the whole length of Greendale Rd there is a general lack of consistency in the application of pavement markings (centre line, edge-lines and RRPM's), guideposts and signposting (curve warning and hazard boards).

It is considered this is attributable to the different local government agencies administering the route.

- There are non-frangible objects in the clear zone. RTA/Pub.11.097 Fig 6.1 shows clear zone for roads with <1000 AADT at 80kph is 4m.
- In the northbound (NB) direction from Ch.1.04 to Ch.8.85 there are no edge-lines to provide driver guidance. This is particularly a hazard under night conditions and likely to contribute to run-off-road incidents.
- In the NB direction from Ch.1.20 to Ch.8.85 there is intermittent pavement failure, including pot-holing and pavement edge failure. Pot-holes are a particular hazard for motorcycles.
- In the NB direction from Ch.1.33 to Ch.8.85 some pavement remediation has been undertaken but centre line markings have not been reinstated resulting in loss of pavement definition, particularly at night.
- In the NB direction at Ch.5.12 there is no warning of the curve in southbound direction and it is not properly delineated in either direction.
- In the NB direction at Ch.5.40 the curve is not delineated in southbound direction. As it leads into the curve at Ch.5.30 it is considered that advance warning of curve and advisory speed of 35kph should commence here.
- In the NB direction at Ch.13.88 50kph regulatory signs are around curve without advance warning of the change in speed limit.
- In the NB direction from Ch. 15.27 to Park Road, centre and edge-line markings terminate abruptly at 15.27. There are no pavement markings along the road. It is believed this area is within the administrative boundaries of Penrith Council. The road is in a residential precinct and a high non-compliance to the regulated 50 km/r speed was observed. Overhead lighting is poor and at night a driver is not confident about vehicle position in the roadway, particularly with on-coming vehicle headlights.

Given the nature of the road environment it is considered imperative that "traffic calming" be employed, by way of pavement markings, to enhance road user safety and enforce the urban road environment being driven.

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ROAD SAFETY AUDIT REPORT

Stage 5 (Existing Road)

GREENDALE ROAD, GREENDALE (The Northern Road to Park Road)

1 Introduction

1.1 Project Description

Winning Traffic Solutions Pty. Ltd. has been engaged by Mr. Peter Georgopolous to undertake a Stage 5 (Existing Road) Road Safety Audit of Greendale Road from The Northern Road, in the south to Park Road in the north (refer Appendix 1).

This audit is being undertaken at the request of Mr. Ryan Bennett (Pikes Verekers Lawyers) who act for the client in respect of DA 1133/2010 for the construction of a multi-denominational lawn cemetery and associated works on land located at 321 Greendale Road, Greendale. This application is to be determined by the Sydney West Joint Regional Planning Panel.

Assessment of the DA application was deferred for determination on the basis of, among other things, a direction from the Sydney West Joint Regional Planning Panel to Council that the applicant be directed to prepare a Road Safety Audit of the existing Greendale Road.

This Road Safety Audit is the result of that direction from Liverpool City Council to Mr F. Georges via correspondence dated 21 June 2012.

Relevant to the findings of this audit is that Greendale Road is administered by three (3) local government agencies each having responsibility for those sections of road within each of the local government administrative areas (refer Appendix 1). These agencies comprise:

- Camden – in the south
- Liverpool – central area
- Penrith – in the north

A Road Safety Audit is a series of formal checks of road and traffic works, both existing and future, in relation to their accident potential and safety performance. It is conducted by a qualified team independent to the Project who can provide an objective safety assessment. The purpose of the audit process is to pro-actively manage road safety by identifying and addressing risks associated with identified road user safety deficiencies.

Road Safety Audits of existing Roads aim to identify any existing road user safety deficiencies of design, layout and road furniture. There should be a consistency of standards such that the road user's perception of local conditions assists safe behaviour.

Other objectives of the Audit are:

- To identify potential safety problems for all road users;
- Help minimise the risk and severity of crashes that may be attributed to the existing road conditions;
- Optimise whole-of-life and operation benefits for the road network where practicable;
- Identify, primarily from the road users perspective, the issues and features that give misleading and confusing messages.

The road features of Greendale Road generally conform to standards of a low volume rural road servicing the areas of Bringelly in the south and Wallacia in the north.

The road is bitumen sealed within its full length of the audit boundaries, is generally a two-lane, two-way undivided road constructed in the majority to a rural road standard within its central part and to urban standard at its southern connection to The Northern Road and northern connection at Park Road.

For the purpose of this audit Greendale Road is orientated to a north/south direction and functions as a collector/distributor road serving the communities of Bringelly, in the south and Wallacia, in the north, a distance of approximately 17 kilometres (refer Appendix 1).

At the southern and northern extremities of the road abutting development is generally of a residential type and rural type large allotments for the majority central section.

