

# Multiquip Quarries

ABN: 44 101 930 714

## Ardmore Park Quarry

**Via Bungonia, NSW**

SUPPORTING DOCUMENTATION FOR A  
REQUEST TO MODIFY PROJECT  
APPROVAL PA 07\_0155

*Prepared by:*



**R.W. CORKERY & CO. PTY. LIMITED**

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## SUPPORTING DOCUMENTATION FOR A REQUEST TO MODIFY PROJECT APPROVAL PA 07\_0155

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# CONTENTS

	<b>Page</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>1 INTRODUCTION.....</b>	<b>3</b>
1.1 OVERVIEW.....	3
1.2 SCOPE .....	3
1.3 BACKGROUND .....	3
1.4 THE APPLICANT .....	5
1.5 THE APPROVED DEVELOPMENT .....	6
1.5.1 General Operations .....	6
1.5.2 The Approved Site Entrance and Access Road .....	6
1.6 MANAGEMENT OF THE INVESTIGATIONS .....	9
<b>2 THE PROPOSED MODIFICATION.....</b>	<b>10</b>
2.1 INTRODUCTION.....	10
2.2 THE PROPOSED SITE ENTRANCE AND ACCESS ROAD.....	10
2.2.1 Ardmore Park Quarry Entrance .....	10
2.2.2 Ardmore Park Quarry Access Road .....	12
2.3 CONSTRUCTION ACTIVITIES.....	13
2.3.1 Hours of Operation .....	13
2.3.2 Equipment .....	13
2.4 TRANSPORT OPERATIONS.....	13
<b>3 PLANNING CONSIDERATIONS .....</b>	<b>14</b>
3.1 S75W OF THE EP&A ACT.....	14
3.2 LOCAL PLANNING ISSUES .....	14
<b>4 ISSUE IDENTIFICATION AND PRIORITISATION .....</b>	<b>14</b>
4.1 INTRODUCTION.....	14
4.2 ISSUE IDENTIFICATION .....	15
4.2.1 Consultation .....	15
4.2.2 Review of the Original Environmental Assessment.....	16
4.3 ANALYSIS OF POTENTIAL ENVIRONMENTAL IMPACT & ISSUE PRIORITISATION.....	16
4.3.1 Introduction .....	16
4.3.2 Cultural Heritage .....	16
4.3.2.1 Aboriginal Heritage.....	16
4.3.2.2 Non-Aboriginal Heritage .....	17
4.3.3 Ecology .....	17
4.3.4 Water Resources.....	17
4.3.5 Soil .....	17
4.3.6 Air Quality.....	17
4.3.7 Noise .....	18
4.3.8 Traffic .....	18
4.3.9 Analysis of Potential Environmental Impacts and Issue Prioritisation.....	18



# CONTENTS

	<b>Page</b>
<b>5 ENVIRONMENTAL ASSESSMENT .....</b>	<b>18</b>
5.1 INTRODUCTION.....	18
5.2 TRAFFIC.....	19
5.2.1 Existing Conditions.....	19
5.2.2 ASSESSMENT.....	20
5.2.2.1 Relevant Criteria.....	20
5.2.2.2 Assessment.....	20
5.2.2.3 Conclusion .....	21
5.3 NOISE.....	22
5.3.1 Introduction .....	22
5.3.2 Section 6 NOISE IMPACT ASSESSMENT .....	22
5.3.2.1 Section 6.1 Scenario 1a: Project Site Construction.....	22
5.3.3 Section 6.3 Scenario 2: Southern Sand Extraction Area (Stage 2) .....	24
5.3.4 Section 6.4 Scenario 3: Basalt and Central Sand Extraction Area - Stages I and II.....	24
5.3.4.1 Section 6.5 Scenario 4: Dozer Campaign .....	25
5.3.4.2 Section 6.6 Discussion .....	25
5.3.4.3 Section 6.7 Recommendations.....	26
5.4 CULTURAL HERITAGE.....	26
5.4.1 Local Cultural Heritage Features.....	26
5.4.2 Definition of Significance .....	27
5.4.3 Assessment of Significance .....	27
5.4.4 Recommendations .....	27
<b>6 JUSTIFICATION FOR THE MODIFICATION .....</b>	<b>27</b>
<b>7 CONCLUSION .....</b>	<b>28</b>
<b>REFERENCES.....</b>	<b>29</b>
<b>APPENDICES</b>	
Appendix 1 Review Of Safety Implications Of Access Into Ardmore Park Quarry, Oallen Ford Road, Bungonia NSW .....	31
Appendix 2 Arborist Report of Rick’s Trees.....	39
<b>FIGURES</b>	
Figure 1 Local Setting.....	4
Figure 2 Approved Quarry Site Layout .....	7
Figure 3 Approved Quarry Entrance Design and Layout.....	8
Figure 4 Proposed Modified Quarry Entrance and Access Road .....	11
Figure 5 Noise Assessment Locations .....	23
<b>TABLES</b>	
Table 2.1 Mobile Equipment.....	13
Table 5.1 Construction $L_{A10(15\text{minute})}$ Noise Emissions .....	22
Table 5.2 Southern Sand Extraction Area Daytime $L_{Aeq(15\text{minute})}$ Noise Emissions .....	24
Table 5.3 Basalt and Central Sand Extraction Daytime $L_{Aeq(15\text{minute})}$ Noise Emissions.....	25
Table 5.4 Dozer Campaign Daytime $L_{Aeq(15\text{minute})}$ Noise Emissions .....	25
<b>PLATES</b>	
Plate 1 Remaining Stump and regrowth of the ‘Larbert Tree’ .....	12



## EXECUTIVE SUMMARY

Project Approval (PA) 07\_0155 was granted on 20 September 2009 for the development and operation of a quarry on the “Ardmore Park” property (the Ardmore Park Quarry), 4km south of the village of Bungonia and 25km southeast of Goulburn in the southern tablelands of New South Wales (see **Figure 1**). Access to the “Ardmore Park” property is currently via a driveway located approximately opposite to the intersection of Lumley Road and Oallen Ford Road. PA 07\_0155 requires the access point to Oallen Ford Road from the Ardmore Park Quarry to be relocated approximately 180m to the south.

This submission has been prepared to support an application to modify PA 07\_0155 under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposed modification would remove the requirement to relocate the Ardmore Park Quarry entrance and retain and upgrade the access in its current location.

An environmental assessment of the proposed modification to PA 07\_0155 has been undertaken to identify those issues likely to be of greatest significance to the local environment, surrounding and nearby land owners and the wider community. Impacts related to traffic and noise were identified as requiring further investigation.

Specialist assessments of traffic and noise-related impacts were commissioned, with Christopher Hallam and Associates Pty Ltd and Heggies Pty Ltd preparing the respective assessments. Both assessments are reproduced in this report in full.

The assessment of traffic-related impacts found that the current location of the driveway opposite the Lumley Road – Oallen Ford Road intersection meets minimum and desirable sight distance in both directions. Notably, the assessment of traffic-related impacts concluded that retaining the existing access to the “Ardmore Park” property and “Ardmore Park” Quarry would provide traffic safety benefits given the increased driver expectation of traffic entering Oallen Ford Road at this point (opposite the intersection of Lumley Road – Oallen Ford Road). In contrast, the approved site access located 180m south of the proposed site driveway would introduce an isolated access on a rural road with limited side conflicts.

The noise assessment found, in all cases, the revised predicted noise levels were below the respective Project Specific Noise Criteria.

It is concluded that the proposed modification would not be likely to result in any significant impacts above current conditions.



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# 1 INTRODUCTION

## 1.1 OVERVIEW

Project Approval for extractive and processing operations at Ardmore Park Quarry (hereafter “the quarry”) was issued by the Minister for Planning on 20 September 2009. The quarry is located north of Oallen Ford Road, 4km south of the village of Bungonia and 25km southeast of Goulburn in the southern tablelands of New South Wales (see **Figure 1**). The “Ardmore Park” property currently has access via a driveway approximately opposite Lumley Road.

This submission has been prepared to support an application to modify PA 07\_0155 under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposed modification would remove the requirement to relocate the Ardmore Park Quarry entrance and retain and upgrade the current access in its current location, rather than relocating the entrance approximately 180m to the South.

It is acknowledged that certain constraints and issues require consideration in determining this application. Accordingly, an environmental assessment has been completed to identify those issues likely to be of greatest significance to the local environment, surrounding and nearby land owners and the wider community. Impacts related to traffic and noise were identified as requiring further investigation to address the effect that the proposed modification to PA 07\_0155 could have on the local environment.

## 1.2 SCOPE

The purpose of this document is to:

