

CLARIFICATION OF TRAFFIC AND TRANSPORT MATTERS

ADDITIONAL INFORMATION:
ENVIRONMENTAL IMPACT STATEMENT

ATTACHMENT

E

Our Ref CEB06354 : BAM|JDB

Contact Jeffrey Baczynski, Brett McClurg

22 October 2013

Cardno HRP
Suite 15, 3029 The Boulevard
Emerald Lakes
Carrara, QLD 4211

Cardno (Qld) Pty Ltd
ABN 57 051 074 992

Level 11
515 St Paul's Terrace
Fortitude Valley QLD 4006
Australia

Locked Bag 4006
Fortitude Valley QLD 4006
Australia

Phone: 61 7 3369 9822
Fax: 61 7 3369 9722

www.cardno.com.au

Attention: Scott Clarke

Dear Scott

**GOLD COAST QUARRY
ADDITIONAL INFORMATION TO THE ENVIRONMENTAL IMPACT STATEMENT**

In response to the analysis of the submissions lodged during the public advertising period, please find below the responses to the identified key matters,

4.4 Chapter 4 Environmental Values and Management of Impacts – Section 4.9 Transport

Key Matter 1 – Containing Proposed Works in Road Reserve Areas

- > *Demonstrate that proposed works can be located within the existing road infrastructure and that safety design parameters will be met.*

Cardno Response

The technical memorandum titled, "Gold Coast Quarry Project – Old Coach Road/Bridgman Drive Concept Layout," further investigates constraints at the intersection. The memorandum specifically identified that the "potential upgraded configuration" as proposed in the Road Impact Assessment (at Appendix LL of the EIS) for the project, can be accommodated entirely within the existing road reserve. It is noted that this potential configuration would offset operational impacts associated with the development.

A copy of the technical memorandum including an upgrade concept is at Attachment T1.

Key Matter 2 – Road Safety Review and Site Access Design

Further clarification with respect to:

- > *an updated Road Safety Review addressing the impacts of increased heavy vehicle usage on other road corridor users (e.g. pedestrians and cyclists) particularly around conflict points such as intersections and roundabouts;*
- > *the extent of the proposed road works around the site access point necessary to meet relevant standards, including addressing existing deficiencies in pavement condition and alignment; and*
- > *outlining site access alternatives to demonstrate that the proposed site access is the best location.*

Cardno Response

- > Cardno has prepared a Road Safety Review for the State-controlled sections of Old Coach Road. A copy of the review is at Attachment T2.
- > Cardno's assessment considered the performance and safety of the access within the EIS RIA. It is understood that the access design prepared by the project's Civil Engineer, Lambert & Rehbein, accords with all relevant civil engineering standards.
- > As part of the design process for the project, a total of 6 different access points were considered by Lambert & Rehbein. The plan detailing each of the 6 options is at Attachment T3. The proposed access for the project is identified as Option A on this plan. It is understood that each of the other options were discounted as not being feasible for a number of reasons including the extent of vegetation that was required to be cleared (identified as being either 'endangered' or 'of concern' ecosystems), the size of the disturbance footprint and that they may rely on land beyond the road reserve area or the subject site (i.e. potential owner's consent issues). Other reasons also include cost impositions and the existing terrain.

Key Matter 3 – Pavement Impact Assessment

- > *Further validation of the methodology and calculations used to determine pavement impact to be provided.*

Cardno Response

It is noted that this issue has now been resolved by way of the respective parties agreeing on the rehabilitation and maintenance contributions for the State controlled road network. As confirmation, these agreed figures are:

- > Rehabilitation contribution = \$170,262.00 (based on 90% loading).
- > Maintenance contribution = \$777,271.00.

The above figures will be paid on a cents per tonne basis over the life of the quarry.