Traffic volumes along the road were not available excepting for a 10 hour count undertaken by Varga Traffic Planning Pty. Ltd. and included in the Traffic and Parking Assessment Report (December 2011) in support of the above referenced Development Application.

The traffic volume count (2009), undertaken in the vicinity of No. 321 Greendale Road, peaked at 44 vehicles per hour and if extrapolated by generally accepted industry standards as 10% of Average Daily Traffic (ADT), would equate to 440 vehicles per day.

A variety of speed regulation is employed along Greendale Road:

- 60 km/h north of The Northern Road to approx. 1.0 km
- 80 km/h from 1.0 km– 13.9 km
- 50 km/h from 13.9 km – 16.6 km at Park Road, Wallacia

Accident Data (2005 to 2009) was included in the above referenced Varga Report and used to assist with this audit but was not reviewed until following the road safety audit fieldwork so as not to influence the audit team's focus to particular types of road safety deficiencies.

The format of this Road Safety Audit report contains a "Deficiency Log" listing safety deficiencies identified during the Road Safety Audit of Greendale Road and is included at Appendix 2.

1.2 Supporting Information

The following documents and relevant to the Audit have been provided by the client:

- JRPP report dated 14 June 2012;
- Letter from JRPP to Liverpool Council's general Manager dated 18 June 2012;
- Letter from Liverpool Council to the applicant dated 21 June 2012;
- Class 1 Application.

1.3 Checklists and Reference Material

The subject site was audited in accordance with the Austroads publication "Guide to Road Safety Part 6: Road Safety Audit" and RMS "Guidelines for Road Safety Audit Practices". Key elements examined included:

- General topics including drainage, landscaping and general access;

- Design issues;
- Alignment details;
- Intersections;
- Special road users;
- Lighting, signs and delineation; and
- Environmental constraints.

Other specific reference documents, papers and manuals utilised during the course of this audit are detailed as follows:

- RMS Road Design Guide;
- RMS Guide to Signs and Markings Reference List;
- Austroads Guide to Traffic Management;
- Australian Standards AS 1742 (Parts 1 & 2): Manual of Uniform traffic Control Devices.

2 Road Safety Audit Program

2.1 Commencement Meeting

This report is based primarily on publications by Austroads and RMS referred above and used as guides for the Road Safety Audit of the subject road.

This audit has been undertaken at the request of Mr. Ryan Bennett (Pikes Verekers Lawyers) as the client representative for the audit.

The audit included a commencement meeting with Mr. Bennett (via telephone), on Thursday 28 June 2012. At this meeting relevant issues aligning to the scope of work were discussed as well as other relevant information available for the audit.

2.2 Site audit

The audit was carried out by:

Terry Winning and Sue Park
Winning Traffic Solutions Pty. Ltd.
Both IPWEA Accredited Level III Auditors

The auditors have had no involvement with design or development of the work audited.

Field inspections of the site, both daytime (PM) and night time, were undertaken on Tuesday 3 July 2012. The weather at the time of inspection was fine and cloudy.

2.3 Completion Meeting

A completion meeting was conducted with Mr. Bennett on Monday 16 July 2012 (via telephone) where the Audit Findings were discussed.

3 Road Safety Audit Findings

This audit addresses the physical features of Greendale Road, Greendale, from The Northern Road in the south, to Park Road in the north, which may impact road user safety and is sought to identify potential safety hazards. However, the auditors point out that no guarantee is made that every deficiency has been identified.

Further, if all the unsafe issues identified in this report were to be acted upon, this would not confirm that the constructed facility is “safe”; rather remedial action should improve the level of safety of the facility.

The format of the Road Safety Audit report aligns with the Austroads publication Guide To Road Safety Part 6: Road Safety Audit and contains a “Deficiency Log” listing safety deficiencies identified during the Road Safety Audit of Greendale Road (refer Appendix 2).

Relevant to the findings of this audit is that Greendale Road is administered by three (3) local government agencies each having responsibility for those sections of road within each of the local government administrative areas (refer Appendix 1). These agencies comprise:

- Camden – in the south
- Liverpool – central area
- Penrith – in the north

A Road Safety Audit is a series of formal checks of road and traffic works, both existing and future, in relation to their accident potential and safety performance. It is conducted by a team independent to the Project who can provide an objective safety assessment. The purpose of the audit process is to pro-actively manage road safety by addressing risks associated with identified road safety deficiencies.

Road Safety Audits of existing Roads aim to identify any existing road user safety deficiencies of design, layout and road furniture. There should be a consistency of standards such that the road user’s perception of local conditions assists safe behaviour.

Other objectives of the Audit are:

- To identify potential safety problems for all road users;
- Help minimise the risk and severity of crashes that may be attributed to the existing road conditions;
- Optimise whole-of-life and operation benefits for the road network where practicable;
- Identify, primarily from the road users perspective, the issues and features that give misleading and confusing messages.

