

Orange City Council

**EUCHAREENA ROAD RESOURCE
RECOVERY CENTRE**

EUCHAREENA ROAD
Cabonne Council

Road User Safety & Operational Assessment

November 2009



WINNING TRAFFIC SOLUTIONS

Prepared by

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Executive Summary

This report presents the summary findings of a Road User Safety and Operational Assessment of the current condition of Euchareena Road, Molong, from the intersection with Watson Street (the Mitchell Highway) to Shades Creek in the north.

Relating to the Project objectives the aim of this Assessment is to identify the relevant levels of road user safety issues to be addressed for:

- o the existing Euchareena Road configuration and infrastructure (Section 3.1)
- o the suitability of the proposed upgrading works identified in the Geolyse concept upgrading works and associated intersection treatments (Section 3.2).

This assessment addresses the physical features of the works that may affect road user safety under the above conditions and is sought to identify potential safety hazards.

This assessment report presents two Deficiency Log Tables (Sections 3.1 & 3.2). The first identifies deficiencies within the existing road network and infrastructure under current traffic conditions. The second identifies deficiencies within the road network and the proposed road upgrade, under the potential increases in traffic associated with the development of the Euchareena Road Resource Recovery Facility (RRC).

Each deficiency was rated according to risk and priority for rectification.

The following presents the greatest concerns arising from the assessment and identifies highest priority works. Other works and priorities are shown within the Deficiency Log Tables within this report.

Existing road network and infrastructure

The items numbered in the report at Section 3.1 that are considered an intolerable risk and high priority to rectify are:

- 1 Line markings on Euchareena Road, especially centre lines, are worn and barely visible. Signs are in poor condition and should be replaced;
- 2 There are trees and saplings in the 6m 'clear zone' by the side of the road in the 100 km/h speed limit zone on Euchareena Road;
- 3 There is a lack of bus stops on Euchareena Road where school buses in particular, can safely pull over;
- 6 The temporary pedestrian refuge in Watson Street at the corner of Euchareena Road is inappropriately located in a high vehicle conflict area. It has also been knocked out of alignment. There is no disabled access on the western kerb;
- 9 There are no double unbroken lines (BB markings) in the lead up to the railway level crossing. As the boom gates control only half of the carriageway, this is in contravention of *AS 1742.11 Railway Level Crossings*;
- 11 There is no wheelchair access at the railway level crossing nor are there any pedestrian controls other than warning bells;
- 13 The 'give way' sign in the south bound direction on Euchareena Road has been damaged and is not facing oncoming traffic;
- 19 At the intersection of Euchareena Road and Back Saleyard Road, there is poor advance warning of the severity in the change of speed to 35 km/h and of the

change in road alignment. Sight through the intersection along Euchareena Road in both directions is also poor due to roadside vegetation. These factors, and the pavement width at the centre of the curve of only 6.0m, makes operation of the road at this point extremely hazardous.

- 21 A number of deficiencies were noted where Euchareena Road crosses Back Creek in the 100 km/h speed zone. These were:

- The road pavement is narrow at just 5.4m wide;
- There are no advance warning 'road narrow' signs;
- The road alignment deviates/changes across the culvert;
- The existing bridge rail across the culvert is substandard, deteriorating and hazardous;
- There is no guardrail protection of the creek on the approaches to the culvert; and
- There are trees in the roadside clear zone.

The combination of these factors makes the operation of the road at this point extremely hazardous.

- 24 The guardrail at the Shades Creek culvert is redundant and deteriorated by white ant and rot. The 'fish tail' end treatment is also redundant.

Proposed road upgrade with the operation of the Euchareena Road RRC

The items numbered in the report at section 3.2 that were considered an intolerable risk and high priority to implement are:

- 1 The road user safety deficiencies identified as part of the current network and infrastructure as listed above;
- 2 All deficiencies rated 'high' and 'medium' priority in Section 3.1 - that is items 1-6, 8, 9, 11-13, 16-19 and 21-24;
- 3 The issues raised by Cabonne Council in its EA submission, namely:
 - a. The safe passage of farm equipment and livestock along Euchareena Road;
 - b. Significant upgrading of Euchareena Road and associated intersections and traffic crossings;
 - c. A comprehensive Transport Code of Conduct;
 - d. Assessment of existing road standard and technical assessment of Euchareena Road including pavement deflection under load conditions;
 - e. The lack of provision of traffic storage capacity at the Watson Street-Euchareena Road intersection;
 - f. Treatment of the substandard curve at Back Saleyard Road and consideration of road realignment;
 - g. Impact of future development along the road and adjoining precincts; and
 - h. Contingencies for traffic management should Euchareena Road be flooded anywhere along the way to the Resource Recovery Facility;
- 5 The pedestrian refuge in Watson Street and provision in the western kerb for disabled access;

- 7 Given the impact of the predicted increase in heavy vehicles along Euchareena Road, the timing of some of the identified projects in the Geolyse Proposed Euchareena Road Upgrade Plan should be reviewed; and
- 8 Realignment of Euchareena Road at Back Saleyard is not addressed in the Geolyse Proposed Euchareena Road Upgrade Plan. It is imperative that this intersection be addressed in the short term and ultimately it should be realigned to appropriate standards.

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EUCHAREENA ROAD

Road User Safety & Operational Assessment

1. Introduction

1.1 Background

Winning Traffic Solutions Pty. Ltd. (WTS) have been engaged by Orange City Council and GHD (Project Managers) to undertake a road user safety and operational assessment of Euchareena Road, Molong that is located within the Cabonne Local Government administrative boundaries.

The purpose of this assessment is to review the existing road operation and proposed road and intersection upgrading works, with a focus to road user safety, relating to a proposed waste facility development at Molong, in the Central West of NSW, known as the Euchareena Road Resource Recovery Centre (RRC).

Orange City Council and Cabonne Council were originally joint venture partners in developing this site as a new location for waste processing and landfilling of waste from the two local government areas. However the joint venture was dissolved in June 2009 and the Orange City Council is the only proponent for the project, known as the Orange Resource Recovery and Waste Management Project.

