

Multiquip Quarries

ABN: 44 101 930 714



Response to Submissions

provided following the exhibition of

Supporting Documentation for a Request to Modify Project Approval PA 07_0155 (Ardmore Park Quarry)

Via Bungonia, NSW



August 2010

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PREAMBLE

Following the public exhibition of a report entitled "*Supporting Documentation for a Request to Modify Project Approval PA 07_0155*" (RWC, 2010), and the notification of adjoining land owners, submissions were received by the Department of Planning from Goulburn-Mulwaree Council (Council), eight members of the general public¹ and the Bungonia & District Historical Society. The submissions provided by Council and the general public were forwarded by the Department of Planning (DoP) to R.W. Corkery & Co. Pty. Limited on 30 June 2010 and 6 July 2010. The submission from the Bungonia & District Historical Society, who were provided an extended period of time to prepare a submission was forwarded to R.W. Corkery & Co. Pty. Limited on 12 July 2010. Council subsequently provided a second submission on 30 July 2010, clarifying the position of Council with respect to the management of a tree of potential heritage significance ("the Larbert Tree"). Each of the submissions was comprehensively reviewed and the issues over which objections were raised identified.

The issues raised and comments presented in the submissions, as relevant to the proposed modification to PA 07_0155, have been categorised into three separate fields of assessment as follows.

1. Traffic safety and adequacy of the proposed intersection.
2. Noise impacts.
3. Impacts on the Larbert Tree.

Rather than respond to each submission individually, the issues raised in relation to the two primary fields of assessment have been considered.

It is noted that several of the submissions raised issues beyond the scope of the proposed modification, namely:

1. the lack of an active Community Consultative Committee; and
2. issues related to the use of Crown land for the approved Bungonia By-pass Road.

While beyond the scope of the assessment associated with proposed modification to the quarry site entrance, brief commentary is provided in Section 4.

¹ Two submissions were received from one individual.

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1. INTRODUCTION

A total of 10 submissions were forwarded to R.W. Corkery & Co. Pty Limited by the Department of Planning. The following sections consider the submission of Council (Section 2) and the general public (Section 3). As noted in the Preamble, the main focus of the public submissions was on three issues: adequacy of the proposed intersection (and impacts on traffic safety (Section 3.1); noise impacts (Section 3.2); and the historical value of a tree to be removed at the proposed intersection (Section 3.3).

2. GOULBURN-MULWAREE COUNCIL

It is noted that Council initially raised no objection to the proposed modification and stated in an email to the Department of Planning on 24 June 2010 the following.

"Please be advised that Council has no objection to the proposed modification as detailed in your letter dated 10/6/2010. Note that this relates to the road access and configuration as proposed and Council understands that the noise impacts to nearby neighbours will be assessed by the Department."

As the primary authority for the management and maintenance of Oallen Ford Road, the advice of Council indicates that the proposed intersection satisfactorily meets all traffic management and road safety requirements. Notably, the comments from Council also illustrate that the previously held concerns noted by Council in correspondence to the Proponent (as identified in the "Supporting Documentation for a Request to Modify Project Approval PA 07_0155") (RWC, 2010) have been addressed.

It has been brought to the attention of the Proponent that in 2007, Council wrote to the Bungonia and District Historical Society noting that the tree which is located to the immediate south of the "Ardmore Park" property entrance (and referred to as the 'Larbert Tree') may have local historic significance. Council noted that a sign would be erected on the tree to identify the significance of the Larbert Tree. While no sign was ever erected, Council has subsequently advised the Department of Planning (in a file note dated 30 July 2010) that it would be Council's preference that the tree remains undisturbed.

Whilst re-iterating that no direct evidence of the historic significance of the Larbert Tree has been provided by the Bungonia and District Historical Society, **the Proponent has agreed to retain the Larbert Tree in its current location.**

To avoid disturbance to the tree, the proposed modified quarry entrance will now be located in the same position as the existing entrance to the "Ardmore Park" property, with some minor widening works undertaken to enable the construction of a sealed taper for incoming trucks

To confirm that this minor modification to the location of the intersection will have no influence on the overall assessment provided by the original assessment (RWC, 2010), a review of the implications of the required intersection modification to avoid the Larbert Tree has been completed by Chris Hallam of Christopher Hallam & Associates Pty Ltd (CHA). The complete review of the impact of the minor modification to the quarry entrance is provided as **Appendix 1**. Critically, CHA concludes that clear line of sight would be retained at the intersection and the minor modification would not present a serious accident risk. The conclusion of CHA (see **Appendix 1**) is as follows.