The log of safety deficiencies (refer Appendix 2) has been ordered as far as practical in a sequential order, provides a site reference, indicates the direction of travel, and provides a “Preliminary Risk Rating” based on how often the problem is likely to lead to a crash (Frequent, Probable, Occasional, Improbable) and the likely severity of the resulting accident type (Catastrophic, Serious, Minor, Limited), Refer Austroads – Road Safety Audit: Section 6 –Tables 6.1, 6.2, 6.3. –reproduced below.

RISK ASSESSMENT GUIDELINES

(Source: Austroads – Road Safety Audit: Section 6)

Table 6.1: How often is the problem likely to lead to a crash?	
<u>Frequency</u>	<u>Description</u>
Frequent	Once or more a week
Probable	Once or more per year (but less than once a week)
Occasional	Once every five or ten years
Improbable	Less often than once every ten years

Table 6.2: What is the likely severity of the resulting accident type?		
<u>Severity</u>	<u>Description</u>	<u>Examples</u>
Catastrophic	Likely multiple deaths	High speed multi vehicle crash. Car runs into bus stop. Bus and petrol tanker collide Collapse of bridge or tunnel
Serious	Likely death or serious injury	High or medium speed veh/veh collision. High or medium speed collision with a fixed roadside object. Pedestrian struck at high speed. Cyclist is hit by a car
Minor	Likely minor injury	Some low speed veh collisions Cyclists falls from bicycle at low speed Left turn rear end crash in a slip lane
Limited	Likely trivial injury or property damage only	Some low speed veh collisions Pedestrian walks into object (no head injury) Car reverses into post

Table 6.3: The resulting level of risk				
	<u>Frequent</u>	<u>Probable</u>	<u>Occasional</u>	<u>Improbable</u>
Catastrophic	Intolerable	Intolerable	Intolerable	High
Serious	Intolerable	Intolerable	High	Medium
Minor	Intolerable	High	Medium	Low
Limited	High	Medium	Low	Low

For the purpose of this audit Greendale Road is orientated to a north/south direction and functions as a collector/distributor road serving the communities of Bringelly in the south and Wallacia in the north, a distance of approximately 17 kilometres (refer Appendix 1).

The audit process included logging easily identifiable commencement and end points to the audit and provides a distance measurement to the roadside features and identified deficiencies of the road.

This was achieved by driving the designated road and using the survey vehicle odometer and video recording to log these items to align the road features to the audit.

At selected areas along the length of road the survey vehicle was stopped and the Audit Team inspected these areas walking the site.

The commencement point of the audit is identified as the intersection of The Northern Road and Greendale Road, a signalized intersection, from the stop line in Greendale Road for the northbound run.

The end point of the audit is identified as the end of median nose in Greendale Road at the intersection of Park Road. This point was also selected for the commencement point of the southbound run.

For the purpose of identification both the northbound and southbound runs of the audit have been recorded and a summary of findings are presented in the following Inventory Log.

Inventory Log:

LOCATION	CUM NORTH BOUND	CUM SOUTH BOUND	Pavement condition	Edge-lines	Centre linemarking	Other linemarking	Curve warning/delineation	Other/ Comments
The Northern Rd, Bringelly	0.00	16.55						Sign has lost reflectivity
Pedestrian refuge	0.14	16.42						
School Zone	0.22	14.35						
culvert	0.38							
"Road narrows" sign	0.44	16.10						
Medway Rd	0.60	15.94						
culvert	0.71							
60/80 kph signs	1.04	15.50						pavement narrows
culvert	1.33							
Tyson Rd	1.74	14.81						
culvert	2.04	14.66						
	2.32							
"Intersection on curve" sign	2.72							
Dwyer Rd	3.06	13.68						
	3.16							
	3.28							
	3.39	11.87						
55kph curve warning	3.58	11.77						
	4.58							
	4.73							
55kph curve warning	4.92							
	5.12	11.41						
35kph curve warning	5.20	11.28						
Property #572	5.30	11.20						
	5.40	10.93						

LOCATION	CUM NORTH BOUND	CUM SOUTH BOUND	Pavement condition	Edge-lines	Centre linemarking	Other linemarking	Curve warning/delineation	Other/ Comments
culvert	5.47							
	5.75	10.73						
	5.88	10.45						
crest	6.22							
advisory direction sign	6.38							
culvert	6.48							
Wolstenholme Ave	6.68	9.86						
"Reduce speed"/"T-junction" signs	6.92	9.78						T sign lost reflectivity
	7.12							
45kph curve warning	7.18	9.34						
		9.21						
		9.05						
		8.95						
	7.83	8.75						
	8.05	8.35						
		7.95						
proposed cemetery entrance	8.68	7.86						
start/end of edge line	8.85	7.70						Centre line overtaking sight distance should be reviewed
	9.35	7.20						
	9.60	6.96						
		6.80						damaged guidepost
		6.21						RRPM failure
		6.00						
	9.74	6.51						damaged guidepost
								centre line marking failure
Vickery Rd	10.48							
"T-junction" sign	10.92	5.64						
		5.51						
	11.22	5.07						
55kph curve warning	11.37							
guardrail	11.50							
55kph curve warning	11.55	4.79						
		4.58						
55kph curve warning	11.95	4.36						
	12.30							
curve warning	12.61							
45kph curve warning								
Property #723	12.88	3.66						
CREST		3.08						
"Road narrows" sign		2.97						
80/50 kph signs	13.88	2.68						
	14.14	2.42						chevrons lost reflectivity
50kph	14.33	2.23						
Matingara Way	15.16	1.39						Sign twisted
Centre line ends/starts	15.27	1.28						
	15.42	1.13						Road narrows
50kph signs	15.46	1.10						
Davenport Dr	15.80	0.75						