The sites for the Orange Resource Recovery and Management Project are:

- o The existing Ophir Road Resource Recovery Centre; and
- o Proposed Euchareena Road Resource Recovery Centre located 44km from Orange and 5 km northeast of Molong.

This report provides an assessment of road user safety and operational issues associated with the existing road network and proposed improvements as it impacts Euchareena Road RCC site only.

The following Assessment has been carried out by Terry Winning, Director of Winning Traffic Solutions Pty. Ltd. who has over 40 years experience in the Traffic Engineering field, with the Roads and Traffic Authority of NSW (RTA) and subsequently in the private sector providing consulting services. Terry is also an IPWEA accredited Level 3 Road Safety Auditor (RTA prequalified), is a member of the IPWEA Road Safety Panel and Road Safety Auditors Accreditation Subcommittee.

The assessor has had no involvement with design or development of the work tabled for assessment.

1.2 Current Status of Project

The Euchareena Road RRC is proposed to be constructed on land located approximately 5km northeast of Molong and within the Cabonne LGA. A locality map of the site is shown in Figure 1-1 and identifies the RRC site near Molong and shows generally the road network configuration of the precinct including Euchareena Road and Mitchell Highway

Public exhibition of the Environmental Assessment for the Orange Resource Recovery Waste Management Project was on display for a period of six weeks and concluded on the 12 November 2009.

A report has been prepared by NSW Department of Planning on the submissions received about the Environmental Assessment. The Minister for Planning has convened a Planning Assessment Commission to undertake a review of the Project, and will hold a public hearing prior to assessing the Project.

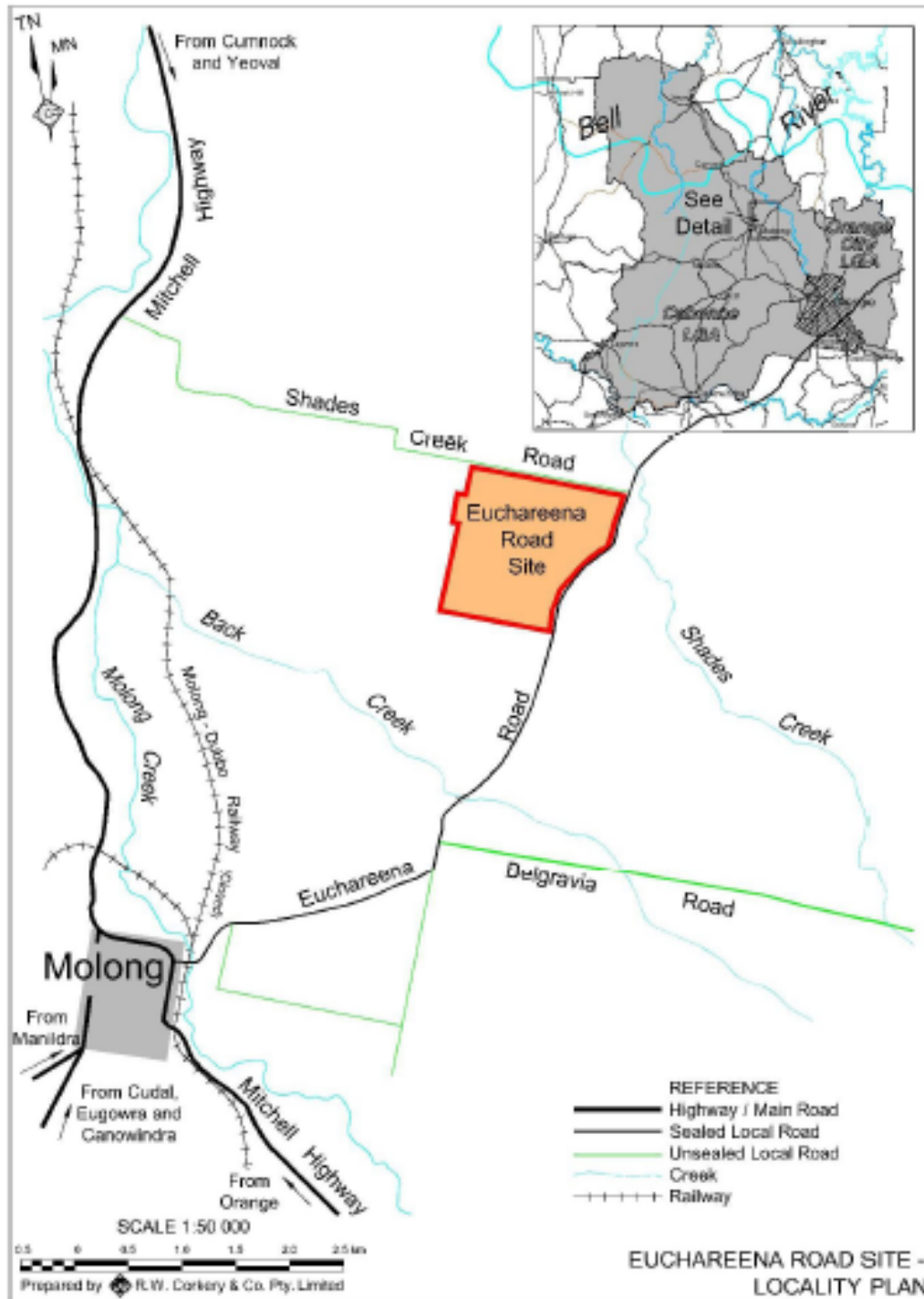


Figure 1.1 – Euchareena Road RRC – Locality Plan

1.3 Scope of this Assessment

This assessment of Euchareena Road is from the junction of the Mitchell Highway (Molong) north to the bridge culvert at Shades Creek (refer Fig. 1.1).

The RTA publication "Technical Direction for Road Safety Practitioners – Policy for road safety audits of construction and reconstruction projects(RTA 2005) with a focus to "Accident Reduction Guide Part 2: Road Safety Audits" (2005) has been utilised as the basis for this assessment.