"Driveway Location

If the tree is to be retained and the driveway located near the tree and opposite Lumley Road, there will be a slight offset in the intersection. Since all transport movements to and from the quarry will be via Oallen Ford Road (North), no trucks carrying quarry product will be travelling between the site and Lumley Road, with the possible exception of occasional minor deliveries or possible staff movements. Hence the minor dog-leg for cross-movement is not a significant concern.

In an ideal situation the site driveway would be directly opposite Lumley Road. However the current traffic flows along both Oallen Ford Road and Lumley Road are low, and hence a less than ideal situation is practical and does not present a serious accident risk."

3. PUBLIC SUBMISSIONS

3.1 TRAFFIC SAFETY AND ADEQUACY OF THE PROPOSED INTERSECTION

A selection of the submissions received, and a response to each, is provided below to illustrate the issues raised in relation to traffic safety.

The proposed new entrance to the quarry site is even more unsafe than the previous entrance approved by your department. Further to this issue, the diagrams in environmental assessment (07_0155 Mod 1) showing the proposed quarry entrance are totally inadequate and do not indicate clearly exactly where the proposed entrance begins in relation to adjoining properties.

D. Cole

An assessment of the proposed modification to the quarry site entrance was conducted by Christopher Hallam & Associates Pty Ltd (CHA), an independent consultancy specialising in traffic & transport impact assessment of developments. This assessment (CHA, 2009) was provided as **Appendix 1** to RWC (2010). Contrary to the claims of Mr Cole, CHA (2009) concludes that relocating the intersection would have benefits for traffic safety as noted in Section 2.4 of CHA (2009) (see *p. 38 of Appendix 1*): "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."

This conclusion reaffirms the recommendations provided by Section 1.3.2 of the RTA's *Guide to Traffic Generating Developments* which states "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."

Critically, CHA (2009) addresses the issues raised initially by Council when the proposed relocation of the quarry site entrance was first considered. Council, by virtue of their submission to the proposed modification are satisfied that these issues have been satisfactorily addressed. CHA has confirmed that the minor modification to the location of the intersection to avoid disturbance to the Larbert Tree would not present a serious accident risk (see **Appendix 1**).



Contrary to the claim of D. Cole, the property boundary between the "Ardmore Park" property and that of D. Cole is provided on both **Figure 4** (represented by the fence line) and **Figure 5** of RWC (2010).

Further, it appears that having the two intersections opposite each other could well lead to unforeseen dangers, such as B-double trucks crossing the centre line of the road in order to make the turn into the quarry premises. Should this happen, an accident could well occur.

As motorists of many years experience, and users of these roads, we can state that our personal opinion would be that to have two intersections looming at the same place, especially one where long trucks are turning, would be a cause for concern. To have them staggered seems much the more sensible option. And there were no doubt strong reasons why this was a condition for approval.

Annie and Norman Bilton

In response to the concern raised in relation to the B-double trucks crossing the centre line of the road in order to make the turn into the quarry premises, the intersection has been designed to meet RTA standard for a basic rural layout. This layout provides for the construction of a sealed taper for incoming trucks (see **Figure 4 of RWC, 2010**) which would ensure that the left-hand turn can be completed without the need for the truck to pull onto the right-hand side of the road.

CHA (2009) concludes that the creation of a single intersection would be preferable to the staggering of two rural road access points and would reduce the potential for conflict between quarry and other traffic. CHA has confirmed that the minor modification to the location of the intersection to avoid disturbance to the Larbert Tree would not present a serious accident risk (see **Appendix 1**).

There are also considerations of road safety with reduced sight and distance, additional traffic using Lumley Road intersection and the trucks entering Oallen Ford Road to travel north at the intersection.