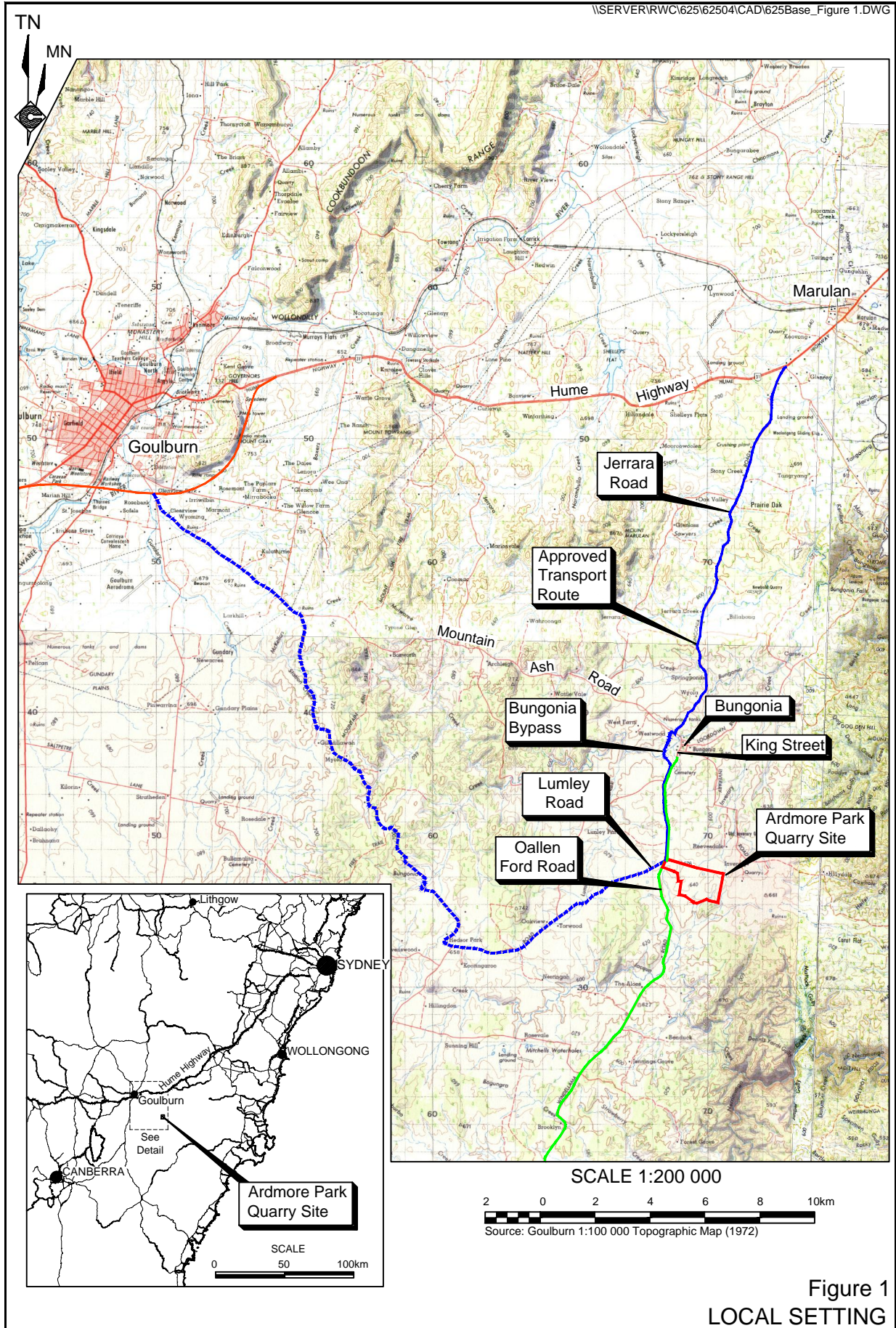
- outline the proposed modification;
- document the likely impacts of the proposed modification on the environment;
- provide further information on the implications that the proposed modification would have on traffic and noise; and
- provide conclusions and recommendations to assist the Department of Planning (DoP) in considering the proposed modification.

## 1.3 BACKGROUND

In January 2005, following the completion of exploratory drilling and resource analysis confirming the presence of commercially recoverable quantities of sand and basalt of a quality satisfactory for use in the manufacture of concrete and for road construction activities, a development application was lodged with the then Department of Infrastructure, Planning and Natural Resources to develop and operate a quarry at the “Ardmore Park” property.



\\SERVER\RWC\625\62504\CAD\625Base\_Figure 1.DWG



**Figure 1  
 LOCAL SETTING**



The Minister for Planning refused that development application with the decision upheld in the NSW Land and Environment Court on 19 June 2007 by Justice Jagot (Hearing 10245 of 2006). Refusal was based on the argument that the environmental impacts associated with the proposed transport through Bungonia Village and the transport route generally were not adequately addressed.

To ensure a modified application for the Ardmore Park Quarry adequately addressed these issues, Multiquip reviewed the transportation component of the proposal and has provided for:

- a private by-pass road of Bungonia; and
- the upgrading of the public roads of the proposed transport route to the desired road standard of Goulburn Mulwaree Council.

An *Environmental Assessment* of the modified Ardmore Park Quarry proposal was prepared by R.W. Corkery & Co. Pty. Limited in 2008. This addressed the issues highlighted by Justice Jagot and also took into consideration concerns raised by Goulburn-Mulwaree Council (“Council”) with the respect to the location of the site access road. Council requested that the access point to the quarry be relocated to avoid any possible conflict between traffic entering and exiting the quarry, and traffic entering Oallen Ford Road from Lumley Road (opposite the existing “Ardmore Park” property entrance). As a result of Council’s concerns related to the current location of the property entrance, a revised alignment for the access road was presented in the *Environmental Assessment*.

Section 1.5 provides a description of the approved operations and relocated site entrance and access road for which PA 07\_0155 was granted by the Minister for Planning on 20 September 2009. Seven months on from the issuing of PA 07\_0155, Multiquip is working to fulfil all pre-operational conditional requirements outlined in PA 07\_0155. It is expected that quarry operations will commence in the third quarter of 2010.

#### **1.4 THE APPLICANT**

The Proponent of the Ardmore Park Quarry and this proposed modification is Multiquip Quarries. Multiquip Quarries is the trading name of CEAL Limited (ABN 44 101 930 714).

The Company directors of Multiquip Quarries, a publicly owned Company, are also directors of Multiquip Transport, a transport company, and Multiquip Pty Ltd, an engineering company. Multiquip Transport currently operate a fleet of over 35 heavy vehicles including semi-trailers and B-double semi-trailers for the transportation of stock feed, livestock, eggs, sand and other raw materials. Operating for approximately 27 years, Multiquip Transport operates in the Sydney area, north to Tamworth, south to Crookwell and west to Wellington.



## 1.5 THE APPROVED DEVELOPMENT

### 1.5.1 General Operations

The sand resource targeted for extraction has been estimated as 6.3 million tonnes and the basalt (hard rock) resource estimated as 9 million tonnes (92% of which would be suitable for the production of quality construction or road building materials). The planned total area of disturbance over the life of the quarry would be 61ha, although the area of active disturbance would be much less given the progressive development of the extraction areas and rehabilitation of the disturbed area. **Figure 2** presents the layout of the Quarry Site and identifies the following components.

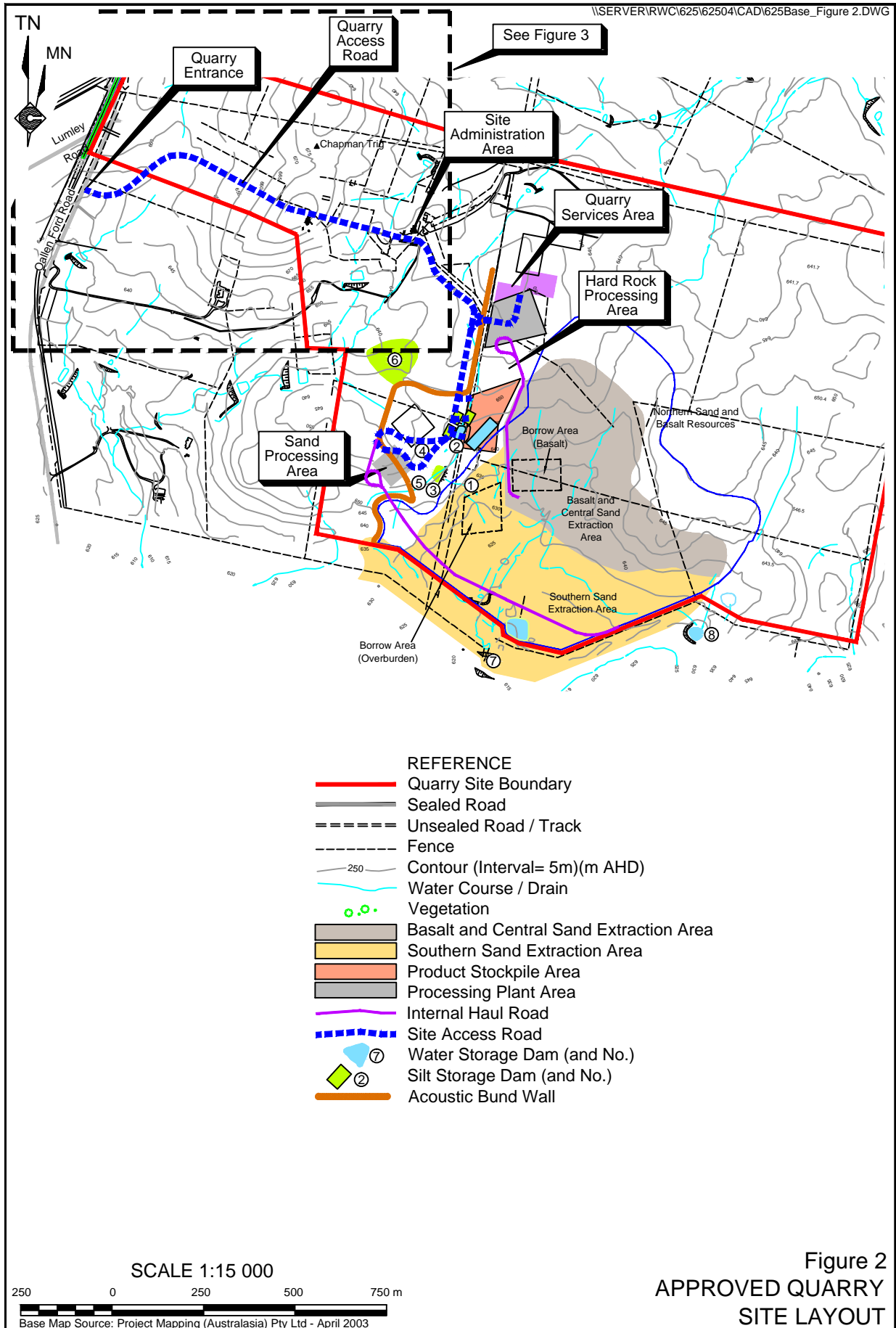
- The southern sand extraction area.
- The basalt and central sand extraction area (including a borrow area for basalt to be used in internal road construction).
- Sand and hard rock processing areas (including a borrow area for overburden to be used in the construction of bund walls).
- Water storage and sediment settling dams.
- Other water management structures.
- The Ardmore Park Quarry entrance and site access road.
- Quarry Services Area.
- Site administration area.