This assessment addresses the physical features of the works that may affect road user safety and is sought to identify potential safety hazards. However, the assessor points 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 a road is "safe", rather, remedial action should improve the level of safety of the facility.

Site inspections were undertaken in both day time and night time conditions and northbound and southbound directions.

Relating to the Project objectives the aim of this Assessment is to identify the relevant levels of road user safety issues to be addressed for:

- o the existing Euchareena Road configuration and infrastructure
- o the suitability of the proposed upgrading works identified in the Geolyse concept upgrading works and associated intersection treatments.

1.4 Supporting Information

The following materials were reviewed as part of this assessment:

- o Environmental Assessment Main Report - Volume 1; Section C1 (Project Description – Euchareena Road RRC) and Section C4 11 (Traffic and Transport);
- o Traffic and Transport Assessment Report (Sept. 2009) prepared by GHD;
- o Euchareena Road proposed upgrade works plan (2007) prepared by Geolyse;
- o Summary of Key Submissions for EA;
- o Submission MO 09_0025 – Orange Waste Project by Cabonne Council;
- o Concept design plan at the junction of Watson Road (Mitchell Highway) and Euchareena Road; and
- o Concept design plan at the junction of Euchareena Road and proposed Euchareena Road RRC.

Other specific reference documents, papers and manuals utilised during the course of this assessment were:

- Austroads Rural Road Design – Guide to the Geometric Design of Rural Roads;
- Austroads "Road Safety Audit" (Second edition 2002),
- Austroads - Guide to Traffic Engineering Practice;
- RTA Road Design Guide (RDG);
- RTA Signs and Markings Manual
- Australian Standards AS 1742 (Parts 1 & 2): Manual of Uniform Traffic Control Devices

2. Assessment Process

2.1 General

Winning Traffic Solutions Pty. Ltd. (WTS) have been engaged by Orange City Council and GHD (Project Managers) to undertake a road user safety and operational assessment of Euchareena Road, Molong that is located within the Cabonne Local Government administrative boundaries.

This report results from applying the principles set out the RTA publication “Accident Reduction Guide Part 2: Road Safety Audits” (2005).

The assessment has been undertaken at the request of GHD.

The assessment included a commencement meeting at the offices of GHD with the Project Manager, Mr David Gamble (GHD) on Wednesday 18 November 2009. At that meeting relevant documents were tabled and issues were discussed and clarified with respect to any unresolved safety concerns, community concerns, adjacent land use, public transport requirements, pedestrian and bicycle requirements.

There has been no known previous formal road safety assessment conducted for the subject works.

The road safety field assessment of the subject road was undertaken during day time and night time inspections on Monday 23 November 2009 and included driving the designated road in both directions (day and night) and using the survey vehicle odometer in conjunction with a working video recording of the road to log identified issues. The weather at the time of the field assessment was overcast and at times raining.

2.2 Road Description

Euchareena Road can be generally described as an undivided two-lane two-way rural road linking Molong with Euchareena and administered by Cabonne Council.

The road is a low volume rural road (Average Daily Traffic – ADT of approx. 190 – with Heavy Vehicle content 6.5%). Austroads¹ definition for this type of road is given as Class 4 – those roads, not being class 1, 2, or 3, whose main function is to provide access to abutting property (including property within a town in a rural area).

Data provided² for seasonal variations in wheat harvest (Dec/Jan) and grape harvest (Feb/Mar) suggest commercial vehicle traffic (truck volumes) may increase by up to 100% during these seasons (depending on actual yield). In addition it is understood that at times cattle drives occur along the road and the road also accommodates a School Bus service during am and pm school day periods.

The road is bitumen sealed with varying width pavement between 5.3 m to 6.5m and accommodates unsealed shoulders 0.5 to 1.0m wide.

The regulated speed limits of the road are set at 50 km/hr in the south within the Molong township and 100 km/hr north to Shades Creek.

¹ Austroads Rural Road Design – Guide to the Geometric Design of Rural Roads - Table 1.1.

² GHD Euchareena Road RRC – Traffic and Transport Assessment September 2009

The alignment of the road accommodates a combination of short lengths of straight alignment and curves through undulating terrain. The road alignment is generally defined by centreline markings supported intermittently by roadside guide posts and chevron alignment markers at some curves.

Stand out features of road include:

- o The junction of the Mitchell Highway within the Molong township;
- o A railway level crossing actively controlled by boom gates and flashing signal display;
- o The configuration of the road junction with Betts Street;
- o The junction of Euchareena Road and Back Saleyards Road, within the 100 km/hr speed zone, where a small radius curve traffic managed/calmed by chevron alignment markers and advisory speed signs of 35 km/hr define this junction; and
- o A narrow bridge/culvert at Back Creek.

2.3 Risk Assessment

In assessing the road user safety requirements of Euchareena Road, road safety is a major goal for the functions of the road.

The theme of enabling a driver to perceive hazards in time to take appropriate action, and providing geometric parameters and road infrastructure, appropriate to the likely speed of operation, is paramount in achieving the highest standards of road user safety.

A road safety assessment is a series of formal checks of road and traffic works, both existing and future, in relation to their accident potential and safety performance. The purpose of road safety assessment is to pro-actively manage road safety by identifying and addressing risks associated with road safety deficiencies.

The format of this Road User Safety Assessment report aligns with the RTA Accident Reduction Guide; Part 2 – Appendix D and contains a “Deficiency Log” (refer Section 3 below) listing safety deficiencies identified during the road user safety assessment of the subject road. The log of safety deficiencies has been ordered sequentially, provides a site reference, indicates the direction of travel, and provides a “Preliminary Risk Rating” assessing:

- Likelihood of an accident occurring as a result of the identified road safety deficiency; and
- Likely severity of the outcome, should an accident occur.

The Preliminary Risk Rating has been determined for each identified deficiency 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?	
Frequency	Description
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?		
Severity	Description	Examples
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

The Deficiency Log Table provides specific details of what is considered to be the nature of the road safety issue to be addressed and a risk rating as high, medium or low.