Yours faithfully



Jeffrey Baczynski
Senior Traffic Engineer
For Cardno
07 3139 2911

Gold Coast Quarry

ATTACHMENT T1

OLD COACH ROAD/BRIDGMAN DRIVE
CONCEPT LAYOUT

Technical Memorandum

Title	Gold Coast Quarry Project - Old Coach Road/Bridgman Drive Concept Layout		
Client	Boral Resources (QLD) Pty Limited	Project No	CEB06354
Date	19 August 2013	Status	Final
Author	Damien Scutt/Nathan Edwards	Discipline	Traffic and Transport
Reviewer	Jeffrey Baczynski	Office	Brisbane

Introduction

Cardno (Qld) Pty Ltd (Cardno) has been commissioned by Boral Resources (QLD) Pty Limited (Boral) to provide ongoing traffic engineering services in relation to the Gold Coast Quarry Project (the 'project').

Background

In April 2013, Cardno prepared a Road Impact Assessment (RIA) as part of the Environmental Impact Statement (EIS) for the project. The objective of the RIA was to identify potential impacts of the project on the State and Council-controlled road networks including potential intersection performance, link performance, pavement condition or road safety impacts and identify mitigation strategies.

The RIA found that the project is unlikely to have a significant impact on the surrounding road network if the identified potential intersection upgrade works were implemented. The RIA was subsequently submitted to the Department of Transport and Main Roads (TMR), Gold Coast City Council (GCCC) and the Office of the Coordinator-General (OCG) for review and was also released for public comment.

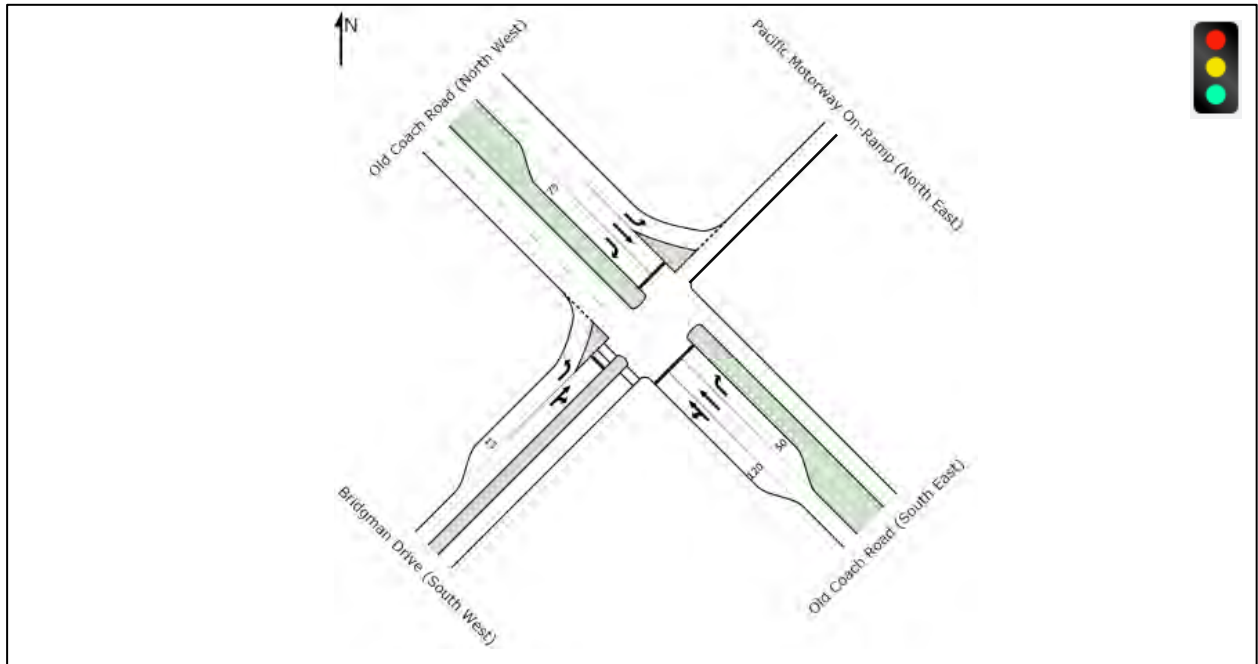
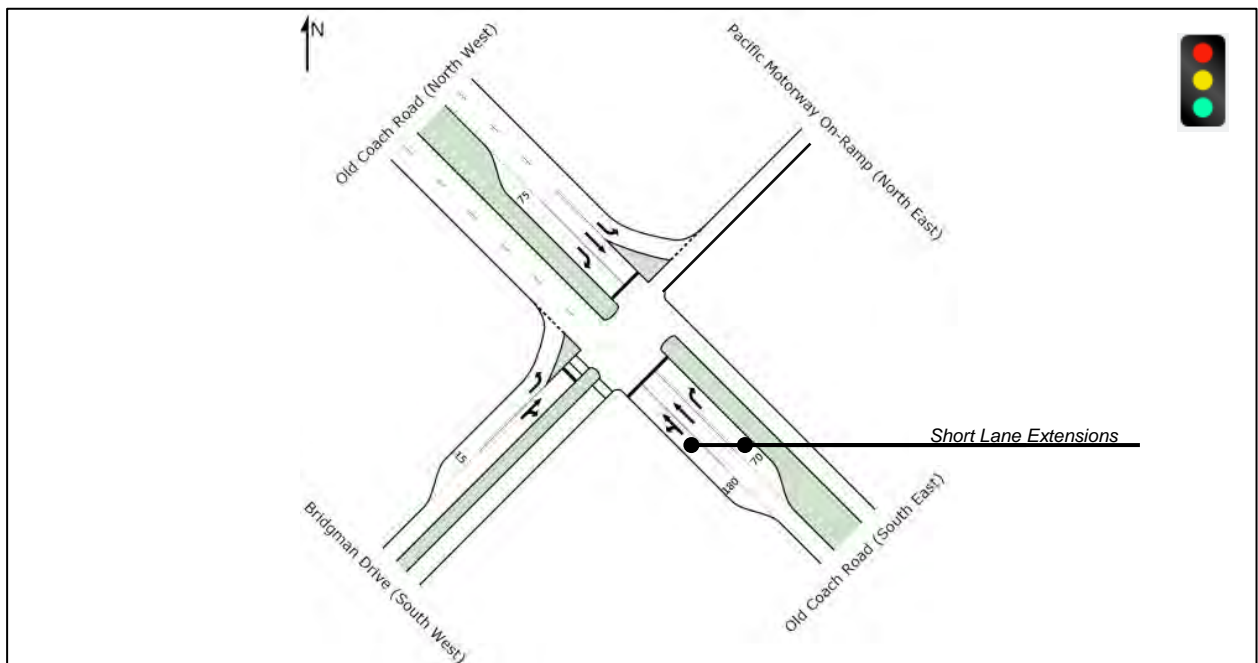
Subsequent meetings have been held with the both TMR and OCG to discuss the project and more specifically the RIA. During these meetings it was agreed that further investigations at the Old Coach Road/Bridgman Drive/Pacific Motorway On-Ramp intersection (referred to herein as the 'study intersection') was required to confirm if the potential upgraded configuration identified in the RIA could be achieved entirely within the existing road reserve.