LOCATION	CUM NORTH BOUND	CUM SOUTH BOUND	Pavement condition	Edge-lines	Centre linemarking	Other linemarking	Curve warning/delineation	Other/ Comments
Murroobah Rd	15.85	0.70						End Kerb & Gutter
Roma Ave	15.97	0.57						
Peter Pan Ave	16.10	0.44						
50kph signs	16.20	0.36						
Eagle St	16.27	0.30						
Byron Ave	16.37	0.18						
50kph sign	16.40	0.15						Sign twisted
Park Rd, Wallacia	16.56	0.00						

There are a number of issues that are considered to be high risk to road users and require review against the overall operational safety aspects of the constructed works.

Of greatest concern arising from the Audit is:

- Generally and for the whole length of Greendale Rd there is a general lack of consistency in the application of pavement markings (centre line, edge-lines and RRPM's), guideposts and signposting (curve warning and hazard boards).

It is considered this is attributable to the different local government agencies administering the route.

- There are non-frangible objects in the clear zone. RTA/Pub.11.097 Fig 6.1 shows clear zone for roads with <1000 AADT at 80kph is 4m.
- In the northbound (NB) direction from Ch.1.04 to Ch.8.85 there are no edge-lines to provide driver guidance. This is particularly a hazard under night conditions and likely to contribute to run-off-road incidents.
- In the NB direction from Ch.1.20 to Ch.8.85 there is intermittent pavement failure, including pot-holing and pavement edge failure. Pot-holes are a particular hazard for motorcycles.
- In the NB direction from Ch.1.33 to Ch.8.85 some pavement remediation has been undertaken but centre line markings have not been reinstated resulting in loss of pavement definition, particularly at night.
- In the NB direction at Ch.5.12 there is no warning of the curve in southbound direction and it is not properly delineated in either direction.
- In the NB direction at Ch.5.40 curve is not delineated in southbound direction. As it leads into the curve at Ch.5.30 it is considered that advance warning of curve and advisory speed of 35kph should commence here.
- In the NB direction at Ch.13.88 50kph regulatory signs are around curve without advance warning of the change in speed limit.
- In the NB direction from Ch. 15.27 to Park Road, centre and edge-line markings terminate abruptly at 15.27. There are no pavement markings along the road. It is believed this area is within the administrative boundaries of

Penrith Council. The road is in a residential precinct and a high non-compliance to the regulated 50 km/h speed was observed. Overhead lighting is poor and at night a driver is not confident about vehicle position in the roadway, particularly with on-coming vehicle headlights.

Given the nature of the road environment it is considered imperative that “traffic calming” be employed, by way of pavement markings, to enhance road user safety and enforce the urban road environment being driven.

4 Accident Data

Accident data along Greendale Road was included in the Varga Traffic Planning Pty. Ltd. Traffic and Parking Assessment Report (December 2011) referred above. Set out (at Appendix B in that report) is the RTA Detailed Crash Report for the 17 km of Greendale Road from The Northern Road to Park Road, for the most recent 4-5 year period available between October 2005 and December 2009.

These accident trends were purposely reviewed following the road safety audit fieldwork so as not to influence the audit team’s focus to particular types of road safety deficiencies.

There were a total of 23 recorded crashes resulting in 20 casualties in 18 of those crashes (NIL fatal – NIL pedestrian) along the audited length of road between October 2005 and December 2009.

Significantly all but 2 of the crashes involved a single vehicle leaving the carriageway and impacting bushes, fence, power pole and the like located mostly within a curved road alignment.

In addition speed was an identified factor associated with 13 crashes and fatigue contributing in 4 crashes.

Motorcycles were represented in 7 crashes and trucks in 4 crashes.

Generally there were no isolated sections of road that could be assessed as a “blackspot” from the crash data analysed. The overrepresentation of “run off road/speed/fatigue” type crashes were recorded mainly within the 80 km/h rural environment employing curved and undulating road alignment and during “dry” weather conditions.

In addition there was no unusual trend toward day of week or time of day crash occurrence, though recorded crashes increased during 2009.