Phillip Leighton-Daly

The sight distance at the proposed relocated intersection (220m) was reviewed by CHA (2009) and found to comply with the relevant Australian Standard (see Section 2.3 of CHA, 2009). CHA has confirmed that the minor modification to the location of the intersection to avoid disturbance to the Larbert Tree would not impact on sight distance from the intersection (see **Appendix 1**).

As noted previously, the intersection has been designed to meet RTA standard for a basic rural layout. This layout provides for the construction of a sealed taper for incoming trucks (see **Figure 4** of RWC, 2010) which would ensure that all vehicle movements in and out of the quarry site can be completed without compromising the safety of other road users.



the intersection remain an intersection not be confused by a private access which will have high traffic impacts right into the RTA road on the intersection.

People will NOT expect trucks constantly entering the intersection at Lumley Road because a driveway is not a designated road and not marked on maps ,sat navs,etc. There are other road users than the trucks.

The consent for truck and trailer access only operates for 6 weeks of allowed soil removal under one very limited period annually. this does not indicate a permission to put trucks into the intersection at regular and high volumes. all times of the day and evening; including weekends in the highly increased weekend traffic.

Anne Williams

The Proponent has committed to placing the appropriate signage on Oallen Ford and Lumley Roads to provide warning to other road users of the potential entry of trucks. Furthermore, the sight distance provided at the proposed relocated intersection (220m) was reviewed by CHA (2009) and found to comply with the relevant Australian Standard (see Section 2.3 of CHA, 2009). The fact that the existing entrance to the "Ardmore Park" property is to be relocated slightly to the south will create a single cross-junction intersection (involving the quarry access road, Oallen Ford Road and Lumley Road), improving driver awareness of the intersection and improving visibility from all roads of approaching traffic.

It would also appear from the information supplied, that using the existing location should give traffic safety benefits to all road users provided a suitable traffic control is established at this location.

On this point, we feel there is now an opportunity for these developers to ensure a substantial, state of the art roundabout be designed and built to safely handle all traffic meeting at this point, now and into the future.

A large, well planned roundabout at this location will ensure all road users, whether familiar with the quarry trucks entering and leaving the roadway at this point or not will be made as aware as possible of the need to slow down, show caution and safely negotiate the roundabout in accordance with the New South Wales Road Rules.

Obviously all approaching road users would be warned of the fact they are about to reach the roundabout by the provision of suitable approach warning signage.

D.B.Thomas, D.G. Good, C.L. Maher

CHA (2009) conclude that the intersection as proposed, ie. basic left-hand turn rural type layout, is appropriate for the type and volume of traffic using the local road network. CHA has confirmed that the minor modification to the location of the intersection to avoid disturbance to the Larbert Tree would not present a serious accident risk (see **Appendix 1**). Critically, Council has no objection to the intersection as proposed.

3.2 NOISE IMPACTS

One submission objected to the proposal to modify the entrance to the quarry site on the basis of noise related impacts.



Table 5.4 of the environmental assessment (07_0155 Mod 1) shows an increase in noise at our residence. Why base noise and dust impact assessment on predictions when the proponent, who professes to be a transport operator, has had more than ample opportunity to collect real measurements of the noise and dust created by his own real trucks? Similarly, actual wind speed data collected from nearby Ardmore Park was ignored by the proponent and NSW Planning during the approval process. Wind speed data collected by an automated electronic weather station 300 metres from the proposed quarry site shows wind speed averages to be well above those listed in the proponent EIS.

The least your department could do is force the proponent to plant four rows of pinus radiata along our common boundary fence joining Ardmore Park. These trees would provide some barrier against noise and dust, levels of which will no doubt be higher in reality than those proffered by the proponent and his dubious experts!

D. Cole

Noise and Dust Measurements

Contrary to the statement of D. Cole, the truck noise levels used in the modelling of predicted noise levels were collected from the truck fleet of Multiquip. The noise modelling undertaken, especially as it relates to noise generated by trucks, is therefore considered likely to be a very good approximation of the actual noise levels that will be received at locations surrounding the quarry site.