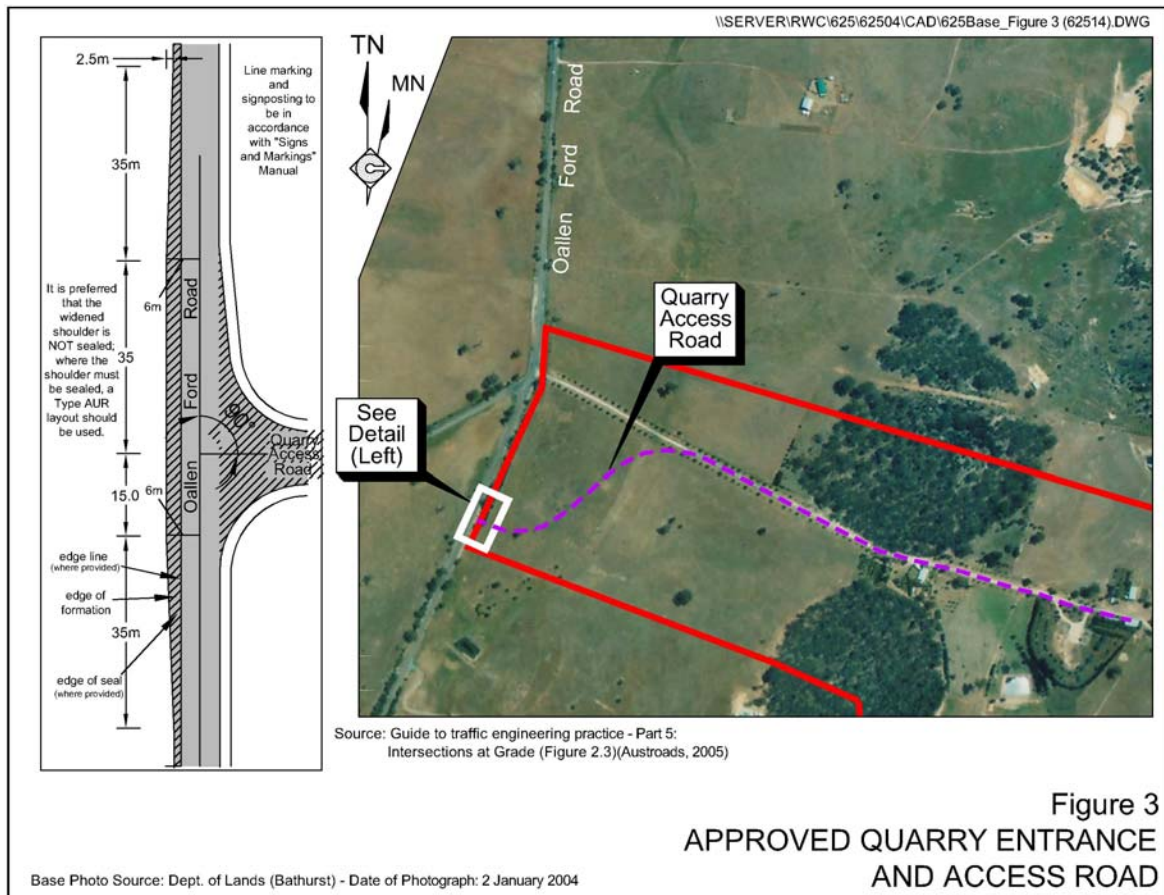
**Figure 1** presents the approved transport route for quarry products between the Ardmore Park Quarry and the Hume Highway. The transport route incorporates approximately 3.7km of Oallen Ford Road, 0.15km of Mountain Ash Road and 14.7km of Jerrara Road, along with a 1.8km section of private road to be constructed to allow for the by-passing of the village of Bungonia.

### 1.5.2 The Approved Site Entrance and Access Road

The approved access to the Ardmore Park Quarry is to be via a new entrance to the “Ardmore Park” property, approximately 180m south of the existing entrance of 5152 Oallen Ford Road. The current entrance to the property is required to be closed and locked to ensure that all quarry-related traffic uses the new site entrance. *Figure 2.15* (on page 2-40) of the *Environmental Assessment* (reproduced as **Figure 3**) presents the proposed and approved alignment of the relocated quarry entrance. The intersection would be constructed in accordance with a Rural Type A intersection in accordance with the Roads and Traffic Authority's *Road Design Guide* (unless otherwise requested by Goulburn Mulwaree Council). This approved quarry entrance (see **Figure 3**) would provide for a sight distance of in excess of 200m in both directions.







Further details of the site access road (between the quarry entrance and quarry operational areas) are provided on page 2-16 of the *Environmental Assessment* (RWC, 2008) and are reproduced below.

*In order to accommodate the new Project Site entrance, a new section of road would be constructed from the entrance to the existing access road between Oallen Ford Road and the "Ardmore Park" residence, roughly following the 845m AHD contour. Access beyond the "Ardmore Park" residence to the areas of extraction and processing activities would require the construction of an internal road to carry regular heavy vehicle movements from the processing plants and extraction areas. The alignment of this road would follow an existing track from the "Ardmore Park" residence before orienting due south to the immediate west of an existing fence line (see Figure 2.6). This road would be constructed with a width of approximately 8m for vehicle transport. Construction of the road would involve the following activities.*

- i) *Topsoil would be pushed to one side of the road and stockpiled as windrows, generally on the downslope side of the road. Any weathered material unsuitable as a sub-base to a depth of up to 0.4m would be removed and used in the construction of acoustic bund walls (see Section 2.4.5).*

- ii) *Basalt material would be obtained from a borrow pit excavated from within the basalt extraction area and transferred to the basalt processing area for crushing. A mobile crushing plant would be positioned within the cut and filled area allocated for the fixed basalt processing plant, ie. approximately 7.0m below the existing ground level. Section 2.6.3.2 provides more detail on the location, design and operation of the mobile crushing plant.*
- iii) *A series of mitre drains would be constructed along the length of the road to manage water run-off from the road surface.*
- iv) *Additional surface water, sediment and erosion controls such as silt-stop fencing, diversion banks and culverts would be installed (see Section 5.2.5.1).*

## 1.6 MANAGEMENT OF INVESTIGATIONS

The preparation of this document has involved a study team managed by Mr Alex Irwin, B.Sc (Hons), Senior Environmental Consultant of R.W. Corkery & Co. Pty. Limited, assisted by Ms Tabitha Kuypers, M.Phys.Geog, B.Env.Man, of the same company. The following specialist consultants were commissioned to assist with specific aspects of the proposed modification.

- Mr Christopher Hallam, BE, MEngSc of Christopher Hallam & Associates Pty Ltd provides a review of the proposed relocation of the entrance to the quarry.
- Mr Dick Godson, B.Sc (Eng), M.Sc (Eng) of Heggies Pty Ltd undertook a noise assessment of the proposed modification.
- Mr Rick Parker of Rick's Trees, a local horticultural company, provided a report on the removal of a single tree to accommodate the proposed modification.

Rob Corkery, M.Appl.Sc, B.Sc (Hons), Principal of R.W. Corkery & Co. Pty. Limited completed a peer review of this document.

On behalf of Multiquip, Mr Jason Mikosic, B.Tech Mgt, General Manager of Multiquip Quarries provided technical information on the proposed modification.



## 2 THE PROPOSED MODIFICATION

### 2.1 INTRODUCTION

Following the receipt of PA 07\_0155, the location of the relocated access point and intersection was discussed with road construction companies and designers. It was claimed on several occasions that the current driveway location may be safer and more suitable than the approved access point. Multiquip commissioned Christopher Hallam and Associates Pty Ltd (CHA) to complete a review of the safety implications of retaining the existing access to the quarry site.

CHA concluded that the existing entrance and driveway arrangement of the “Ardmore Park” property would, with minor realignment work, satisfactorily address road safety and design requirements for such an intersection. The following sections describe the proposed modification to the entrance and access road, proposed construction and implications on quarry transport operations.

### 2.2 THE PROPOSED SITE ENTRANCE AND ACCESS ROAD

#### 2.2.1 Ardmore Park Quarry Entrance

It is proposed to retain the entrance to the “Ardmore Park” property, with a minor realignment slightly south, to bring it directly opposite Lumley Road (see **Figure 4**).

This would create a single cross-junction intersection, as opposed to the two offset T-junctions provided for by the PA 07\_0155. While this intersection arrangement is not recommended by Australian Standard (AS) 2890.1-2004 (which provides guidelines for the location of access driveways), it is considered preferable in this circumstance as it would assist driver recognition of an upcoming intersection. The location of the Ardmore Park Quarry entrance at this junction would also optimise sight distance as it is on the outside of a curve.

**Figure 4** presents a conceptual intersection treatment based on the general form of a typical basic rural layout (type BA) of *Guide to Traffic Engineering Practice — Part 5: Intersections at Grade* of Austroads (2005). A final intersection design would be prepared prior to construction and would be subject to a Road Safety Audit to confirm the design meets the design and safety requirements specified in the RTA’s *Road Design Guide*.

The minor realignment of the Quarry Site entrance would require the removal of a large tree at this point. This tree has been identified as the “Larbert Tree” (as the Bungonia Historical Society note that it once featured a sign “To Larbert”) (GSA, 2007). Notably, the tree has recently fallen (by natural causes), with only a stump and some regrowth remaining (see **Plate 1**). A report on the condition of the remaining stump has been completed by Mr Rick Parker of Rick’s Trees (see **Appendix 2** for the complete report) who concludes that the remaining tree is in poor condition and should be removed. The significance of the remaining stump is considered in more detail in Section 5.4.