Age/sex distribution of drivers aligns with current NSW trends in that 12 drivers (only 1 female) below the age of 30 years were involved in recorded crashes.

Crash rate, in general, measures high risk opportunity of crash occurrence i.e. per unit of exposure. Typical exposure measures in rate criterion for road sections are usually based on a measure of exposure per kilometre of road length i.e. number of crashes per kilometre.

On this basis Greendale Road crash rate equates to 0.32 crashes per kilometre per year.

Though the recorded crash rate for the length of road does not appear significant it is the type of crash (run off road) that represents a need to improve awareness of the road alignment. This is supported by inspection of the road identifying a lack of delineation at critical locations along the road.

In conclusion assessment of the crash data tends toward a review of and improving driver information/awareness along the road.

5 Responding to this Audit Report

As set out in the road safety audit guidelines, responsibility for implementing and or accepting/rejecting the audit findings, always rests with the Project Manager (or equivalent), and not with the auditors.

A Project Manager is under no obligation to accept all the audit findings and comments. Also, it is not the role of the audit team to accept or approve of the Project Manager's response to the audit. Rather, the audit provides the opportunity to highlight potential problems and risks and to have them formerly considered by the Project Manager or in this case the local government administrative agency in developing the final works program for remedial works, in conjunction with all other road management considerations.

As mentioned above and relevant to the findings of this audit is that Greendale Road is administered by three (3) local government agencies each having responsibility for those sections of road within each of the local government administrative areas (refer Appendix 1). These agencies comprise:

- Camden – in the south
- Liverpool – central area
- Penrith – in the north

It is considered solely the responsibility of each Council to determine corrective action that is to be applied to the identified road user safety deficiencies (refer Appendix 2) along Greendale Road. Whilst some of the identified deficiencies may be dealt with through maintenance programs, other corrective actions may be more substantial and require inclusion into a forward works program as deemed necessary by each responsible Council.

Given the source for the instigation of this road safety audit being Liverpool City Council it is recommended a joint approach between Camden and Liverpool Councils, in the length of road in the south identified as shared administration, be established in addressing the issues raised in this audit report.

Penrith City Council, who administers that length of Greendale Road generally north of Matingara Road, should be advised of this report to allow Council assessment and action on the audit findings as deemed necessary.

6 Formal Statement

The auditors have examined all documents provided and have a reasonable knowledge of the site and its environs.

This audit has been carried out in accordance with the Austroads publication "Guide to Road Safety Part 6: Road Safety Audit" for the sole purpose of identifying any features of the works interfacing with the road user and road network that could be altered or removed to improve safety.

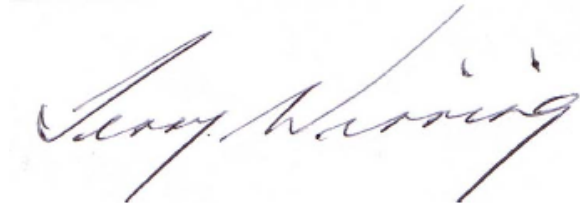
A Road Safety Audit is a series of formal checks of road and traffic works, both existing and future, in relation to their accident potential and safety performance. It is conducted by a qualified person or team independent to the Project who can provide an objective safety assessment.

The purpose of the audit process is to pro-actively manage road safety by identifying and addressing risks associated with identified road safety deficiencies. It should be noted the while every effort has been made to identify potential safety hazards, no guarantee can be made that every deficiency has been identified.

7 Conclusion

We, the undersigned, declare that we have reviewed the material and data listed in this report and identified what are considered safety and operational deficiencies resulting from a field inspection undertaken of Greendale Road.

We recommend that points of concern be investigated and corrective actions implemented as soon as practicable by the administrative agencies for the road.



Date: 19 July 2012

Terry Winning – Lead Road Safety Auditor
Winning Traffic Solutions Pty. Ltd.