Key elements examined included:

- General Topics
- Alignment detail
- Intersections
- Special road users
- Lighting signs and delineation
- Physical objects
- Operation

2.4 Assessment Stages

This Road User Safety and Operational Assessment was undertaken in two stages:

1. Existing road network and infrastructure, and
2. Adequacy of proposed road upgrade with the operation of the Euchareena Road RRC.

3. Road User Safety & Operational Assessment Findings

The overall findings of the assessment are documented in the deficiency log table (below).

The deficiency log table provides specific details of what is considered to be the nature of the road safety issues to be addressed, a risk rating as intolerable, high, medium or low and a reference to a photograph where applicable.

In addition a priority rating has been determined for each identified deficiency 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.

Accident Data presented for this assessment was lacking detail and given the time frame for this assessment it is considered further examination of this data is required. Notwithstanding it is noted that data recorded between 2003 – 2007 identified 4 crashes resulting in 3 injuries, 1 towaway. Significantly three crashes occurred at night and 1 crash involved a pedestrian (assumed at night).

Relevant to the sections of road under audit it is considered the accident trends within the audited precinct would be treated, in the majority, by the proposed upgrading works (with suitable consideration given to this assessment).

As referred above Austroads¹ definition for this type of road is given as Class 4 – those roads, not being class 1, 2, or 3, whose main function is to provide access to abutting property (including property within a town in a rural area).

It is considered that with the introduction of the proposed development and resultant increased heavy vehicle (HV) content within the traffic stream the functional road assessment may need to be reconsidered between Molong township and Shades Creek to a level of Class 3 that (among other things) is of an arterial nature within a town in a rural area.

On the basis of the HV content (existing and predicted) and the seasonal variation of that content where it is likely that an increased “stranger driver” (tourists/caravans) are part of that traffic stream it is considered the identified road user safety deficiencies within the existing road network assessed requires serious consideration and the road network adjusted accordingly. The risk of an incident occurring and the severity of the outcome of that incident, should it occur, is increased due to what is assessed as (in areas) substandard road infrastructure for the function of the road.

The proposed Geolyse Plan for upgrading works in Euchareena Road, given the impact of predicted increase in HV content within the traffic stream, the timing of some of the identified Projects is not supported and should be reviewed.

The GHD Traffic and Transport Assessment Report (September 2009) is supported in terms of roadway capacity and intersection analysis. There are some road user safety issues that have been identified at the junction of Watson Street (Mitchell Highway) and Euchareenna Road that will need to be reviewed and may impact anticipated queuing within the northbound right turn bay.

The operational issues of the proposed development, other than those issues identified within the road user safety arena, are considered do not impact greatly the existing traffic “levels of service” currently operating.

3.1 Deficiency Log Table - Existing road network and infrastructure

Item No.	Location	Description of deficiency	Risk Rating	Priority (High, medium, low)	Photo Reference (Appendix. 1)
1	General	Generally there is a lack of delineation within the whole of the assessed road network. In most areas pavement markings especially centreline markings are worn and barely visible at night, there is a lack of roadside guidepost delineation and most signs are weathered and require replacement.	Intolerable	HIGH	1,2,3,4
2	General	Within the 100 km/hr regulatory speed zone there are a number of substantial trees that encroach into "clear zone" of the road (6m – refer RTA Road Design Guide –Section 6) and possibly Heavy Vehicle (HV) vertical envelope. In addition a number of saplings (that grow to be a potential hazard) are also located within this zone.	Intolerable	HIGH	5,6
3	General	Given the route is a designated School Bus route and the percentage of heavy vehicles (HV) there is a lack of designated Bus Stops where buses can safely pull to the side of the road to set down and pick up passengers.	Intolerable	HIGH	N/A
4	At the junction of Bank Street & Watson Street (Mitchell Highway) &	Bank Street is controlled by "Give Way" traffic management. There is no regulatory signposting supporting "Give Way" operation. It is noted that currently the kerb alignment in Bank Street at Watson Street is under construction providing kerb blisters in Bank Street. This new configuration will need to be included in any future designs.	Medium	MEDIUM	7,8
5	At the junction of Watson Street (Mitchell Highway) & Euchareena Road and Bank Street	There is a lack of "No Stopping" kerbside signposting along Watson Street opposite both junctions. 'No Stopping' signs in these locations are essential to facilitate passing of a stationary vehicle waiting to turn right into either street.	High	HIGH	N/A
6	At the junction of Watson Street (Mitchell Highway) & Euchareena Road	Temporary construction (clip lock) of a pedestrian refuge within Watson Street is located within a high vehicle conflict area. Driver appreciation of pedestrian activity is competing with vehicles entering and leaving both Bank St. and Euchareena Road. There is no provision in the western kerb for disabled	Intolerable	HIGH	9,10

Item No.	Location	Description of deficiency	Risk Rating	Priority (High, medium, low)	Photo Reference (Appendix. 1)
6 contd.		access. It was observed wheelchair access is north of Euchareena Rd to cross Watson Street to driveways on the western kerb. It appears the temporary construction has been impacted and knocked out of alignment. Given the impact of turning vehicles and heavy vehicle (HV) content within the traffic stream the location of this pedestrian refuge is considered inappropriate.			
7	At the junction of Watson Street (Mitchell Highway) & Euchareena Road	In approach to Euchareena Road on both directions there is no indication of advance warning of "Rail Crossing On Side Road" as per accepted standards.	Low	LOW	N/A
8	In Euchareenna Road	Located approx. 30m to the east of Watson Road (Mitchell Highway) is a vehicle access to the car park servicing the Railway Station Library and Bus Stop. At this point there is an expansive area of uncontrolled pavement and it was observed eastbound vehicles (including Buses) travelled in the opposing traffic flow lane to access the site. The road configuration of this access is considered hazardous.	High	MEDIUM	11,12
9	In Euchareenna Road	In advance of the Railway Level Crossing centreline BB markings are non-existent. As the boom gates control only half of the road carriageway it is considered essential BB centreline markings be installed in accordance with AS 1742.11 Railway Level Crossings.	Intolerable	HIGH	13,14
10	In Euchareenna Road	At the Railway Level Crossing the guardrail accommodates redundant Breakaway Cable Terminal (BCT) end treatments. In addition the timber posts supporting the guardrail terminals are rotted and require replacement. The guardrail in the south eastern corner is damaged and requires replacement.	Low	LOW	15,16
11	In Euchareenna Road	At the Railway Level Crossing there is no provision for disabled wheelchair access. In addition there are no pedestrian controls other than audio (bells) to warn pedestrians of an approaching train.	Intolerable	HIGH	17,18