Actual dust and particulate emissions have been assumed, however, these are drawn from a comprehensive database maintained by the air quality consultancy (Heggies Pty Ltd) commissioned to undertake the assessment. As noted in RWC (2010), the potential for the proposed modification to have a significant impact on local dust levels is minimal and may in fact reduce vehicle emissions given the reduction in the vertical climb required of quarry trucks entering and exiting the quarry site.

Meteorological Data

This issue has been addressed previously. Notwithstanding, the following provides a summary of the previous response to this issue.

- While Goulburn meteorological data was referenced in the report, a site specific meteorological was generated for the site using a prognostic meteorological model (TAPM).
- The Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DECC, 2005) recommend that where site specific data is not available, site representative data should be used, ie. the use of TAPM is an approved method.
- It is unclear as to what weather station D. Cole is referring to, however, previous objections to the assessment on the basis of weather data utilisation have referred to the private records from "Ravenswood". It is noted that a peer review of this data (undertaken by Holmes Air Sciences) questioned the validity of the data and concluded that it would be inappropriate to use the Ravenswood data directly as a representative dataset for the site.



Tree Plantations

The predicted noise levels does not warrant the suggested tree plantations, however, the Proponent is prepared to discuss the possibility of planting some vegetation along the property boundary with D. Cole.

3.3 THE LARBERT TREE

A selection of the submissions received, and a general response, is provided below to illustrate the issues raised in relation to the Larbert Tree.

*The "Larbert Tree" is structurally sound, not just a stump as claimed in Multiquip Quarries documentation nor does it present a danger to anyone. Its significance is that it had a directional sign to the Larbert crossing of the Shoalhaven River on the Old South Road on the way to the Braidwood goldfields. It was also used as a post tree where mail was left **and is marked on a Mulwaree Council Map**. A highly qualified aborists report has been submitted by the Bungonia & District Historical Society Inc.*

The Goulburn Mulwaree Council have recognized the tree as of historical significance.

Phillip Leighton-Daly.

The Larbert tree has not recently "Fallen" it has lost a limb -as is the way with older trees;

Anne Williams

To create the proposed entrance CEAL have to destroy "the Larbert Tree". This old gum tree is so called as it had a directional sign to Larbert which was a crossing on the Shaoalhaven River on the way to the Braidwood goldfields. It is shown on a Mulwaree Council map (Attachment 1). The Goulburn Mulwaree Council recognizes it historical significance (See attachment 2).

Bungonia & District Historic Society

This Larbert tree is an integal part of the district's heritage. As was the case with the Tree of Knowledge in Queensland, every attempt should be made to preserve it.

Phillip Leighton-Daly.

On the point of the "Larbert Tree" the simple compromise solution to preserving this possibly historical specimen to the area, is to re-align the road to incorporate the Larbert Tree as the feature centre piece of the substantial roundabout. If the tree, as stated by Mr Rick Parker, is in poor condition and should be removed, then possibly it could be trimmed back to a large, safe, stump with suitable historical signage affixed and a protective display cover built around it for preservation purposes. The stump would still be the centre piece feature of the roundabout.

The Larbert Tree would in this way be preserved and highlighted as part of Bungonia's history just as the "Explorers Tree" stands as a preserved shrine to the side of the Great Western Highway Katoomba.

D.B.Thomas, D.G. Good, C.L. Maher



The Proponent has agreed to avoid disturbance to the 'Larbert Tree'. As noted in Sections 2 and 3.1, this will require a modification to the intersection as presented in RWC (2010). Importantly, however, CHA has confirmed that the minor modification to the location of the intersection would not present a serious accident risk (see **Appendix 1**).

4. OTHER ISSUES

.....we are concerned that no Consultative Committee has apparently yet been convened. The convening of such a committee was a condition of approval. How can this project be going forward (due to start operation, we read, in the 4th quarter of 2010).

Annie and Norman Bilton

It is noted that the Proponent provided nominations for the Community Consultative Committee (CCC) well within the timeframe required by PA 07_0155. On 13 August 2010, the appointment of community representatives to the CCC was approved by the Department of Planning. The first meeting of the CCC will be held before the 30 September 2010.