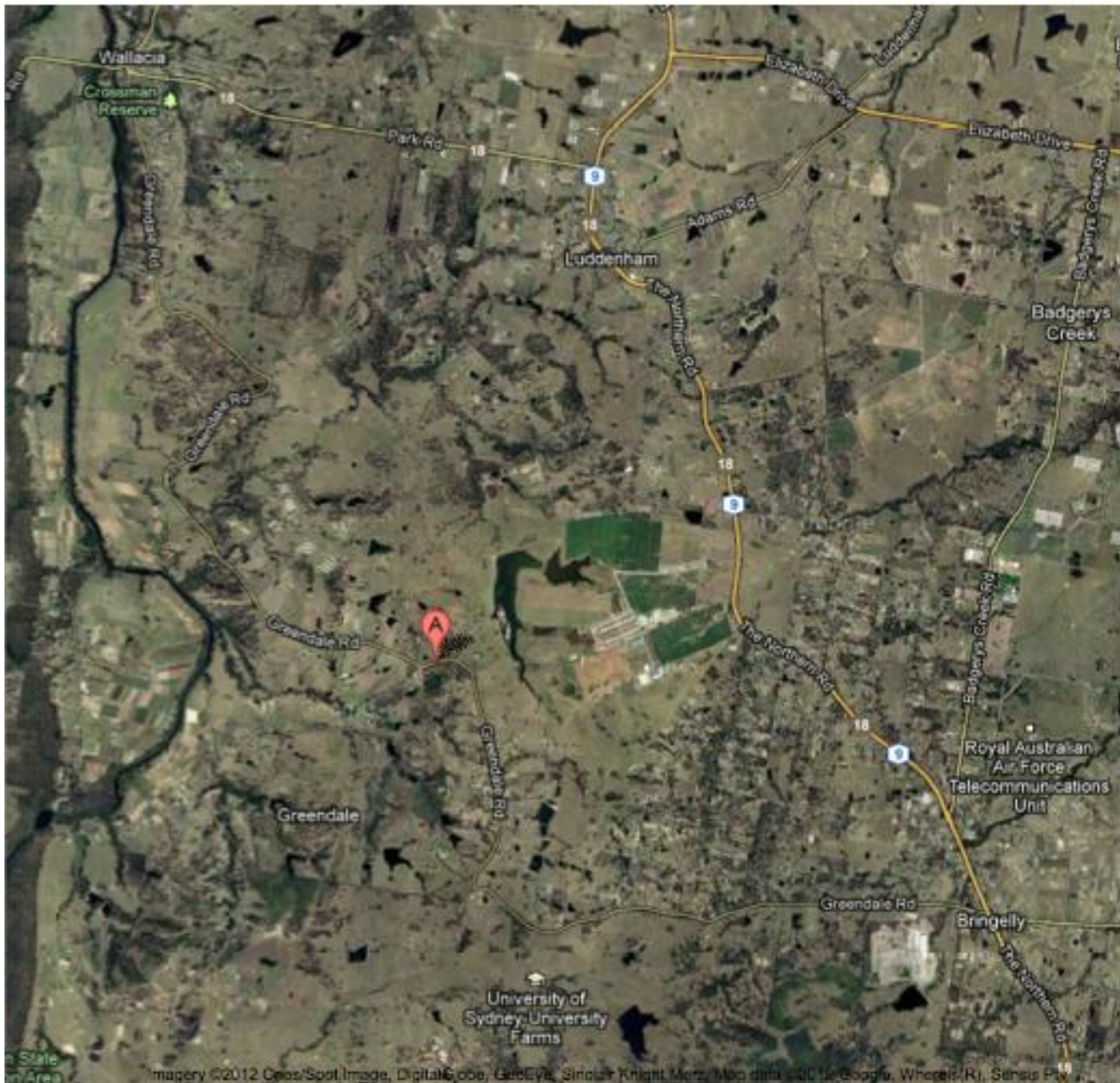


Date: 19 July 2012

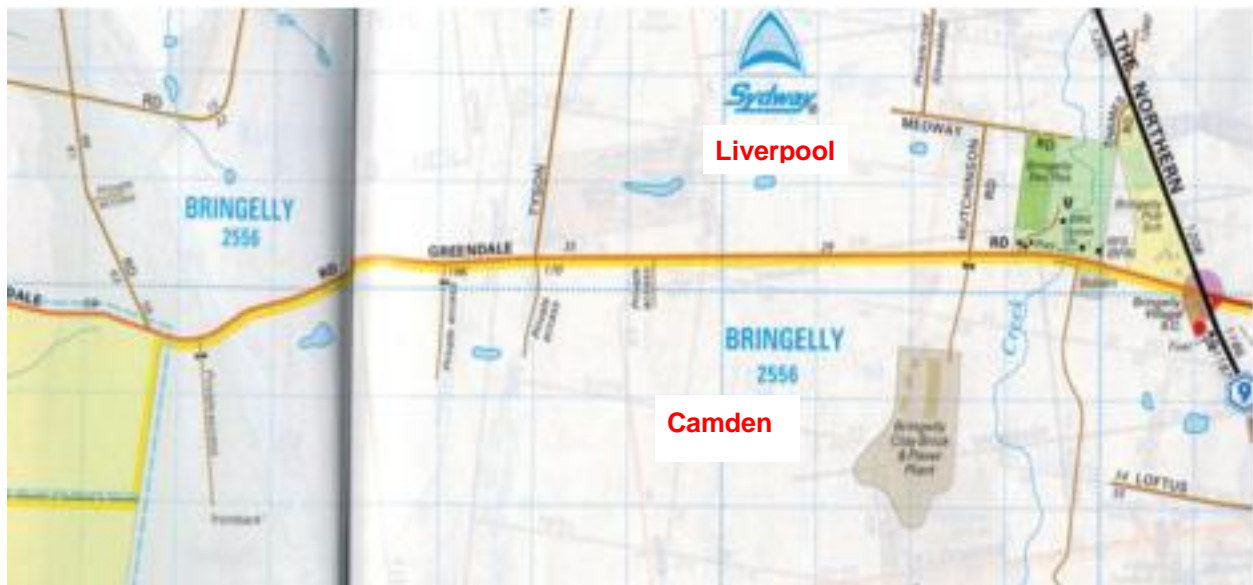
Sue Park – Road Safety Auditor Team Member
Winning Traffic Solutions Pty. Ltd.