Item No.	Location	Description of deficiency	Risk Rating	Priority (High, medium, low)	Photo Reference (Appendix. 1)
12	At Betts Street	Linemarking at this junction is extremely poor. Given the unusual configuration of the junction, centreline markings are considered imperative for driver appreciation/expectation and operational safety of the junction.	High	MEDIUM	19,20
13	At Betts Road	In the south bound direction in Euchareena Road the "Give Way" sign has been damaged and is not perpendicular to oncoming traffic.	Intolerable	HIGH	21,22
14	At Betts Road	Directional signposting of Euchareena is located remotely from the junction within and toward the north of the central median island.	Low	LOW	N/A
15	North of Bernie Cole Street	In the N/B direction there are no chevron alignment markers (G9-243) delineating the right hand curve yet they are placed for the S/B direction left hand curve. Whilst it is appreciated the regulatory speed is 50 km/hr the road alignment N/B is difficult to determine at night.	Low	LOW	N/A
16	At 50/100 Speed Zone Change	Approx. 100m south of the 50/100 speed zone change the pavement narrows and is extenuated by different pavement colour and textures. Advance warning "Road Narrows" signs (W4-3) may be appropriate under these circumstances.	High	MEDIUM	23,24
17	Between 50/100 Speed Zone Change & Back Saleyard Road	It is understood that an upgrade of Euchareena Road between Beets Road and Back Saleyard Road has been approved by Cabonne Council but no timeframe was indicated except within the Euchareena Road proposed upgrade works plan (2007) prepared by Geolyse. Pavement condition along this length of road is poor. The road width was measured between 5.5m and 6.0m. Pavement patching and edge repairs provide a contrasting pavement colour and texture which results in the vehicle occupying the centre of the carriageway especially at night and wet weather. Along this section of road there are substantial trees growing within the clear zone. Given the narrow carriageway and content of HV within the traffic stream, especially during summer holiday season, a vehicle correcting to avoid an on-	High	HIGH	25,26

Item No.	Location	Description of deficiency	Risk Rating	Priority (High, medium, low)	Photo Reference (Appendix. 1)
17 contd.		coming vehicle has potential to enter the shoulder area and impact a tree. This length of road is considered hazardous and contains a high probability that should an incident occur the likely outcome would be severe.			
18	At the entrance to Golf Club and Showground	The access roadway to these facilities is gravel. The road pavement in Euchareena Road at this access narrows to 5.8m, is of different colour/texture, there is evidence that vehicles use the road shoulder (possibly to pass a turning vehicle that would expedite edge of pavement deterioration) and gravel stones have been tracked onto the bitumen pavement from the access road. It is considered the combination of these issues render the operation of this access mildly hazardous.	High	MEDIUM	27,28
19	At Back Saleyard Road	At this junction Euchareena Road traverses a 90° bend and accommodates advance warning signs indicating 35 km/hr and chevron alignment markers (G9-243) within the curve. Advance warning of the severity in the change and speed of alignment is poor, mutual sight through the junction along Euchareenna Road (in both directions) is poor due to roadside vegetation and pavement width at the centre of the curve measured 6.0m. It is considered the combination of these issues makes operation of the road at this point extremely hazardous.	Intolerable	HIGH	29,30,31,32
20	200m North of Belgravia Road	N/B in Euchareena Road the road alignment accommodates a R/H curve and advance warning advisory speed signposting at 55 km/hr. S/B accommodates similar facilities with the addition of a uni-directional hazard marker located at the centre of the L/H curve. The site road alignment is partially defined with roadside guideposts that assist the delineation however, it is considered enhanced delineation for both directions (e.g. extending guidepost coverage or chevron alignment markers) would enhance road user safety.	Medium	LOW	N/A
21	At Back Creek	It is understood that the reconstruction of the culvert at Back Creek and its approaches has been approved by Cabonne Council but no timeframe was indicated except within	Intolerable	HIGH	33,34,35,36

Item No.	Location	Description of deficiency	Risk Rating	Priority (High, medium, low)	Photo Reference (Appendix. 1)
21 contd.		the Euchareena Road proposed upgrade works plan (2007) prepared by Geolyse. The road crossing of Back Creek, within a 100 km/hr speed environment, has a number of deficiencies that have been recognised in documents reviewed. These deficiencies include: • The narrow pavement across the culvert measured at 5.4m. • There are no advance warning "Road Narrow" signs (W4-3) in advance of the culvert. • The road alignment deviates/changes across the culvert. • The existing bridge rail across the culvert is substandard deteriorating and hazardous. • In approaches to the culvert there is no guardrail protection of the Creek from errant vehicles. • Grown tree vegetation encroaches into the clear zone. It is considered the combination of these issues makes operation of the road at this point extremely hazardous.			
22	At Cooper Hill Road	Cooper Hill Road currently services two properties via a gravel surface. At this point the Euchareena Road pavement narrows and tracking of large stones occurs onto the bitumen pavement. It is considered there is a reasonable probability that windscreen damage to vehicles could occur at this location.	Medium	MEDIUM	N/A
23	At Shades Creek Road	Shades Creek Road services a number of properties and connects through to the Mitchell Highway in the west. At this point the Euchareena Road pavement narrows and tracking of large stones occurs onto the bitumen pavement. It is considered there is a reasonable probability that windscreen damage to vehicles could occur at this location.	Medium	MEDIUM	37,38
24	At Shades Creek	The culvert at Shades Creek accommodates redundant guardrail treatment. The rail is supported by timber posts for its length (deteriorated by white ant and rot) and redundant "fish tail" end treatment.	Intolerable	HIGH	39,40