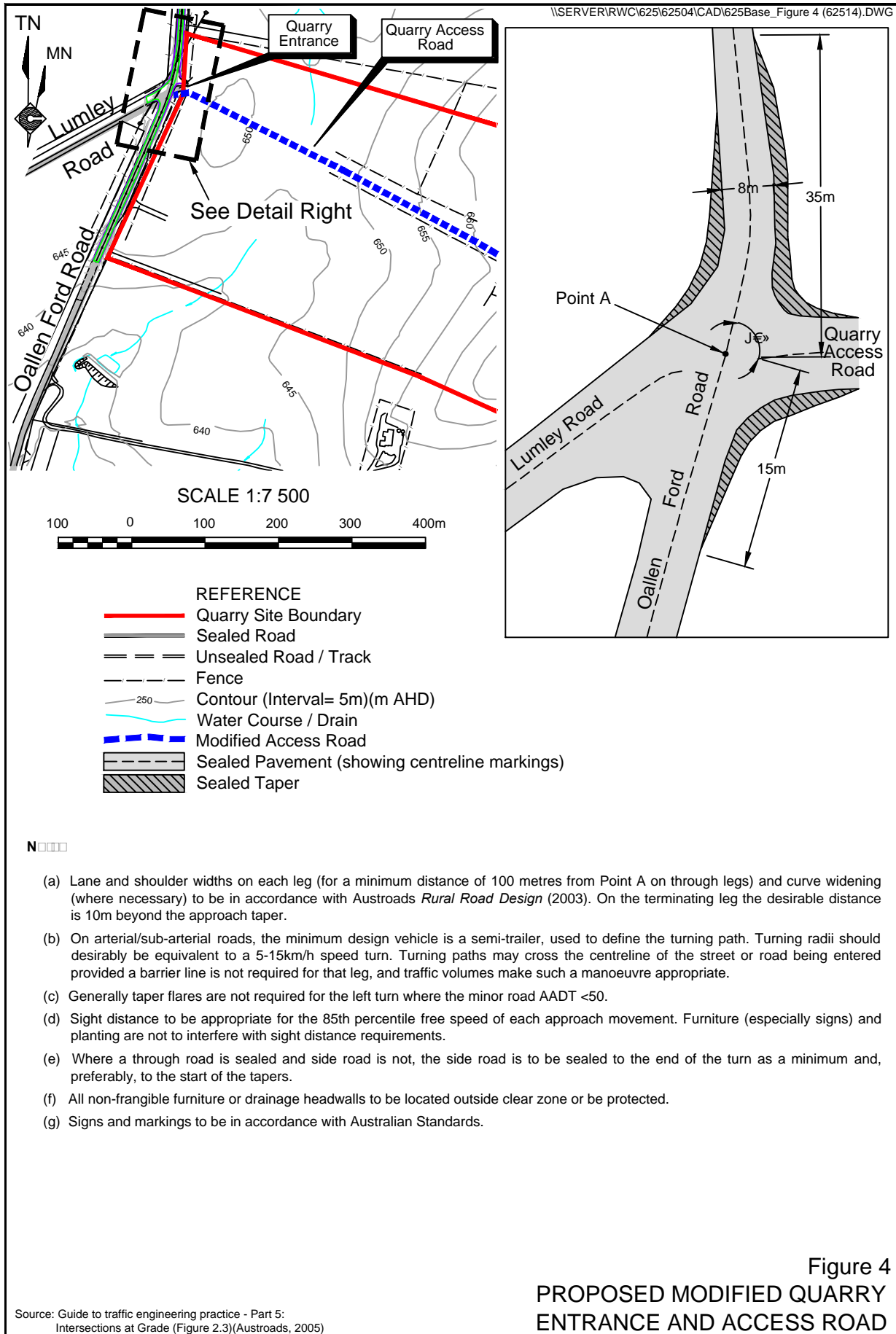




PLATE 1

Remaining Stump and regrowth of  
the 'Larbert Tree'

### 2.2.2 Ardmore Park Quarry Access Road

The existing "Ardmore Park" property access road would be retained and upgraded. Notably, heavy vehicles ("truck and trailer" style vehicles) already have consent to use this access (DA No. 001/395) which would be upgraded as described in the EIS prepared for the original development application (RWC, 2005).

The design parameters for the access road, as specified by RWC (2005) are as follows.

*The existing access road between Oallen Ford Road and the "Ardmore Park" residence and shed area would be retained. Access from this point to the areas of extraction and processing activities would require the construction of an internal road to carry regular heavy vehicle movements from the processing plants and extraction areas. The alignment of this road would largely follow an existing track from the "Ardmore Park" residence before orienting due south to the immediate west of an existing fence line to provide access to the processing plants and extraction areas (see Figure 2.6). This road would be constructed with a width of approximately 8m.*

- i) *Topsoil would be pushed to one side of the road and stockpiled as windrows, generally on the downslope side of the road. Any weathered material unsuitable as a sub-base to a depth of up to 0.4m would be removed and used in the construction of acoustic bund walls (see Section 2.5.5).*
- ii) *Road base material would be obtained from a borrow pit excavated from within the basalt extraction area and spread along the length of the cleared road and compacted in thin layers.*
- iii) *A series of mitre drains would be constructed along the length of the road to manage water run-off from the road surface.*
- iv) *Additional surface water, sediment and erosion controls such as silt-stop fencing, diversion banks and culverts would be installed.*

## 2.3 CONSTRUCTION ACTIVITIES

### 2.3.1 Hours of Operation

All construction works would be undertaken during the day, ie. 7:00am to 6:00pm Monday – Friday, public holidays excluded.

### 2.3.2 Equipment

**Table 2.1** identifies the mobile equipment that would be used at various times in the construction of Ardmore Park Quarry entrance and access road.

**Table 2.1**  
**Mobile Equipment**

Equipment	Activity / Use	No.
30 t Dump Truck	Material Haulage	1
12G Cat Grader	Road Construction	1
962G Cat Loader	Various	1
D9 Cat Dozer	Overburden Removal and Road Construction	1
Water Cart	Dust Suppression	1

Source: Multiquip Quarries

## 2.4 TRANSPORT OPERATIONS

There would be no change to the proposed and approved transport operations. That is, no product would be despatched from the quarry for sale until the completion of Stage 1 construction and road upgrade, ie. Ardmore Park Quarry entrance, Bungonia by-pass and intersections. A limited number of trucks would be used to transfer overburden and crushed basalt products required to construct the roads, creek crossing and intersections during this period. As noted in Section 2.2.2, heavy vehicles already have consent to use this access (DA No. 001/395).



### **3 PLANNING CONSIDERATIONS**

#### **3.1 S75W OF THE EP&A ACT**

A modification to PA 07\_0155 is required under Section 75W of the EP&A Act as the proposed relocation of the quarry entrance would change the terms of the determination made by the Minister (clause 75W(1)(b)).

Multiquip advised the DoP as to the intention to lodge the application to modify PA 07\_0155. No formal Director-General's Requirements were issued by the DoP, with the following advice provided as to the requirements of the environmental assessment to support the application.

- Justification is required to demonstrate that the proposal is a modification of an existing project, as opposed to a new project (see Section 6).
- Information as to the identification of issues for assessment (see Section 4).
- Assessment of the key issues identified (see Section 5).

The DoP also directed the Proponent to recently completed assessments supporting S75W applications.

#### **3.2 LOCAL PLANNING ISSUES**

The quarry lies entirely within that part of the Goulburn Mulwaree Local Government Area covered by the Goulburn Mulwaree Local Environmental Plan 2009. The proposed modification would not alter the proposed activities of the quarry, ie. extractive industry, which is permissible with consent in the applicable zone RU1 – Primary Production.

### **4 ISSUE IDENTIFICATION AND PRIORITISATION**

#### **4.1 INTRODUCTION**

To enable a comprehensive assessment of the proposed modification, appropriate emphasis needs to be placed on those issues likely to be of greatest significance to the local environment, surrounding and nearby land owners and the wider community. In order to ensure this has occurred, a program of community and government consultation, preliminary environmental studies and literature review was undertaken to identify relevant environmental issues and potential impacts. This was followed by an analysis of the environmental risks posed by each potential impact in order to prioritise the assessment of the identified environmental issues within the *Environmental Assessment*.



## 4.2 ISSUE IDENTIFICATION

### 4.2.1 Consultation

#### Goulburn Mulwaree Council

Following the receipt of advice related to the suitability of the existing access point to the “Ardmore Park” property, Multiquip contacted Council to determine whether Council would be amenable to the retention of the existing access point as the entrance to the quarry. In response to an initial enquiry made by Multiquip, Mr Ian Aldridge (Council Engineer) provided the following response.

1. *I have investigated the location of entrance of Ardmore Park onto Oallen Ford Road. You asked whether it could remain in its current location (nearly opposite Lumley Road), as opposed to some 180m further to the south as indicated in the consent. The issue is not so much the formation of a cross intersection with Lumley Road because i) Lumley Rd is very lightly trafficked, and ii) measures can be undertaken to address the concerns.*

*Rather the issue is sight distances. I measured the sight distances, as below:*

*Ardmore Park Sight Distances (m)*

	<b>Existing (1.15m height)</b>	<b>Proposed</b>
To north	160	240
To south	235	320

*The above are based on an eye height of 1.15m (normal vehicle). In the case of heavy vehicles, such as Ardmore’s vehicles, the eye height would be 1.8m. This would improve the sight distances available for the existing entrance by about 30m. There would be no change to the proposed entrance since the road curvature was the limiting factor.*

*Thus the table would be modified to:*

	<b>Existing (1.8m)</b>	<b>Proposed</b>
To north	Est 190	240
To south	Est 265	320

*The sight distances recommended by Austroads are:*

- *To north (Safe Intersection Sight Distance) 250m*
- *To south (Entering Sight Distance) 500m*

*You can see that both the existing and the proposed fall short of the recommended distances. However, the proposed are some 25% better than the existing.*

*I take the point that the proposed location has an uphill climb (for about 270m), which could delay trucks attaining cruising speed. The existing location also has an uphill climb (for about 90m).*

*In conclusion, my preference is for the proposed location due to the sight distance issue. If you wish to pursue this matter, a report by a traffic consultant would be the best approach.*



Multiquip subsequently commissioned Christopher Hallam and Associates Pty Ltd to prepare the requested report which was forwarded to Council in November 2009. Council has subsequently advised Multiquip that formal response would be provided in advice to the DoP as part of the S75W application process.

### Department of Planning

As noted in Section 3.1, the DoP has also been consulted regarding the assessment requirements for a S75W application. Advice was provided verbally on 24 March 2010 and email on 25 March 2010.

## 4.2.2 Review of the Original Environmental Assessment

A review of the *Environmental Assessment* prepared to support the application for project approval (RWC, 2008) has been completed to identify issues that could be affected by the proposed modification and therefore require assessment. The issues that could be affected include the following.

- Traffic and intersection suitability / performance.
- Noise generated by construction and ongoing operational (transport) activities.
- Air quality during the construction and ongoing operational (transport) activities.
- Local heritage associated with the Larbert Tree.

## 4.3 ANALYSIS OF POTENTIAL ENVIRONMENTAL IMPACT & ISSUE PRIORITISATION

### 4.3.1 Introduction

For each of the issues considered in the Environmental Assessment, a review of the potential environmental impacts associated with the proposed modification has been completed to determine whether further assessment is warranted. Particular attention has been paid to those issues identified in Section 4.2.

### 4.3.2 Cultural Heritage

#### 4.3.2.1 Aboriginal Heritage

The identified sites of Aboriginal Heritage significance occur away from the existing property entrance and access road and would not be affected by the proposed modification.

Notwithstanding this, Multiquip will ensure that all employees of the quarry are aware of their responsibility to report any site of Aboriginal significance to the Quarry Manager. Should this occur, work in the affected area would cease and the manager would contact the DECCW for advice.

*No further assessment is warranted.*



#### 4.3.2.2 Non-Aboriginal Heritage

As noted in Section 2.2.1, the remaining stump of a Larbert Tree would be removed to enable the minor southerly relocation of the site entrance and access road to create a single cross-junction intersection with Lumley Road.