Appendix 1

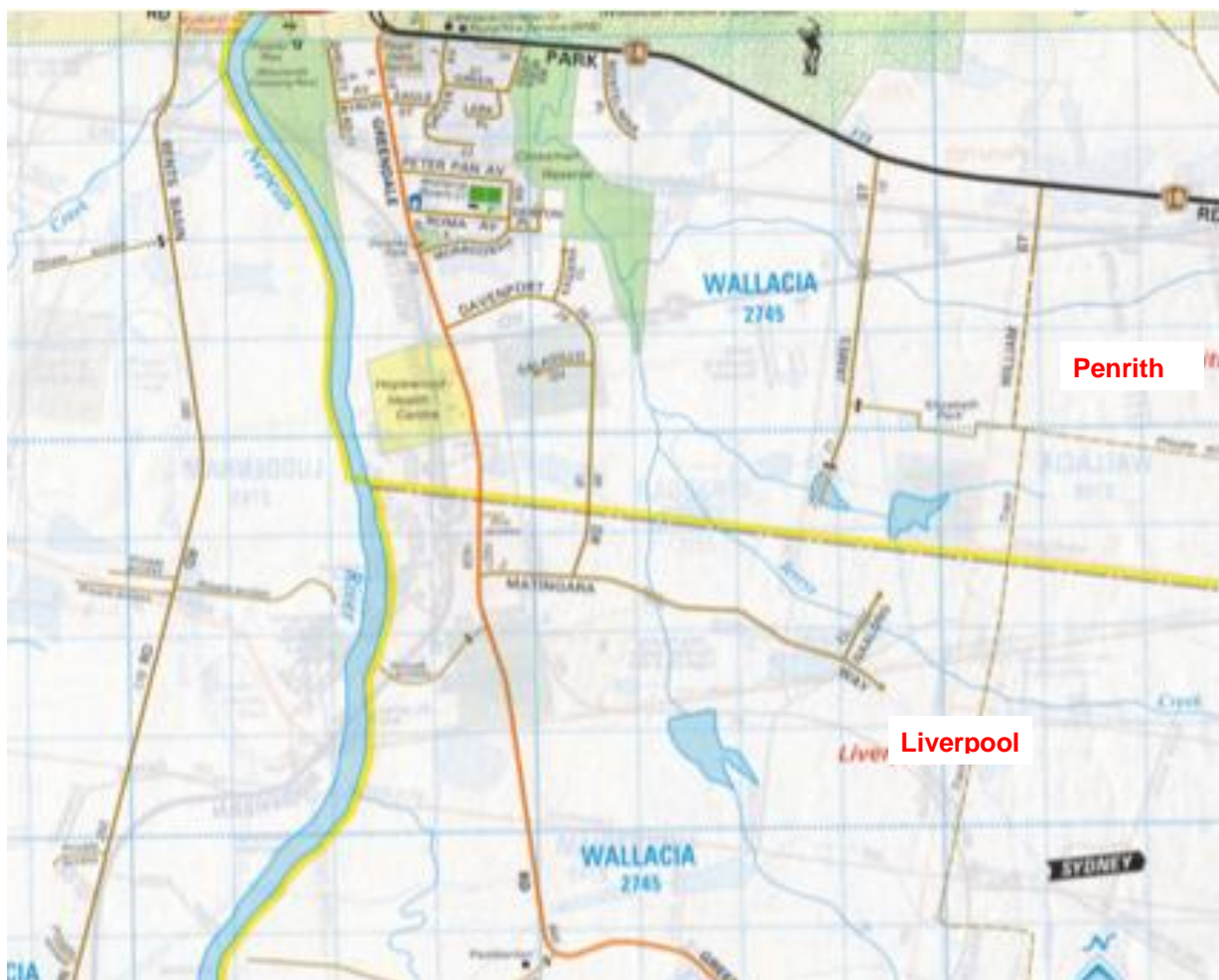
LOCALITY MAP





LOCALITY GOVERNMENT ADMINISTRATIVE BOUNDARIES








 Local Government Boundary









APPENDIX 2: DEFICIENCY LOG OF ROAD SAFETY AUDIT FINDINGS – Greendale Road




No.	Location	Description of deficiency	Photographic Record	Priority (L/M/H)	Accept	Response
1	General	For the whole length of Greendale Rd there is a general lack of consistency in the application of pavement markings (centre line, edge-lines and RRPM's), guideposts and signposting (curve warning and hazard boards).		H		
2	General	Apart from the junction with Wolstenholme Ave which is "Stop" controlled, there is no control at side streets i.e. Tyson, Dwyer, Vickery, Matingara, Davenport, Murroobah, Roma, Peter Pan, Eagle and Byron.		M		
3	General	<p>A number of signs have lost reflectivity, probably due to age, and are therefore not visible at night. These include:</p> <ul style="list-style-type: none"> • "Road narrows" sign at Ch.0.44 southbound; • T-junction sign at Ch.6.92 southbound (pictured – located under the Reduce Speed sign); • Hazard boards at Ch.14.14 southbound. 		L		
4	General	<p>There are non-frangible objects in the clear zone. RTA/Pub.11.097 Fig 6.1 shows clear zone for roads with <1000 AADT at 80kph is 4m.</p> <p>Example: tree at Ch.5.40 looking north is 2m from the pavement edge. Also note, vehicles have been travelling off the pavement.</p>		H		




No.	Location	Description of deficiency	Photographic Record	Priority (L/M/H)	Accept	Response
5	Approach to Medway Rd (Ch.0.60)	Slip lane markings are very worn and are not visible at night.		L		
6	From Ch.1.04 to Ch.8.85	There are no edge-lines to provide driver guidance. This is particularly a hazard under night conditions and likely to contribute to run-off-road incidents. Photos show transition at Ch.8.85.	 	H		




No.	Location	Description of deficiency	Photographic Record	Priority (L/M/H)	Accept	Response
7	From Ch.1.20 to Ch.8.85	<p>There is intermittent pavement failure, including pot-holing and pavement edge failure. Pot-holes are a particular hazard for motorcycles.</p> <p>Examples: Photo 1 at Ch.1.20 looking south; Photo 2 at Ch.7.18 looking south.</p>	 	H		

No.	Location	Description of deficiency	Photographic Record	Priority (L/M/H)	Accept	Response
8	From Ch.1.33 to Ch.8.85	<p>Some pavement remediation has been undertaken but centre line markings have not been reinstated resulting in loss of pavement definition, particularly at night.</p> <p>Examples: Photo 1 at Ch.1.90 northbound. Photo 2 at Ch.7.12 northbound at night.</p>	 	H		