3.2 Deficiency Log Table - Proposed road upgrade with the operation of the Euchareena Road RRC

Item No.	Location	Description of deficiency	Risk Rating	Priority (High, medium, low)	Photo Reference
1	General	Prior to the operation of the Euchareena Road RCC consideration should be given to addressing the road user safety deficiencies identified in Table 3.1 of this report.	Intolerable	HIGH	N/A
2	General	The existing 5 day ADT traffic volumes are stated at 196 with an 8% HV content. The estimated increase in HV content within the traffic stream, estimated to be 58 truck movements per day (5 day ADT) and recognising these truck movements will not occur between 7:30 -8:30 am and 3:30-4:30 pm, the predicted truck movements generated by the Euchareena Road RCC represents an increase from 8% to 29% (Source GHD Traffic & Transport Assessment Table 2-1). On the basis of predicted HV content within the traffic stream it is considered that all the deficiencies rated HIGH and MEDIUM priority works identified within this report be addressed prior to commencing operational activities of the Euchareena Road RCC.	Intolerable	HIGH	N/A
3	General	The following issues were raised by Cabonne Council in its submission on MP 09_0025 – Orange Waste Project and are supported as road user safety issues that should be addressed prior to operation of the subject facility: • The safe passage of farm equipment and livestock along Euchareena Road. • Significant upgrading of Euchareena Road and associated intersections and traffic crossings must be completed prior to the development commencing (<i>operation Ed.</i>). • A comprehensive Transport Code of Conduct. • Assessment of existing road standard a technical assessment of Euchareena Road to be undertaken including pavement deflection under load conditions. • The lack of provision of R/T storage capacity at Watson Street/Euchareena Road.	Intolerable	HIGH	Refer Appendix 3

Item No.	Location	Description of deficiency	Risk Rating	Priority (High, medium, low)	Photo Reference
3 contd.		• Treatment of the substandard curve at Back Saleyard Road and consideration of road realignment • Impact of future development along the road and adjoining precincts • Contingencies for traffic management should Euchareenna Road be flooded along any part of the route to the RCC.			
4	At the junction of Watson Street (Mitchell Highway) & Euchareenna Road and Bank Street	Vehicle access to the car park servicing the Railway Station Library and Bus Stop accommodates expansive areas of uncontrolled pavement at both the Watson Street and Euchareenna Road accesses. The road configuration at both access points, given they must accommodate buses, are considered hazardous. It is recognised that the existing car park is to be reconfigured to allow for additional formal capacity following detailed survey. It is considered the reconfiguration should include the access points to the adjoining road network.	Medium	HIGH	Refer Appendix 1
5	At the junction of Watson Street (Mitchell Highway) & Euchareenna Road and Bank Street	The pedestrian refuge within Watson Street is located within a high vehicle conflict area. Driver appreciation of pedestrian activity is competing with vehicles entering and leaving both Bank Street and Euchareenna Road. There is no provision in the western kerb for disabled access. It was observed wheelchair access is north of Euchareenna Road to cross Watson Street to driveways on the western kerb. Given the impact of turning vehicles and heavy vehicle (HV) content within the traffic stream and the potential for vehicles to queue through the refuge the location of this pedestrian refuge is considered inappropriate.	Intolerable	HIGH	Refer Appendix 1
6	At the Euchareenna Road RCC Access	Given the proposed hours of operation of the development roadway lighting should be accommodated within the final design.	Medium	HIGH	Refer Appendix 2
7	Geolyse Plan Proposed Euchareenna Road Upgrade	It is considered that given the impact of predicted increase HV content within the traffic stream along Euchareenna Road the timing of some of the identified Projects should be reviewed.	Intolerable	HIGH	Refer Appendix 3

Item No.	Location	Description of deficiency	Risk Rating	Priority (High, medium, low)	Photo Reference
8	Geolyse Plan Proposed Euchareena Road Upgrade	At Back Saleyard no indication of road realignment is indicated in the plan reviewed. It is considered imperative that the treatment of this junction in the short term is paramount for road user safety with ultimate consideration to realigning Euchareena road to appropriate standards.	Intolerable	HIGH	Refer Appendix 3

4. Actioning this Assessment Report

As this Road User Safety and Assessment Report was commissioned by Orange City Council and for the benefit of Cabonne Council to identify road user safety issues that need to be considered, it is considered its purpose is to look at the accident potential and safety performance of the road or road proposal. It is a formal process using a defined procedure and not an informal check.

It is generally recognised that lower volume roads (such as Euchareena Road) typically accommodate lower level design standards for pavement and shoulder widths. These are often considered acceptable on economic grounds, though not considered desirable from a road user safety perspective.

As set out in the road safety audit guidelines, responsibility for implementing and or accepting/rejecting the audit findings, comments and recommendations within each identified deficiency rests with the Council Representative and not with the auditor/assessor. The Council Representative is under no obligation to accept all the Assessment findings and comments.

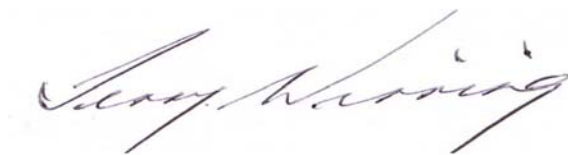
Also, it is not the role of the Assessor to agree or approve of the Council Representative's response to the Assessment. Rather, the Assessment provides the opportunity to highlight potential problems and risks and to have them formally considered by the Council Representative, in conjunction with all other road management considerations.

5. Concluding Statement

I, the undersigned, declare that I have reviewed the material and data listed in this report and identified what are considered safety and operational deficiencies presented in the tabled information and preliminary design plans.

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.

I recommend that points of concern be investigated and corrective actions implemented as soon as practicable.



.....