*Further consideration of the potential impact is warranted (see Section 5.4).*

#### 4.3.3 Ecology

The only vegetation to be disturbed would be the Larbert Tree, which has recently fallen (see **Plate 1**). The proposed modification would not be likely to have a significant effect on any species, populations or ecological communities.

*No further assessment is warranted.*

#### 4.3.4 Water Resources

The proposed relocation of the quarry entrance and access road would not alter groundwater or surface water conditions given the access road falls within the footprint of the current driveway to the “Ardmore Park” residence.

Monitoring of the potential impacts of the quarry on water resources has been considered an operational safeguard and the proposed modification would not require any change to the program of monitoring currently proposed.

*No further assessment is warranted.*

#### 4.3.5 Soil

The proposed site access road would have less impact on soil than the approved access road because the proposed access lies within the footprint of the existing entrance.

*No further assessment is warranted.*

#### 4.3.6 Air Quality

The alignment of the approved site entrance has an uphill climb of approximately 270m, while the proposed site entrance has an uphill climb of approximately 90m. Vehicle exhaust emissions from laden trucks leaving the quarry would therefore be significantly less for the modified Quarry Site entrance.

*No further assessment is warranted.*



#### **4.3.7 Noise**

The proposed modification would require construction and product transportation activities in closer proximity to some residences, although further away from other residences. It is expected therefore that there may be some minor change to the noise levels expected to be received at some residences.

*Further consideration of the potential impact is warranted (see Section 5.3).*

#### **4.3.8 Traffic**

As identified in Section 4.2.1, sight distances from the approved and proposed site entrance are a concern to Goulburn Mulwaree Shire Council's Engineer, Mr Ian Aldridge.

*Further consideration of the issues related to sight distance and intersection suitability is warranted (see Section 5.2).*

#### **4.3.9 Analysis of Potential Environmental Impacts and Issue Prioritisation**

Based on the issues identified, and consideration of the potential impacts, further environmental assessment has been completed (in order of priority) for the following environmental issues.

1. Traffic.
2. Noise.
3. Cultural (Non-Aboriginal) heritage.

To properly assess the potential environmental impacts of the modification on traffic and noise, specialist consultants were commissioned to conduct further studies. The effects that the modification would have on the remaining environmental issues are either comparable to, or more beneficial when compared to those resulting from the approved site access road location.

## **5 ENVIRONMENTAL ASSESSMENT**

### **5.1 INTRODUCTION**

This section describes the specific environmental features of the Quarry Site and its surrounds that may be affected by the proposed modification. The proposed design and/or operational safeguards and an assessment of the level of impact the proposed modification may have after implementation of these safeguards is described.



## 5.2 TRAFFIC

*Christopher Hallam and Associates Pty Ltd (CHA) was commissioned to prepare reports to address the effect that the proposed entrance would have on traffic conditions. The complete report of CHA (2009) is reproduced in full as Appendix 1. The following sub-sections summarise the key elements of CHA (2009), along with sections of the Environmental Assessment (RWC, 2008), as relevant to the assessment of the proposed modification.*

### 5.2.1 Existing Conditions

The existing traffic environment was described in Section 6.2.2 of the *Environmental Assessment* (RWC, 2008). Features relevant to the proposed modification are as follows.

#### Road Network

Oallen Ford Road (Shire Road 24) is a two-lane, variously sealed and unsealed road between the Windellama and Bungonia (approximately 21km) where it becomes King Street. The transition between Oallen Ford Road and King Street is signified by the change in speed zone from 100km/hr on Oallen Ford Road to 50km/hr on King Street within the village of Bungonia.

Lumley Road intersects with Oallen Ford Road approximately 4km south of Bungonia (opposite the “Ardmore Park” property entrance) at an angle of approximately 120° (to the north) and 140° (to the south). Lumley Road provides indirect access to Goulburn and the Hume Highway (approximately 50km) via a mix of sealed and unsealed rural roads.

#### Traffic Types and levels

Traffic count data collected on Oallen Ford Road indicates daily traffic averages a little over 300 vehicles per day. This would increase to almost 400 vehicles per day (more on the weekends and less mid-week) with heavy vehicles making up approximately 10% of total traffic once maximum production is reached by the quarry.

No traffic count data was collected for Lumley Road, however, it is expected to be similar to or less than that of Oallen Ford Road. The quarry will not alter the volume or type of traffic using Lumley Road.

#### Ardmore Park – Oallen Ford Road Intersection

The property currently has access via a driveway approximately opposite Lumley Road.

Sight distances (measured from a height of 1.15m) from this intersection have been measured by Council and are 160m to the north and 235m to the south. CHA (2009) notes that at driver height from the cabin of the trucks to be used by Multiquip to transport quarry products (2.45m), this distance would increase to 220m to the north and 295m to the south.

#### Approved Quarry Access Road – Oallen Ford Road Intersection

PA 07\_0155 requires the quarry entrance be relocated approximately 180m to the south of the existing “Ardmore Park” property entrance.



Sight distances (measured from a height of 1.15m) from this location have been measured by Council and are 240m to the north and 320m to the south. There would be no change to the proposed entrance since the road curvature was the limiting factor.

## 5.2.2 ASSESSMENT

### 5.2.2.1 Relevant Criteria

As a driveway, CHA (2009) notes that the “Ardmore Park” property / quarry access road is governed by different standards to those for public roads, namely Australian Standard (AS) 2890.1-2004. On the basis of this classification of the quarry access road as a driveway, CHA (2009) considers that the provision of *Safe Intersection Sight Distance* (SISD) to the site driveway is the desirable standard (as opposed to *Entering Sight Distance* [ESD]). ESD is the sight distance required for minor road drivers to enter a major road such that traffic on the major road is unimpeded. ESD assumes that the vehicle turning onto the major road accelerates up to its operating speed, while the vehicle approaching, on the major road, does not need to brake at all. CHA (2009) suggests that this might be a desirable standard for a minor public road entering the Hume Highway, however, it is less relevant for a private driveway entering Oallen Ford Road, which is a little used rural road carrying about 300vpd.

The Roads & Traffic Authority’s *Guide to Traffic Generating Developments* provides further comments on SISD as follows.

*“It is necessary that any vehicle entering or leaving the driveway is visible to approaching vehicles and pedestrians. The absolute minimum requirement to achieve this is stopping sight distance. This is known as Approach Sight Distance (ASD).”*

*Ideally, the sight distance required is that which enables the driver of a vehicle waiting to leave a driveway to select a gap in the through traffic and to join the street without causing a major disruption. This is the desirable sight distance. This is known as Safe Intersection Sight Distance (SISD).”*

AS2890.1-2004 sets out minimum (ASD) and desirable (SISD) sight distances for private access driveways. For a design speed of 100km/hr, AS2890.1-2004 recommends a SISD of 139m and ASD of 160m.

### 5.2.2.2 Assessment

The existing “Ardmore Park” property – Oallen Ford Road intersection provides a sight distance to the both the north and south greater than the ASD and SISD nominated for a design speed of 100km/hr.

Furthermore, the proposed relocated quarry entrance is located on the outside of a curve, which will optimises sight distance.



CHA (2009) also considers the issue relating to the expectation of a driver on Oallen Ford Road seeing a vehicle entering Oallen Ford Road. CHA (2009) suggests that while local drivers will become accustomed to trucks entering from the approved quarry entrance, visitors may not. All drivers would, however, have greater expectation when approaching an intersection of two public roads, such as Oallen Ford Road with Lumley Road, of entering traffic. Notably, Section 1.3.2 of the RTA's *Guide to Traffic Generating Developments* makes the following comment.

*Vehicles entering and leaving an isolated development are a potential hazard to other vehicles and to traffic flow in general, even if sight distance is good. Also, high speed accidents in rural areas can occur when traffic enters from isolated developments and where main road traffic operates at high speed. Such situations should be avoided.*

It follows from this that there are in fact traffic safety advantages at this location in locating the driveway at the Lumley Road intersection, to increase the expectation of approaching drivers of meeting a vehicle coming out of the side street or driveway.

### 5.2.2.3 Conclusion

CHA (2009) makes the following conclusions regarding the proposed use of the existing "Ardmore Park" property entrance as the quarry entrance.

1. The critical sight line is to the north along Oallen Ford Road. Based on the analysis by Council engineers, the available sight distance for a driver eye height at one end of 1.8m is 190m. With the actual trucks used by the quarry operator, and in conformity with Austroads (2002), a driver eye height (and truck height) of 2.45m would increase the sight distance to at least 220m.
2. The quarry entrance and access road is classified as a private driveway, not a public road. AS2890.1-2004 sets out minimum and desirable sight distances for private access driveways. For a design speed of 100km/hr, AS2890.1-2004 recommends a SISD of 139m and ASD of 160m. A relocation of the quarry entrance to the "Ardmore Park" property driveway (opposite Lumley Road) provides a sight distance to the north of 160m and to the south of 235m, from measuring heights of 1.15m, and longer sight distances for higher vehicles. The proposed relocated quarry entrance would meet the minimum and desirable sight distances.
3. A site driveway located 180m south of the current site driveway would introduce an isolated access on a rural road with limited side conflicts. The location of this access to a consolidated location opposite Lumley Road would provide traffic safety benefits through increasing driver expectation of traffic entering Oallen Ford Road.

On the basis of 1 to 3 above, CHA (2009) concludes that it is appropriate to relocate the Ardmore Park Quarry entrance to a position opposite Lumley Road.



## 5.3 NOISE

*Heggies Pty Ltd (Heggies) was commissioned in March 2010 to prepare a report to address the effect that the proposed site entrance would have on noise predictions for the quarry. The report is reproduced, in full, below.*

### 5.3.1 Introduction

It is proposed to relocate the entrance to the quarry and change the alignment of the quarry access road from that shown in *Figure 2.1* and *2.15* of the *Environmental Assessment* for the Ardmore Park Quarry proposal (RWC, 2008) (see **Figures 2** and **3** of this report).

As a part of the assessment of the implications of the road realignment, the impacts of construction and traffic noise from the realigned access road were investigated.

Accordingly, the relocated road alignment (see **Figure 4**) was incorporated into the noise model and revised noise level predictions were made relative to those presented in Section 6, Noise Impact Assessment, of the Specialist Consultant Studies, Part 2 - Noise and Vibration Impact Assessment of the *Environmental Assessment* for the Ardmore Park Quarry proposal (Heggies, 2008).