Study Intersection

In relation to the study intersection, the RIA found that it currently exceeds the typically adopted performance threshold (i.e. DOS greater than 0.90) for a signalised intersection during the morning and afternoon road peak periods. As a result, Cardno identified a potential upgraded configuration which would effectively offset operational impacts associated with the proposed development (i.e. a 'non-worsening' approach). The potential upgraded configuration was identified primarily to establish a reasonable proponent contribution which is considered reasonable for an EIS level assessment. As a result, no concept level designs were prepared for the study intersection as part of the RIA.

The potential upgraded configuration identified involves extending the approach lanes on the south-eastern approach to the intersection (i.e. Old Coach Road). Since issuing the RIA, TMR has raised concerns that the potential upgraded configuration may not be able to be constructed within the existing road reserve at this location. To inform TMR's assessment of the application, Cardno has prepared a high level concept layout of the potential upgraded configuration at the study intersection.

The existing configuration and the potential upgraded configuration is illustrated on Figure 1 and Figure 2 respectively. A copy of the high level concept layout is included at Attachment T1.1.

Figure 1 Study Intersection SIDRA Layout – Existing Configuration**Figure 2 Study Intersection SIDRA Layout - Potential Upgrade Configuration**

Design Considerations

As shown on the concept drawing (refer Attachment T1.1), the potential upgraded configuration can be accommodated entirely within the existing road reserve. It is noted that there is a significant embankment on the south-western side of Old Coach Road. As a result, the concept layout assumes widening of Old Coach Road would occur on the north-eastern side where there is sufficient width. Nevertheless, the concept drawing should provide TMR confidence that the potential upgraded configuration identified within the RIA is achievable.

Gold Coast Quarry
Project

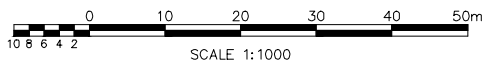
ATTACHMENT T1.1

CONCEPT LAYOUT

CONCEPT ONLY



Legend.	
New Pavement	
New Median	
Cadastre	



BASE INFORMATION OBTAINED USING AERIAL MAPPING.
ACCURACY OF BASE CANNOT BE GUARANTEED.

© Cardno Limited
All Rights Reserved.
This document is produced by
Cardno Limited solely for the benefit
of and use by the client in
accordance with the terms of the
retainer. Cardno Limited does not
and shall not assume any
responsibility or liability whatsoever
to any third party arising out of any
use or reliance by third party on the
content of this document.



Client: Boral Resources (QLD) Pty Limited
Old Coach Road/ Bridgman Drive/ Pacific Motorway On-Ramp
Concept Layout for Potential Mitigation Solution

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Drawn	Date	Scale	Size	
RW	08/08/2013	1:1000	A3	
Drawing Number			Revision	
CEB06354 - SK01			A	

Gold Coast Quarry

ATTACHMENT T2

ROAD SAFETY REVIEW

Road Safety Review

Old Coach Road, Reedy Creek

CEB06354



Prepared for
Boral Resources (QLD) Pty Limited

August 2013

Document Information

Prepared for Boral Resources (QLD) Pty Limited
Project Name Old Coach Road, Reedy Creek
File Reference 6354 Gold Coast Quarry Road Safety Review 2013 08 21.docx
Job Reference CEB06354
Date August 2013

Contact Information

Cardno (Qld) Pty Ltd

ABN 57 051 074 992

Level 11 Green Square North Tower
515 St Paul's Terrace
Locked Bag 4006
Fortitude Valley Qld 4006

Telephone: 07 3369 9822
Facsimile: 07 3369 9722
International: +61 7 3369 9822

transportqld@cardno.com.au
www.cardno.com.au

Document Control

Author	Reviewer
Michael Pickerill, Jessica Peters	Brett McClurg (RPEQ 7628)

© Cardno 2013. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

Table of Contents

1	Introduction	1
1.1	Context	1
1.2	Scope	1
2	Review Findings	2
2.1	Safety Review Aspects	2
2.2	Identified Issues	2
3	Conclusion	7

Figures

Figure 1-1	Scope of Road Safety Audit	1
Figure 2-1	State-controlled Old Coach Road (north) Identified Issues	2
Figure 2-2	State-controlled Old Coach Road (south) Identified Issues	3

1 Introduction

1.1 Context

Cardno has been commissioned by Boral Resources (QLD) Pty Limited (Boral) to undertake a road safety review of the State-controlled sections of Old Coach Road, Reedy Creek.

This road safety review has been undertaken in response to a request from the Department of Transport and Main Roads (TMR) in respect of the application for the proposed Gold Coast Quarry and associated proposed haulage routes.

1.2 Scope

Figure 1-1 indicates (in red) the geographical scope of the audit. The scope was limited to those sections and intersections on Old Coach Road that are State-controlled, including the northbound exit 85 off-ramp from the Pacific Motorway. For ease of reference, the audit references two sections: Old Coach Road (north) and Old Coach Road (south).

Figure 1-1 Scope of Road Safety Audit



Source: TMR South Coast Region Map, NearMap

The area under review was inspected in daylight and darkness hours on 19 August 2013. The routes were driven a number of times in a light passenger vehicle and areas of concern were inspected on foot, where safe to do so.

It should be noted that the Old Coach Road (north) section was substantially reconstructed as part of the Pacific Motorway Exit 85 upgrade project approximately two to three years ago.