Terry Winning (Team Leader)
Road Safety Auditor – level 3
Winning Traffic Solutions P/L

November 2009

DATE

APPENDIX 1

Associated Photographs **(Deficiency Log)**



1 – Deficiency Log Item 1 Generally there is a lack of delineation within the whole of the assessed road network. In most areas pavement markings especially centreline markings are worn and barely visible at night, there is a lack of roadside guidepost delineation and most signs are weathered and require replacement.



2 – Deficiency Log Item 1



3 - Deficiency Log Item 1



4 - Deficiency Log Item 1



5 - Deficiency Log Item 2 Within the 100 km/hr regulatory speed zone there are a number substantial trees that encroach into "clear zone" of the road (6m – refer RTA Road Design Guide – Section 6) and possibly Heavy Vehicle (HV) vertical envelope. In addition a number of saplings (that grow to be a potential hazard) are also located within this zone.



6 - Deficiency Log Item 2



7 - Deficiency Log Item 4 Bank Street is controlled by "Give Way" traffic management. There is no regulatory signposting supporting "Give Way" operation. It is noted that currently the kerb alignment in Bank Street at Watson Street is under construction providing kerb blisters in Bank Street. This new configuration will need to be included in any future designs.



8 - Deficiency Log Item 4



9 – Deficiency Log Item 6 Temporary construction (clip lock) of a pedestrian refuge within Watson Street is located within a high vehicle conflict area. Driver appreciation of pedestrian activity is competing with vehicles entering and leaving both Bank St. and Euchareena Road. There is no provision in the western kerb for disabled access. It was observed wheelchair access is north of Euchareena Rd to cross Watson Street to driveways on the western kerb. It appears the temporary construction has been impacted and knocked out of alignment. Given the impact of turning vehicles and heavy vehicle (HV) content within the traffic stream the location of this pedestrian refuge is considered inappropriate.



10 - Deficiency Log Item 6



11 – Deficiency Log Item 8 Located approx. 30m to the east of Watson Road (Mitchell Highway) is a vehicle access to the car park servicing the Railway Station Library and Bus Stop. At this point there is an expansive area of uncontrolled pavement and it was observed eastbound vehicles (including Buses) travelled in the opposing traffic flow lane to access the site. The road configuration of this access is considered hazardous.



12 – Deficiency Log Item 8



13 – Deficiency Log Item 9 In advance of the Railway Level Crossing centreline BB markings are non-existent. As the boom gates control only half of the road carriageway it is considered essential BB centreline markings be installed in accordance with AS 1742.11 Railway Level Crossings.



14 – Deficiency Log Item 9



15 – Deficiency Log Item 10 At the Railway Level Crossing the guardrail accommodates redundant Breakaway Cable Terminal (BCT) end treatments. In addition the timber posts supporting the guardrail terminals are rotted and require replacement. The guardrail in the south eastern corner is damaged and requires replacement.



16 – Deficiency Log Item 10



17 – Deficiency Log Item 11 At the Railway Level Crossing there is no provision for disabled wheelchair access. In addition there are no pedestrian controls other than audio (bells) to warn pedestrians of an approaching train.



18 – Deficiency Log Item 11



19 – Deficiency Log Item 12 Linemarking at this junction is extremely poor. Given the unusual configuration of the junction, centreline markings are considered imperative for driver appreciation/expectation and operational safety of the junction



20 – Deficiency Log Item 12



21 – Deficiency Log Item 13 In the south bound direction in Euchareena Road the “Give Way” sign has been damaged and is not perpendicular to oncoming traffic.



22 – Deficiency Log Item 13



23 – Deficiency Log Item 16 Approx. 100m south of the 50/100 speed zone change the pavement narrows and is extenuated by different pavement colour and textures. Advance warning “Road Narrows” signs (W4-3) may be appropriate under these circumstances.



24 – Deficiency Log Item 16



25 – Deficiency Log Item 17 It is understood that an upgrade of Euchareena Road between Beets Road and Back Saleyard Road has been approved by Cabonne Council but no timeframe was indicated except within the Euchareena Road proposed upgrade works plan (2007) prepared by Geolyse.

Pavement condition along this length of road is poor. The road width was measured between 5.5m and 6.0m. Pavement patching and edge repairs provide a contrasting pavement colour and texture which results in the vehicle occupying the centre of the carriageway especially at night and wet weather. Along this section of road there are substantial trees growing within the clear zone. Given the narrow carriageway and content of HV within the traffic stream, especially during summer holiday season, a vehicle correcting to avoid an on-coming vehicle has potential to enter the shoulder area and impact a tree.

This length of road is considered hazardous and contains a high probability that should an incident occur the likely outcome would be severe.



26 – Deficiency Log Item 17



27 – Deficiency Log Item 18 The access roadway to these facilities is gravel. The road pavement in Euchareena Road at this access narrows to 5.8m, is of different colour/texture, there is evidence that vehicles use the road shoulder (possibly to pass a turning vehicle that would expedite edge of pavement deterioration) and gravel stones have been tracked onto the bitumen pavement from the access road. It is considered the combination of these issues render the operation of this access mildly hazardous.



28 – Deficiency Log Item 18



29 – Deficiency Log Item 19 At this junction Euchareena Road traverses a 90° bend and accommodates advance warning signs indicating 35 km/hr and chevron alignment markers (G9-243) within the curve. Advance warning of the severity in the change and speed of alignment is poor, mutual site through the junction along Euchareena Road (in both directions) is poor due to roadside vegetation, pavement width at the centre of the curve measured 6.0m. It is considered the combination of these issues makes operation of the road at this point extremely hazardous.



30 – Deficiency Log Item 19



31 – Deficiency Log Item 19



32 – Deficiency Log Item 19



33 – Deficiency Log Item 21 It is understood that the reconstruction of the culvert at Back Creek and its approaches has been approved by Cabonne Council but no timeframe was indicated except within the Eucharreena Road proposed upgrade works plan (2007) prepared by Geolyse. The road crossing of Back Creek, within a 100 km/hr speed environment, has a number of deficiencies that have been recognised in documents reviewed.