The relevant sub-sections of Heggies (2008) (*Section 6*) are reproduced with the changes to the noise level predictions for the new road alignment underlined and shaded in the respective tables. The locations of the eight residential receivers surrounding the quarry (one of which is owned by Multiquip and is therefore considered project-related) are presented on **Figure 5**. The noise levels are shown in black where no change in noise level occurred.

### 5.3.2 Section 6 NOISE IMPACT ASSESSMENT

#### 5.3.2.1 Section 6.1 Scenario 1a: Project Site Construction

Construction activities would occur during the daytime period only. The construction scenario modelled comprises the equipment presented in **Table 2.1**.

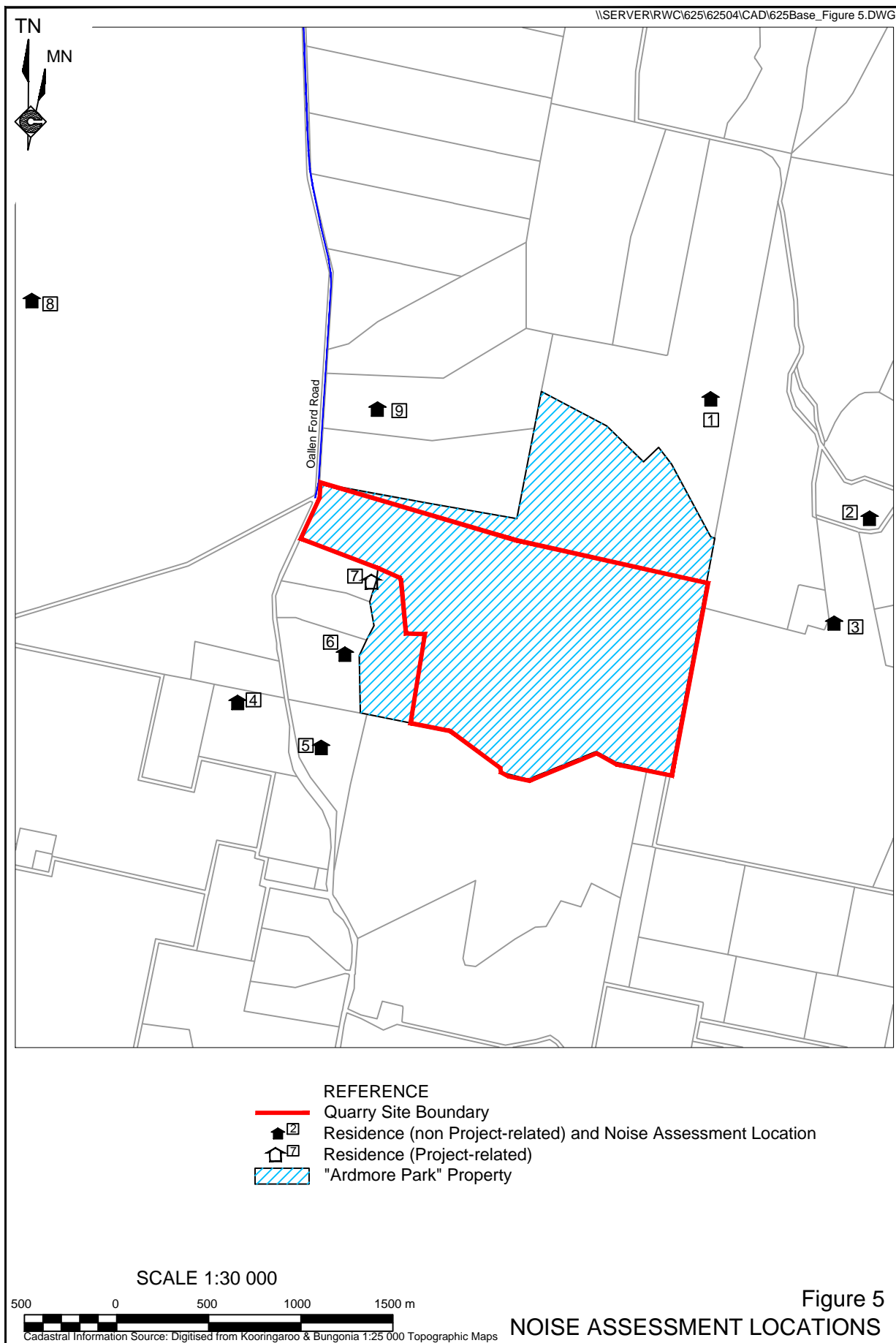
The predicted  $L_{A10(15\text{minute})}$  noise emissions at the eight nominated residences are presented in **Table 5.1** for the daytime period together with the corresponding construction noise criterion and impact assessment.

**Table 5.1**  
**Construction  $L_{A10(15\text{minute})}$  Noise Emissions**

Assessment Location	Predicted Daytime $L_{A10(15\text{minute})}$ Emission	Quarry Site Specific $L_{A10(15\text{minute})}$ Criterion	Noise Assessment
Residence 1	29dB(A)	40dB(A)	Below Criterion
Residence 2	<b>25dB(A)</b>	40dB(A)	Below Criterion
Residence 3	28dB(A)	40dB(A)	Below Criterion
Residence 4	33dB(A)	40dB(A)	Below Criterion
Residence 5	36dB(A)	40dB(A)	Below Criterion
Residence 6	37dB(A)	40dB(A)	Below Criterion
Residence 8	19dB(A)	40dB(A)	Below Criterion
Residence 9	32dB(A)	40dB(A)	Below Criterion

Note: **Bold** results identify a modified prediction to that presented in the Environmental Assessment





The noise modelling, based on unshielded mobile equipment surface activities and the mobile processing plant at an elevation of 647m AHD, indicates that noise emissions from construction activities under calm daytime conditions would be within the construction noise criteria at all assessment locations.

### 5.3.3 Section 6.3 Scenario 2: Southern Sand Extraction Area (Stage 2)

The predicted daytime  $L_{Aeq(15\text{minute})}$  noise emissions from extraction operations in the southern sand extraction area and trucks travelling to and from the Quarry Site via the relocated access road are presented in **Table 5.2** together with the Quarry Site specific criteria.

**Table 5.2**  
**Southern Sand Extraction Area Daytime  $L_{Aeq(15\text{minute})}$  Noise Emissions**

Assessment Location	Predicted $L_{Aeq(15\text{minute})}$ Emission			Quarry Site Specific $L_{Aeq(15\text{minute})}$ Criterion	Noise Assessment
	Sand Only	Rock Only			
		With Mobile Processing Plant	With Fixed Processing Plant		
Residence 1	22dB(A)	25dB(A)	27dB(A)	35dB(A)	Below Criterion
Residence 2	<b>19dB(A)</b>	22dB(A)	24dB(A)	35dB(A)	Below Criterion
Residence 3	22dB(A)	24dB(A)	26dB(A)	35dB(A)	Below Criterion
Residence 4	26dB(A)	27dB(A)	<b>27dB(A)</b>	35dB(A)	Below Criterion
Residence 5	29dB(A)	25dB(A)	26dB(A)	35dB(A)	Below Criterion
Residence 6	27dB(A)	31dB(A)	<b>31dB(A)</b>	35dB(A)	Below Criterion
Residence 8	12dB(A)	16dB(A)	16dB(A)	35dB(A)	Below Criterion
Residence 9	27dB(A)	30dB(A)	31dB(A)	35dB(A)	Below Criterion

Note: **Bold** results identify a modified prediction to that presented in the Environmental Assessment

It should be noted that extraction within the southern sand extraction area would initially be to the north of the modelled scenario (ie. Stage 1). This will both create a greater offset distance for noise emissions to the south whilst an acoustic bund is constructed using overburden from Stage 1 extraction fill for this barrier.

The results presented in **Table 5.2** indicate that noise emissions from operational activities under calm daytime conditions would be within the project specific noise criterion at all assessment locations.

### 5.3.4 Section 6.4 Scenario 3: Basalt and Central Sand Extraction Area - Stages I and II

The predicted daytime  $L_{Aeq(15\text{minute})}$  noise emissions from extraction operations in the basalt and central sand extraction area and trucks travelling to and from the Quarry Site via the relocated access road are presented in **Table 5.3** together with the project specific noise criterion and impact assessment.

The results presented in **Table 5.3** indicate that noise emissions from extraction activities under calm daytime conditions would be within the project specific noise criterion at all assessment locations whilst operating within Stages I and II of the basalt and central sand extraction area.

**Table 5.3**  
**Basalt and Central Sand Extraction Daytime  $L_{Aeq(15minute)}$  Noise Emissions**

Assessment Location	Predicted $L_{Aeq(15minute)}$ Emission			Project Site Specific $L_{Aeq(15minute)}$ Criteria	Noise Assessment
	Sand Only	Rock Only			
		With Mobile Processing Plant	With Fixed Processing Plant		
Residence 1	22dB(A)	26dB(A)	28dB(A)	35dB(A)	Below Criterion
Residence 2	20dB(A)	<b>22dB(A)</b>	24dB(A)	35dB(A)	Below Criterion
Residence 3	23dB(A)	25dB(A)	27dB(A)	35 dB(A)	Below Criterion
Residence 4	25dB(A)	<b>26dB(A)</b>	27dB(A)	35dB(A)	Below Criterion
Residence 5	28dB(A)	26dB(A)	27dB(A)	35dB(A)	Below Criterion
Residence 6	<b>26dB(A)</b>	31dB(A)	31dB(A)	35dB(A)	Below Criterion
Residence 8	13dB(A)	16dB(A)	16dB(A)	35dB(A)	Below Criterion
Residence 9	27dB(A)	31dB(A)	31dB(A)	35dB(A)	Below Criterion

Note: **Bold** results identify a modified prediction to that presented in the Environmental Assessment

**5.3.4.1 Section 6.5 Scenario 4: Dozer Campaign**

The predicted  $L_{Aeq(15minute)}$  noise emissions from the extraction operations in the basalt and central sand extraction area and trucks travelling to and from the Quarry Site via the relocated access road are presented in **Table 5.4** together with the project specific criterion and assessment impact.