It is clear that a process must be followed in respect of any Crown Land sale (as to which see correspondence from Diana Moran with the Minister). It is also clear that the Minister cannot just slip it past the community. To do so would be a misuse of powers. Recent work done in relation to the heritage of Bungonia makes it clear that there are much more important public uses for this land. The legislation deals with these matters. It is clear that an assessment is necessary. You only need to look at the Council website to see the importance of this village not only to the area but also to the history of NSW and indeed Australia. The Minister cannot ignore that matter of public importance and turn Crown Land held for the public into a truck thoroughfare-especially where there is no rationale for it except for an incorrectly stated one.

The Minister was (with respect) wrong in his statement that the Crown Land was needed for this (private) project because the project is important to the state. The project is not important to NSW and can never be. Large quarrying or mining activities must be supported by rail and not an ever-increasing number of trucks. Also it should not be aimed at a heritage village

Hugh Williamson

The issue raised in this submission does not apply to the proposed modification, rather to the purchase and use of Crown land for the purpose of the Bungonia By-pass. This notwithstanding, the Proponent has followed the correct process throughout the application process and has been upfront and above board in its negotiations with the Department of Lands, Department of Planning and the local community at all times in relation to its intention to arrive at a satisfactory solution to the transportation of products from the quarry.

It is also noted that contrary to the claims made by Mr Williamson, the availability of construction materials such as sand and hard rock aggregates, which are in diminishing supply, are of importance to the state.



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Appendix 1

"ARDMORE PARK" QUARRY ACCESS – ISSUE OF TREE

11th August 2010

Christopher Hallam & Associates Pty Ltd

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"ARDMORE PARK" QUARRY ACCESS – ISSUE OF TREE

Introduction

The driveway access to the "Ardmore Park" quarry, off Oallen Ford Road, was originally approved approximately 180 metres south of the junction of Oallen Ford Road with Lumley Road. This location had advantages for maximizing sight distance, but disadvantages for the operation of laden trucks, given the gradient of Oallen Ford Road. The attached report was prepared, discussing the sight distance issues, and comparing the approved location with the current driveway location, which is approximately opposite Lumley Road.

The attached report dated 6th November 2009 makes the point that there is some safety benefit in having the site driveway opposite Lumley Road, because it is a location on Oallen Ford Road where drivers on that road have some expectation of seeing a vehicle enter or leave the road.

An issue has arisen with the existing tree adjacent to the current site driveway. If it is to be maintained, the site driveway will need to be in approximately its current location, suitably widened. At this location, the critical sight distance is that to the North, where the available sight distance is less than that to the South.

Sight Distance Issues

For reviewing sight distance requirements from private driveways, AS2890.1-2004 (Figure 3.2 Sight Distance Requirements at Access Driveways) puts the driver's eye as being 2.5m inside of the edge of the carriageway.

The trunk of the tree has been measured to be 6.5 metres off the edge of the carriageway. As such, it is well clear of a sight line measured at a point 2.5 m off the edge of the carriageway.

With the standard truck and dog vehicles used by Multiquip, the position of the driver is 2.6 metres back from the front of the truck. If the front of the truck was level with the edge of the carriageway, the driver's eye would then be 2.6m from the edge. With the tree trunk 6.5 m back, there is a clear line of sight. The front of the truck could be set back a little off the edge of the carriageway and the sight line still unobstructed by the tree.

Driveway Location

If the tree is to be retained and the driveway located near the tree and opposite Lumley Road, there will be a slight offset in the intersection. Since all transport movements to and from the quarry will be via Oallen Ford Road (North), no trucks carrying quarry product will be traveling between the site and Lumley Road, with the possible exception of occasional minor deliveries or possible staff movements. Hence the minor dog-leg for cross-movement is not a significant concern.



In an ideal situation the site driveway would be directly opposite Lumley Road. However the current traffic flows along both Oallen Ford Road and Lumley Road are low, and hence a less than ideal situation is practical and does not present a serious accident risk.



Chris Hallam 11th August 2010
Christopher Hallam & Associates Pty Ltd



CEAL LIMITED

Trading as

MULTIQUIP QUARRIES

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

6TH 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)

	Existing (1.15m height)	Proposed
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:

	Existing (1.8m)	Proposed
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.



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