2 Review Findings

2.1 Safety Review Aspects

The review findings have been documented by identified issue, with the location of each issue shown on Figure 2-1 and Figure 2-2 for reference. The issues identified represent items that desirably should be addressed, but are not essential. In order to address these existing issues, recommendations for potential remedial treatments have been identified for each issue.

The risk associated with these issues has been classified as:

- > high – any safety issue that is considered to be of sufficient hazard to warrant immediate attention for redesign, reconstruction, removal, protection or warning;
- > medium – any safety issue which the auditors consider to have potential to increase crash risk or increase the severity of a crash;
- > low – any issue which is not identified as being of high or medium priority, but which still requires consideration. This does not imply that the issue is not important.

Each issue has also been classified ('Boral Presence') on the basis of the potential to be exacerbated by haulage traffic movements associated with the proposed Gold Coast Quarry (under the 'without Bermuda Street connection scenario'). The 'Bermuda Street connection' is a proposed future road connection between the Pacific Motorway and Old Coach Road at the Bermuda Street interchange.

It is stressed that whilst issues are identified as 'Yes' in terms of 'Boral Presence', such issues are an existing deficiency and the Boral traffic simply adds traffic volumes to that deficiency, but not does not create or necessarily significantly worsen the deficiency.

2.2 Identified Issues

Figure 2-1 State-controlled Old Coach Road (north) Identified Issues



Figure 2-2 State-controlled Old Coach Road (south) Identified Issues



Issue 1

Location	Old Coach Road (northern approach) left turn slip lane to the northbound Pacific Motorway on-ramp, at the Old Coach Road/Bridgman Drive/On-ramp intersection		
Deficiency	Give Way line faded		
Risk	Vehicles may not perceive the need to give way at this location, with failure to give way potentially causing conflict with other vehicle movements.		
Recommendation	Repaint the Give Way line or consider using a thermoplastic material to reduce maintenance frequencies		
Priority	Low	Boral Presence	No



Issue 2

Location	Bridgman Drive approaching the Old Coach Road/Bridgman Drive/ On-ramp intersection		
Deficiency	Only three signal lanterns are provided for the through and right turn movements on the northbound approach		
Risk	May not provide a sufficient level of redundancy for the northbound movement		
Recommendation	Consider providing one additional lantern for the northbound approach signal group		
Priority	Low	Boral Presence	No



Issue 3

Location	Woodland Drive approaching the Old Coach Road/Woodland Drive intersection		
Deficiency	Stop sign rotated and Stop line faded		
Risk	Risk that vehicle may not detect the presence of the intersection or may not pay sufficient attention (as it may be considered as a Give Way controlled intersection)		
Recommendation	Re-orientate the Stop sign and repaint the Stop line (give consideration to using a thermoplastic material)		
Priority	Medium	Boral Presence	No



Issue 4

Location	Old Coach Road (northbound approach) to Old Coach Road/Kingsmore Boulevard/Off-ramp roundabout (approximately 150m in advance of the roundabout)		
Deficiency	Reduction in speed from 70km/h to 60km/h occurs on a curve and in close proximity to the reverse curves on the approach to roundabout		
Risk	Drivers may not have sufficient time to respond to the change in speed limit prior to negotiating the curves on approach to the roundabout		
Recommendation	Considering relocating the speed limit signage and pavement markings upstream to the straight section of Old Coach Road immediately prior to curve		
Priority	Low	Boral Presence	Yes



Issue 5

Location	Old Coach Road (northbound approach) to Old Coach Road/Kingsmore Boulevard/Off-ramp roundabout (approximately 150m in advance of the roundabout)		
Deficiency	Roundabout advisory sign is faded and offers a poor level of retro-reflectivity		
Risk	Drivers may not see the advisory sign at night or under adverse weather conditions and fail to anticipate the approach curves to the roundabout		
Recommendation	Replace sign		
Priority	Medium	Boral Presence	Yes



Issue 6

Location	Left hand side of Old Coach Road (northbound approach) to Old Coach Road/Kingsmore Boulevard/Off-ramp roundabout (approximately 20m prior to roundabout)		
Deficiency	Sharp drop off and unprotected culvert headwall located immediately outside the shoulder (within the clear zone)		
Risk	If an errant vehicle left the road at this location, there is a risk of loss of vehicle control		
Recommendation	Consider installing guardrail to shield the hazard		
Priority	Medium	Boral Presence	Yes