**Table 5.4**  
**Dozer Campaign Daytime  $L_{Aeq(15minute)}$  Noise Emissions**

Assessment Location	Predicted $L_{Aeq(15minute)}$ Emission		Project Site Specific $L_{Aeq(15minute)}$ Criterion	Noise Assessment
	Sand Only	Rock Only		
Residence 1	21dB(A)	25dB(A)	35dB(A)	Below Criterion
Residence 2	18dB(A)	21dB(A)	35dB(A)	Below Criterion
Residence 3	21dB(A)	24dB(A)	35dB(A)	Below Criterion
Residence 4	26dB(A)	25dB(A)	35dB(A)	Below Criterion
Residence 5	29dB(A)	23dB(A)	35dB(A)	Below Criterion
Residence 6	26dB(A)	28dB(A)	35dB(A)	Below Criterion
Residence 8	12dB(A)	15dB(A)	35dB(A)	Below Criterion
Residence 9	<b>27dB(A)</b>	30dB(A)	35dB(A)	Below Criterion

Note: **Bold** results identify a modified prediction to that presented in the Environmental Assessment

The results presented in **Table 5.4** indicate that noise emissions from dozer campaign activities under calm daytime conditions would be within the project specific noise criterion at all assessment locations.

**5.3.4.2 Section 6.6 Discussion**

A review of the revised noise level prediction indicates that the revised noise level predictions changed by up to a 1 dB(A) increase (**Table 5.3**, Residence 9 only) and down to a 1 dB(A) reduction (at Residences 2, 4 and 6).



In all cases the revised predicted noise levels are below the respective Project Specific Noise Criteria.

#### **5.3.4.3 Section 6.7 Recommendations**

It is recommended that on-site noise monitoring be conducted during both “worst case scenario” operations, as well as in the event of complaint. Noise monitoring should be undertaken in order to determine the operational noise emission levels as well as to aid the selection of additional noise controls, if required.

In addition, Multiquip should consider nominating an employee as the Community Liaison Officer for the “Ardmore Park” Quarry. Their role would be to communicate current quarrying activities to the local community and to be a point of contact, through a complaints hotline for example, for any community concerns or queries. The Community Liaison Officer would then be responsible for implementing a system to document any noise complaints received.

A database of complaints, and the quarry’s subsequent response, should be maintained and should be made readily available to the community and to the DECCW (or other regulatory authorities).

## **5.4 CULTURAL HERITAGE**

### **5.4.1 Local Cultural Heritage Features**

As noted in Section 2.2.1, GSA Planning (2007) identified a tree at the existing entrance to the “Ardmore Park” property, identified as the “Larbert Tree” has been flagged as being of historical significance by the Bungonia Historical Society. It is understood that this tree once held a sign “to Larbert”, although the validity of this, as well as the historic significance of the feature is not verified by GSA Planning (2007).

Notably, this feature is not identified as being of heritage significance by any of the relevant databases and planning documents which include:

- NSW State Heritage Register;
- Mulwaree LEP 1995 and Mulwaree Draft Heritage Inventory;
- Goulburn Mulwaree LEP 2009;
- National Trust NSW; and
- Register of the National Estate.

Recently the tree fell over (by natural causes) leaving only a small section of trunk and regrowth (see **Plate 1**).



## 5.4.2 Definition of Significance

Cultural (or heritage) significance, as defined by the Burra Charter (2000), refers to “Aesthetic, historic, social or spiritual value for the past present or future generations”. Further, it is “embodied in the place itself, its fabric, setting, use, association, meanings, records, related places and related objects”.

## 5.4.3 Assessment of Significance

In assessing the relative heritage significance of the various features on and surrounding the Ardmore Park Quarry, GSA (2007) concluded that while research potential existed for some features such as the Old Argyle Road, neither the property or associated features (such as the Larbert Tree) should be considered for heritage listing or as an item on an LEP.

With specific reference to the Larbert Tree, the following is noted.

- Any historic significance associated with the Larbert Tree was provided by the sign previously hung from the tree, as opposed to the tree itself. (Although the occurrence of the sign appears to be anecdotal as no picture or reference to the sign was identified by GSA, 2007).
- The tree has subsequently fallen (by natural causes), leaving only a small section of the trunk which is sprouting some regrowth.
- An arborist was commissioned by Multiquip (in accordance with the recommendations of GSA, 2007) to review the remaining stump. In a report prepared by Rick’s Trees (ABN: 65 141 220 215) (see **Appendix 2**), the arborist confirmed that remaining portion of the tree to be in poor condition and recommended removal to avoid problems associated with regrowth in the future.

The remaining portion of the tree is of therefore considered to be of limited historic significance, the removal of which will have no real impact on the cultural heritage setting. In fact, the removal of the remaining portion of the tree has been recommended by a local arborist.

## 5.4.4 Recommendations

In accordance with the recommendations of GSA Planning (2007), an arborist should be engaged to undertake further investigation and documentation of the Larbert Tree. This documentation should be retained by Multiquip and provided to the local historical society such that a record of the type, location and other remaining features of the tree can be retained.

# 6 JUSTIFICATION FOR THE MODIFICATION

The proposed relocation of the quarry entrance would not alter any other activity or operation of the Ardmore Park Quarry (as approved by PA 07\_0155). As such, it is clearly demonstrated that this represents a modification to an approved project as opposed to being a new development.



The proposed relocation of the quarry entrance and access road is justified on the basis of the following.

- Precedence for the use of the “Ardmore Park” property entrance for heavy vehicle entry/exit is provided by DA No. 001/395.
- The proposed intersection of the quarry entrance with Oallen Ford Road would meet the minimum and desirable sight distances.
- The relocation of quarry entrance to provide a single cross-junction intersection with Lumley Road would provide traffic safety benefits by increasing driver expectation of traffic entering Oallen Ford Road. Conversely, a site driveway located 180m south of the current site driveway would introduce an isolated access on a rural road with limited side conflicts from which entering traffic may not be expected (especially by visitors to the area).
- Vehicle exhaust emissions from laden trucks leaving the quarry would be significantly less given the proposed relocated quarry entrance has an uphill climb of approximately 90m as opposed to the approved site entrance which has an uphill climb of approximately 270m.
- Noise impacts would remain compliant with the Project Specific Noise Criteria.
- Any impact on cultural heritage is considered minor given the type and condition of the feature to be impacted (the Larbert Tree). The impact could be further mitigated by engaging an arborist to document the remaining features of the tree prior to removal.
- Other environmental impacts would either be equal to or less than predicted in the *Environmental Assessment* (RWC, 2008) given the construction activities would be minimised due to the alignment of the quarry access road follows the existing driveway on the “Ardmore Park” property.

## 7 CONCLUSION

This assessment has been prepared to support a Section 75W application to modify the approved quarry entrance location and access road alignment by retaining both in their current locations.

This assessment of the proposed modification has been undertaken in order to assist DoP in assessing the application under Section 75W of the EP&A Act.

Section 2 describes the various elements of the proposed modification and Section 5 assesses the residual impacts associated with the modification on traffic, noise and cultural heritage. It is concluded that the proposed modification would have minimal impacts on the local environment comparable to those identified in the *Environmental Assessment* and approved by PA 07\_0155.



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- R.W. Corkery & Co. Pty Limited (RWC) (2008). *Environmental Assessment for the Modified “Ardmore Park” Quarry Project Via Bungonia, NSW*. Prepared on behalf of Multiquip Quarries.



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# Appendix 1

**Review Of Safety Implications Of Access Into Ardmore Park  
Quarry, Oallen Ford Road, Bungonia NSW**

**6<sup>th</sup> November 2009**

Christopher Hallam & Associates Pty Ltd

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**CEAL LIMITED**

**Trading as**

**MULTIQUIP QUARRIES**

**REVIEW OF SAFETY IMPLICATIONS  
OF ACCESS INTO ARDMORE PARK  
QUARRY, OALLEN FORD ROAD,  
BUNGONIA NSW**

**6<sup>TH</sup> NOVEMBER 2009**

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## 1.0 INTRODUCTION

Project approval has been granted for the development and operation of a quarry on the property "Ardmore Park", north of Oallen Ford Road, south of the village of Bungonia. The property currently has access via a driveway approximately opposite Lumley Road. The Project approval requires the site driveway to be relocated approximately 180m to the south. CEAL Limited has requested that consideration be given to a change to the access location, to maintain the access in its approximate current location. A primary concern is the effect of the approved access on vehicle operating conditions and costs, where laden trucks leaving the site would need to initially travel uphill.

The Goulburn Mulwaree Shire Council engineer Mr Ian Aldridge made the following comments in regard to the driveway location:

*"1. I have investigated the location of entrance of Ardmore Park onto Oallen Ford Road. You asked whether it could remain in its current location (nearly opposite Lumley Road), as opposed to some 180m further to the south as indicated in the consent. The issue is not so much the formation of a cross intersection with Lumley Road because i) Lumley Rd is very lightly trafficked, and ii) measures can be undertaken to address the concerns.*

*Rather the issue is sight distances. I measured the sight distances, as below:*

*Ardmore Park Sight Distances (m)*

	<b>Existing (1.15m height)</b>	<b>Proposed</b>
To north	160	240
To south	235	320

*The above are based on an eye height of 1.15m (normal vehicle). In the case of heavy vehicles, such as Ardmore's vehicles, the eye height would be 1.8m. This would improve the sight distances available for the existing entrance by about 30m. There would be no change to the proposed entrance since the road curvature was the limiting factor.*

*Thus the table would be modified to:*

	<b>Existing (1.8m)</b>	<b>Proposed</b>
To north	Est 190	240
To south	Est 265	320

*The sight distances recommended by Austroads are:*

- To north (Safe Intersection Sight Distance) 250m*
- To south (Entering Sight Distance) 500m*

*You can see that both the existing and the proposed fall short of the recommended distances. However, the proposed are some 25% better than the existing.*

*I take the point that the proposed location has an uphill climb (for about 270m), which could delay trucks attaining cruising speed. The existing location also has an uphill climb (for about 90m).*

*In conclusion, my preference is for the proposed location due to the sight distance issue. If you wish to pursue this matter, a report by a traffic consultant would be the best approach."*

Christopher Hallam & Associates Pty Ltd was commissioned by CEAL Limited to assess the traffic implications of the site access location. We prepared various traffic and transport assessment reports on the quarry, with the first report "*Proposed "Ardmore Park" Quarry, Via Bungonia, NSW, Transport Assessment*" being prepared in June 2006.