These deficiencies include:

- The narrow pavement across the culvert measured at 5.4m
- There are no advance warning “Road Narrow” signs (W4-3) in advance of the culvert
- The road alignment deviates/changes across the culvert
- The existing bridge rail across the culvert is substandard deteriorating and hazardous
- In approaches to the culvert there is no guardrail protection of the Creek from errant vehicles
- Grown tree vegetation encroaches into the clear zone

It is considered the combination of these issues makes operation of the road at this point extremely hazardous.



34 – Deficiency Log Item 21



35 – Deficiency Log Item 21



36 – Deficiency Log Item 21



37 – Deficiency Log Item 23 Shades Creek Road services a number of properties and connects through to the Mitchell Highway in the west. At this point the Euchareena Road pavement narrows and tracking of large stones occurs onto the bitumen pavement. It is considered there is a reasonable probability that windscreen damage to vehicles could occur at this location.



38 – Deficiency Log Item 23



39 - Deficiency Log Item 24 The culvert at Shades Creek accommodates redundant guardrail treatment. The rail is supported by timber posts for its length (deteriorated by white ant and rot) and redundant “fish tail” end treatment.



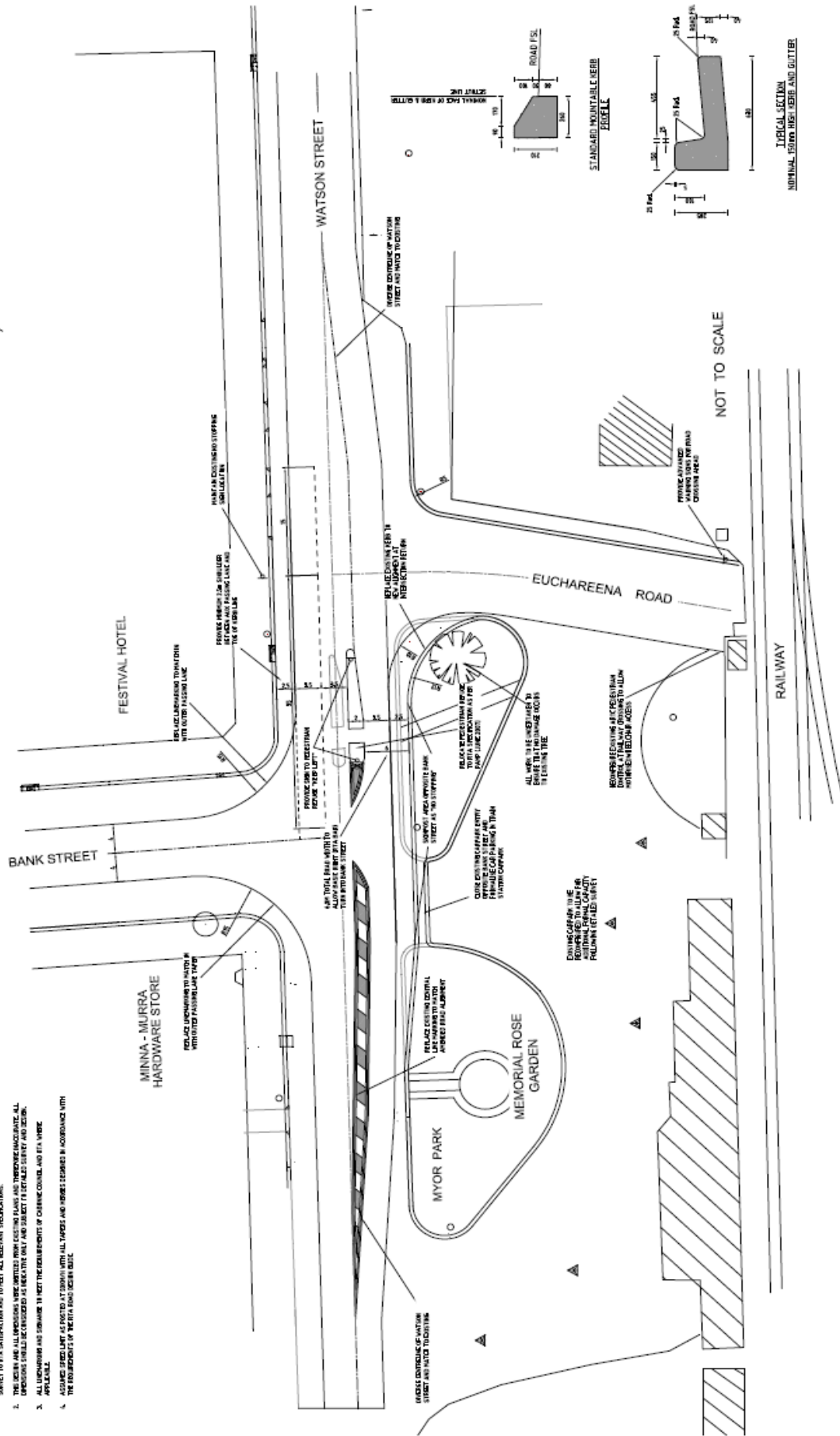
40 - Deficiency Log Item 24

APPENDIX 2

Concept Design Plans **Proposed Upgrade – Euchareena Road**

GENERAL NOTES

1. THE DESIGN AND CONSTRUCTION OF THE PROPOSED FACILITY ARE SUBJECT TO FINAL DETAILED DESIGN AND SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STANDARDS.
2. THE DESIGN AND CONSTRUCTION OF THE PROPOSED FACILITY SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STANDARDS AND SHALL BE SUBJECT TO FINAL DETAILED DESIGN AND CONSTRUCTION.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT CODES AND CITY ORDINANCES.
4. ASSUMED SPEED LIMIT AS NOTED AT INTERSECTION WITH ALL TAPES AND VEHICLES TO BE LOCATED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF BIRMINGHAM.



PLAN A

WATSON ST & EUCHAREENA RD
HUB REGIONAL RESOURCE FACILITY
INTERSECTION UPGRADES

REF: 202401_0018