Issue 7

Location	Old Coach Road (northbound approach) to Old Coach Road/Kingsmore Boulevard/Off-ramp roundabout		
Deficiency	Median vegetation has grown to a height where it obscures the approach view of circulating traffic on the roundabout for approaching light/passenger vehicles		
Risk	Northbound vehicles may fail to observe/give way to circulating traffic on the roundabout, resulting in conflict/collision		
Recommendation	Trim the vegetation to a maximum height of 800mm above the road surface so that northbound drivers (in light vehicles) can observe circulating vehicles and their turn signals. Regularly maintain the vegetation to ensure that it does not grow high enough to obscure sight lights.		
Priority	Medium	Boral Presence	No



Issue 8

Location	Old Coach Road/Kingsmore Boulevard/Off-ramp roundabout		
Deficiency	Street lights in the middle of roundabout were not working		
Risk	Driver perception of the roundabout may be reduced at night time, increasing the potential for vehicles to fail to reduce approach speed or give way as required		
Recommendation	Repair street light		
Priority	Medium	Boral Presence	Yes



Issue 9

Location	Pacific Motorway northbound off-ramp (Exit 85)		
Deficiency	No guardrail present at the hairpin turn from the off-ramp (Exit 85)		
Risk	If an errant vehicle left the road on the hairpin, there is a risk of loss of control of vehicle or collision with the vegetation on the outside of the curve. It is likely that the existing vegetation will continue to grow and greater trunk diameters will pose an increased risk in the event of collision		
Recommendation	Consider installing guardrail along the outside of the hairpin curve		
Priority	Med	Boral Presence	Yes