9	Tyson Rd (Ch.1.74)	There are no advance T-junction signs in either direction.		L		
10	Tyson Rd (Ch.1.74)	Greendale Rd signposting is damaged.		Note only		

No.	Location	Description of deficiency	Photographic Record	Priority (L/M/H)	Accept	Response
11	Dwyer Rd (Ch.3.06)	There is no advance T-junction sign in the southbound direction. There is a wide expanse of uncontrolled pavement. Driver perception of place on roadway would be assisted by a continuity line.		L		
12	Ch.4.58	The pavement northbound narrows without warning.		L		
13	Ch.5.12	There is no warning of the curve in southbound direction and it is not properly delineated in either direction.		H		

No.	Location	Description of deficiency	Photographic Record	Priority (L/M/H)	Accept	Response
14	Ch 5.30	Curve is not delineated in southbound direction for daylight conditions although there is overhead lighting at night.		L		
15	Ch.5.40	Curve is not delineated in southbound direction. As it leads into the curve at Ch.5.30 it is considered that advance warning of curve and advisory speed of 35kph should commence here.	 	H		
16	Ch.9.35	Sight distance appears poor in the southbound direction. Centre line overtaking permit should be reviewed.		M		

No.	Location	Description of deficiency	Photographic Record	Priority (L/M/H)	Accept	Response
17	Ch.11.50	Visibility of chevron board is obscured by grasses.		L		
18	Ch.11.50	Guardrail has been damaged. End terminals are redundant type.		M		
19	Ch.11.50 eastern side	Hazard marker has been damaged.		L		

No.	Location	Description of deficiency	Photographic Record	Priority (L/M/H)	Accept	Response
20	Ch.12.88 (property #723)	There is no advance warning in the southbound direction. Curve has no delineation in either direction. Edge-line has been lost on curve.		H		
21	Ch.13.88	In northbound direction 50kph regulatory signs are around curve without advance warning of the change in speed limit.		H		
22	Matingara Way (Ch.15.16)	This intersection is part of Bus Route 759 to Warragamba. Night delineation is good but in daylight there is no advance warning of the turning lanes and it is a surprise around the curve.		M		
23	Ch.15.27 to end.	Centre and edge-line markings terminate abruptly at 15.27. Overhead lighting is poor and at night a driver is not confident about vehicle position in the roadway, particularly with on-coming vehicle headlights. It is believed this area is within the administrative boundaries of Penrith Council. The road is in a residential precinct and a high non-compliance to the regulated 50kph speed was observed.		H		