## 2.0 ASSESSMENT

### 2.1 Previous Report

Our Report of June 2006 supported the retention of the original site access, with a minor realignment slightly south, to bring it directly opposite Lumley Road. The report commented as follows:

#### "Site Access to Oallen Ford Road

*Figure 3 reproduces Figure 2.14 from the EIS, showing the proposed site access intersection. The sketch design showing the intersection treatment does not include the approach from Lumley Road. The implication is that the site access joins the existing junction of Oallen Ford Road with Lumley Road. We consider that this is the preferred outcome, with one cross-junction instead of two offset T-junctions. We prefer one intersection because it assists in the driver recognition that they are approaching an intersection. We recognize that Figure 3.1 of AS2890.1-2004 recommends against locating private driveways opposite public roads. In the site circumstances, this is the preferred location. While we do not have any traffic count data for Lumley Road, given the relatively low traffic flow on Oallen Ford Road, of approximately 300 veh/day, the flow down Lumley Road joining Oallen Ford Road would be lesser. The location of the site access at this junction, which is on the outside of a curve, as shown in Figure 3, optimizes sight distance. The minor realignment of the site driveway slightly south would bring the driveway more directly opposite Lumley Road. This would require the removal of a large tree at this point.*

*On this issue of sight distance, the EIS traffic report notes that the sight distance to the South from the site access is 280m, with a sight distance to the North of 200m. This report observed that the safe intersection sight distance for design speeds of 100 km/hr is 225m. For reference, the equivalent sight distance for design speeds of 80 km/hr is 160m. As a first comment, these sight distances are the current sight distances for this existing intersection of two public roads. In practice, a vehicle coming out of Lumley Road is more restricted because they are on the inside of the curve. As indicated in Appendix B, safe intersection sight distance to a vehicle on the side road is taken as to a position 5m back from the edge of the carriageway.*

*As a second comment, the situation would fully meet intersection sight distance requirements if the speed limit between Lumley Road and Bungonia Village was reduced to 80 km/hr. It should also be noted that the limitation on sight distance to the North is due to the vertical alignment of the road – there is a crest. As previously noted, while the driver eye height in a car is 1.15m, the driver eye height in the trucks used by Multiquip Quarries is 2.45m. A truck driver at one end of the sighting would have substantially longer sight distance than a car driver. A car driver travelling southbound on Oallen Ford Road would be more able to see a large truck where the top of the cabin is over 2.5m high than to see a car in Lumley Road.*

*The option of reducing the speed limit on this section to 80 km/hr could be considered, but note that the fleet management set out in Appendix A proposes to limit quarry truck speeds to 80km/hr. We fully support this measure... ”*

By way of clarification, the original EIS for the project – which we were not involved in – measured sight distances of 200m to the north and 280m to the south. We have not checked these measurements. We note that the Council engineer measured distances of 160m to the north and 235m to the south. The EIS also mentioned a “safe intersection sight distance” of 225m for a design speed of 100km/hr and a distance of 160m for a design speed of 80km/hr. The Council engineer quoted a “safe intersection sight distance” of 250m for a speed of 100km/hr and an “entering sight distance” of 500m for a speed of 100km/hr. Assuming a driver reaction time of 2.0 seconds, the figures quoted by the Council engineer are correct.

## **2.2 Truck Driver Eye Height**

On the question of sight distance measurement to/from a truck, the Council engineer assumed a truck driver eye height of 1.8m. We measured the actual driver eye height for the type of trucks used by Multiquip Quarries as being 2.45m. This height is supported by the Austroads report “*Urban Road Design – Guide to the Geometric Design of Major Urban Roads*”, 2002. Section 8.4 discusses Stopping Sight Distance, for travel speeds of up to 110 km/hr. Figure 8.7 shows the sight lines for truck stopping sight distance, where a truck driver eye height of 2.4m is used. This supports our contention that a truck driver eye height of 2.4-2.45m is appropriate. With the driver eye at this height, the top of the cabin of the truck is higher than this height, to assist an approaching car driver see the truck.

The sight distances are firstly to assist approaching vehicles, generally cars, see a truck about to leave the Quarry Site, and secondly, to allow a truck driver about to leave the Quarry Site see an approaching vehicle. With the first issue, the car driver needs to see if a truck is about to pull out, and move into a position of potential conflict, and then have time to react and to apply the brakes. The car driver would more readily see a truck than another car, because of the height of the truck. With the vertical alignment of Oallen Ford Road being the constraining factor, greater height at either end of the distance measurement helps. With the second issue, the greater height of the truck driver clearly assists him in seeing an approaching vehicle.

We have not checked sight distances to/from a height of 2.45m at the site entrance, but if the increase in height from 1.15m to 1.80 m gives an additional 30m of sight distance, as estimated by the Council engineer, then a further increase of 0.65m to a height of 2.45m would logically further increase the sight distance by 30m, taking the distance to the north to 220m, and to the south to 295m.

By way of comment, we note that the 1988 Austroads publication *Guide to Traffic Engineering Practice Part 5– Intersections at Grade*, talks of a truck driver eye height of 1.8m. We have assumed that the 2002 publication quoted better reflects the situation with current trucks.

### 2.3 Public Road or Private Driveway

We consider that the provision of “safe intersection sight distance” to the site driveway is the desirable standard. We do not consider that “entering sight distance” is as relevant on Oallen Ford Road. Entering Sight Distance (ESD) is the sight distance required for minor road drivers to enter a major road such that traffic on the major road is unimpeded. ESD assumes that the vehicle turning onto the major road accelerates up to its operating speed, while the vehicle approaching, on the major road, does not need to brake at all. This might be a desirable standard for a minor public road entering the Hume Highway, but is less relevant for a private driveway entering Oallen Ford Road, which is a little used rural road carrying about 300 veh/day.

The second aspect of “public road” versus “private driveway” is that the location of private driveways are governed by different Standards to those for public roads. Australian Standard 2890.1-2004 provides guidelines for the location of access driveways. The basic design is chosen to suit the traffic generation and the type of access road. For example, a shopping centre with 100 parking spaces with access onto a Local Road requires a Type 2 driveway, which is 6-9m wide, similar to that proposed for “Ardmore Park”. Such a development could have a peak hour traffic generation similar to the projected daily traffic generation of the quarry. AS2890.1-2004 then sets out locational criteria for access driveways. Figure 3.2 of this Standard sets out *Sight Distance Requirements at Access Driveways*. For a 100km/hr design speed, there is a desirable sight distance of 139m and a minimum stopping sight distance of 160m. These sight lines are for both directions of approach to the driveway. The 160m distance is achieved at the current site driveway, based on the Council engineer measurements from 1.15m to 1.15m. As discussed above, with one end having a driver eye height of 2.45m, the sight distance to/from the North is approximately 220m. The retention of the “Ardmore Park” driveway will thus meet the relevant sight distance requirements for a private access driveway.

The Roads & Traffic Authority’s *Guide to Traffic Generating Developments* provides further comments on driveway sight distance, in Section 6.2.1:

*“It is necessary that any vehicle entering or leaving the driveway is visible to approaching vehicles and pedestrians. The absolute minimum requirement to achieve this is stopping sight distance. This is known as Approach Sight Distance (ASD).*

*Ideally, the sight distance required is that which enables the driver of a vehicle waiting to leave a driveway to select a gap in the through traffic and to join the street without causing a major disruption. This is the desirable sight distance. This is known as Safe Intersection Sight Distance (SISD).*

*As2890.1: Off-street Car Parking gives minimum and desirable sight distances for a range of frontage road speeds.”*

The existing driveway meets both the “minimum” and “desirable” sight distances shown in Figure 3.2 of AS2890.1 for a speed of 100km/hr.

There is also an issue relating to the expectation of a driver on Oallen Ford Road seeing a vehicle pull out of the site driveway. While local drivers will get to know the location of the driveway, visitors will not. While they might have some expectation when approaching an intersection of two public road – Oallen Ford Road with Lumley Road – that a vehicle might turn from the side road (Lumley Road), they might not have the same expectation for a truck coming out of a site driveway south of Lumley Road. Section 1.3.2 of the RTA’s *Guide to Traffic Generating Developments* makes the following comment:

*“Vehicles entering and leaving an isolated development are a potential hazard to other vehicles and to traffic flow in general, even if sight distance is good. Also, high speed accidents in rural areas can occur when traffic enters from isolated developments and where main road traffic operates at high speed. Such situations should be avoided.”*

It follows from this that there are in fact traffic safety advantages at this location in locating the driveway at the Lumley Road intersection, to increase the expectation of approaching drivers of meeting a vehicle coming out of the side street or driveway.

## 2.4 Conclusion

1. The critical sight line is to the north of Oallen Ford Road. Based on the analysis by Council engineers, the available sight distance for a driver eye height at one end of 1.8m is 190m. With the actual trucks used by the quarry operator, and in conformity with Austroads road design guidelines (2002), a driver eye height (and truck height) of 2.45m would increase the sight distance to at least 220m.
2. The access driveway is a private driveway, not a public road. AS2890.1-2004 sets out minimum and desirable sight distances for private access driveways. For a design speed of 100km/hr, this Standard recommends sight distances of 139m and 160m. A site driveway opposite Lumley Road provides a sight distance to the north of 160m and to the south of 235m, from measuring heights of 1.15m, and longer sight distances for higher vehicles. The driveway opposite the Lumley Road intersection meets these minimum and desirable sight distances.
3. A site driveway located 180m south of the current site driveway would introduce an isolated access on a rural road with limited side conflicts. The location of this access to a consolidated location opposite Lumley Road would provide traffic safety benefits through increasing driver expectation of traffic entering Oallen Ford Road.
4. We conclude that it is appropriate to locate the “Ardmore Park” site access at a position opposite Lumley Road.

# Appendix 2

## Arborist Report of Rick's Trees 18<sup>th</sup> May 2009

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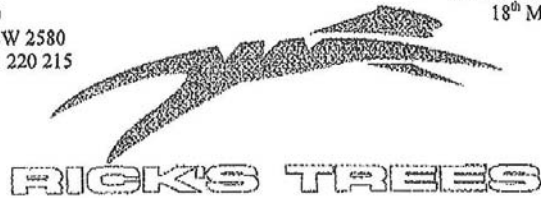
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ARBOTIST REPORT  
18<sup>th</sup> May 2010



RICK'S TREES

**Large Gum Tree  
Intersection of Lumbley Road and Bungonia Road**

**Arborist Report for Multi Quip Pty Ltd**

Further to our conversation regarding the removal of one large gum tree.

Upon inspection of the tree there is no immediate danger of the tree or any of the existing branches falling, however due to the structural integrity of the tree there will almost certainly be problems with existing and new re-growth in the near future.

In my opinion the tree is in poor condition and I would suggest it being removed would be the best option as problems will occur in the future.

If you have any further question please contact Rick Parker (Director) on 040 631 4869.

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