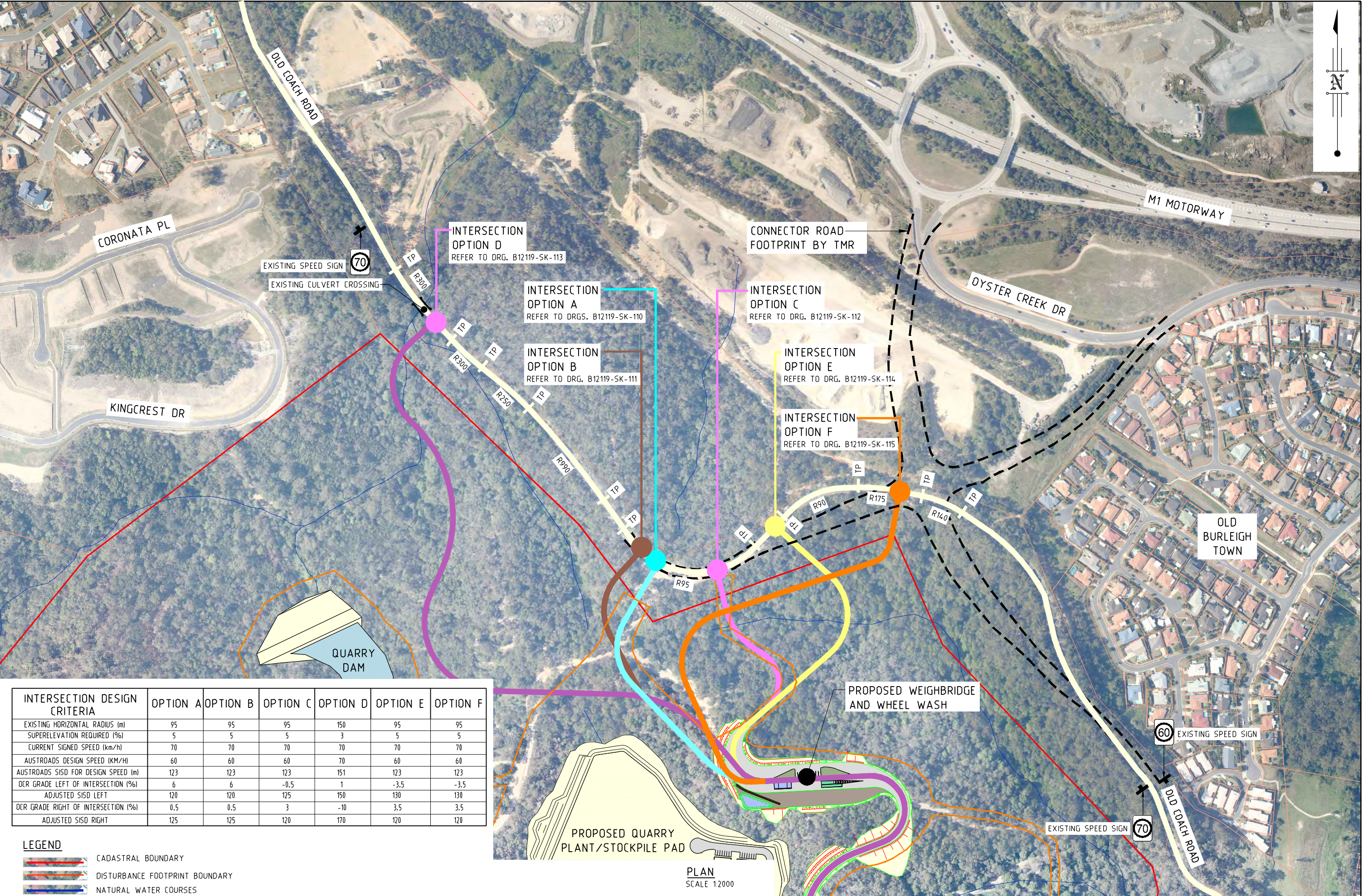
3 Conclusion

This road safety review has identified nine potential issues on the State-controlled sections of Old Coach Road that form the scope of this review. It is considered that five of the identified issues have the potential to be exacerbated by haulage traffic movements associated with the proposed Gold Coast Quarry, under the 'without Bermuda Street connection' scenario. Recommendations for potential remedial treatments have been identified for each issue.

Gold Coast Quarry

ATTACHMENT T3

ACCESS LOCATION OPTIONS



INTERSECTION DESIGN CRITERIA	OPTION A	OPTION B	OPTION C	OPTION D	OPTION E	OPTION F
EXISTING HORIZONTAL RADIUS (m)	95	95	95	150	95	95
SUPERELEVATION REQUIRED (%)	5	5	5	3	5	5
CURRENT SIGNED SPEED (km/h)	70	70	70	70	70	70
AUSTROADS DESIGN SPEED (KM/H)	60	60	60	70	60	60
AUSTROADS SISD FOR DESIGN SPEED (m)	123	123	123	151	123	123
OCR GRADE LEFT OF INTERSECTION (%)	6	6	-0.5	1	-3.5	-3.5
ADJUSTED SISD LEFT	120	120	125	150	130	130
OCR GRADE RIGHT OF INTERSECTION (%)	0.5	0.5	3	-10	3.5	3.5
ADJUSTED SISD RIGHT	125	125	120	170	120	120

LEGEND

CADASTRAL BOUNDARY
DISTURBANCE FOOTPRINT BOUNDARY
NATURAL WATER COURSES

Project:
GOLD COAST QUARRY
HIGH LEVEL OPTIONS ASSESSMENT

Client:
BORAL RESOURCES (QLD)
Title:
INTERSECTION OPTIONS ANALYSIS
SITE PLAN

L

R

LAMBERT & REHBEIN
ENGINEERS • MANAGERS • SCIENTISTS

CBD HOUSE
LEVEL 3, 320 MECHAN STREET
FORTITUDE VALLEY QLD 4006
P.O. BOX 10 FORTITUDE VALLEY QLD 4006

TELEPHONE (07) 3250 9000
FACSIMILE (07) 3250 9001
EMAIL mail@lra.net.au
A.E.N. 010 451 902

The Association of
Consulting Engineers
Australia

Drawn: ES
Checked: BE
Approved: RR

Figure No:
B12119-SK-101
Scale: AS SHOWN
File Ref: WBO
Rev. Date
A1
Sheet
Size