

Appendices

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MULTIQUIP QUARRIES

*Ardmore Park Quarry – Modification of PA 07_0155
Report No. 525/17*

ENVIRONMENTAL IMPACT STATEMENT

Appendices

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Appendix 1

Director-General's Requirements

(Total No. of pages including blank pages = 5)

MULTIQUIP QUARRIES

*Ardmore Park Quarry – Modification of PA 07_0155
Report No. 625/17*

ENVIRONMENTAL IMPACT STATEMENT

Appendix 1

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**Mining & Industry Projects**

Contact: Caitlin Elliott
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Email: caitlin.elliott@planning.nsw.gov.au

Mr Jason Mikosic
Multiquip Quarries
PO Box 4
AUSTRAL NSW 2179

Dear Mr Mikosic

**Ardmore Park Quarry Project (07_0155)
Proposed Modification – Haul Routes**

I refer to your letter dated 15 April 2013.

I can confirm that the proposal to utilise roads other than the nominated route in the project approval (07_0155) would need to be assessed as a modification under section 75W of the *Environmental Planning and Assessment Act 1979*.

To lodge a modification application, please do so via the project page on the Department's website (http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=2224).

The approach you have proposed for assessing the modification is generally acceptable, and I have attached a table which provides a guide for the matters to be considered in an Environmental Assessment (EA) for the proposed modification.

To assist the Department to determine whether or not to publicly advertise the modification, please ensure the EA includes a description of the consultation with the relevant stakeholders, which may include the Bungonia community, the project Community Consultative Committee, and key landowners along the proposed haul routes.

Please also ensure you provide the Department with a copy of correspondence with the relevant roads authorities to satisfy the requirements of the *State Environmental Planning Policy (Infrastructure) 2007*.

If you have any enquiries about the attached, please contact Caitlin Elliott.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Kane Winwood', with the date '1/5/13' written next to it.

Kane Winwood
Team Leader
Mining Projects

Bridge St Office 23-33 Bridge St Sydney NSW 2000 GPO Box 39 Sydney NSW 2001 DX 22 Sydney
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General Requirements	<p>The Environmental Assessment (EA) for the modification must meet the form and content requirements in Clauses 6 and 7 of Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i>.</p> <p>In addition, the EA must include a:</p> <ul style="list-style-type: none"> • detailed description of the proposed modification, including the: <ul style="list-style-type: none"> – need for the proposal; – justification for the modification to haulage routes; – alternatives considered; • consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments; • risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment; • detailed assessment of the key issues specified below, and any other significant issues identified in the risk assessment (above), including: <ul style="list-style-type: none"> – a description of the existing environment, <u>using sufficient baseline data</u>; – an assessment of the potential impacts of the proposal, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes; and – a description of the measures that would be implemented to avoid, minimise and if necessary, offset the potential impacts of the proposal, including proposals for adaptive management and/or contingency plans to manage any significant risks to the environment; and • consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EA.
Key Issues	<p>The EA must address the following specific matters:</p> <ul style="list-style-type: none"> • Traffic & Transport – including: <ul style="list-style-type: none"> – accurate predictions of the road traffic generated by the proposal; – assessment of the traffic volumes likely to be generated on each of the proposed haulage routes; – assessment of the capacity and safety of the proposed transport routes and local road network; and – description of the measures that would be implemented to maintain and/or improve the capacity, efficiency and safety of the road networks; • Amenity – including the potential noise, air quality, vibration and visual impacts of the proposal; and • Social & Economic – including an assessment of the potential direct and indirect social and economic impacts and benefits to the community.
References	<p>The environmental assessment of the key issues listed above must take into account relevant guidelines, policies, and plans. While not exhaustive, the following attachment contains a list of guidelines, policies and plans that may be relevant to the environmental assessment of this modification.</p>
Consultation	<p>During the preparation of the EA, you should consult with the relevant local, and State government authorities, service providers, community groups or affected landowners. The consultation process and the issues raised must be described in the EA.</p> <p>The EA must:</p> <ul style="list-style-type: none"> • describe the consultation process used and demonstrate that effective consultation has occurred; • describe the issues raised by public authorities, service providers, community groups and landowners; • identify if and where the design of the proposed modification has been amended in response to issues raised; and • otherwise demonstrate that issues raised have been appropriately addressed in the assessment.
Deemed Refusal Period	60 days

Technical and Policy Guidelines

The following guidelines may assist in the preparation of the Environmental Assessment. This list is not exhaustive and not all of these guidelines may be relevant to your proposal.

Many of these documents can be found on the following websites:

<http://www.planning.nsw.gov.au>

<http://www.bookshop.nsw.gov.au>

<http://www.publications.gov.au>

Policies, Guidelines & Plans

Risk Assessment	
	AS/NZS 4360:2004 Risk Management (Standards Australia)
	HB 203: 203:2006 Environmental Risk Management – Principles & Process (Standards Australia)
	Risk Management Handbook for the Mining Industry (DPI)
	Risk Management Policy Framework for Dam Safety (Dam Safety Committee)
Air Quality	
	Protection of the Environment Operations (Clean Air) Regulation 2002
	The Assessment and Management of Odour from Stationary Sources in NSW: Technical Framework and Notes (OEH)
	Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC)
	Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC)
Noise	
	NSW Industrial Noise Policy (DECC)
	Environmental Noise Management Manual (RTA) Dec 2001
	Environmental Noise Management – Assessing Vibration: a technical guide (DEC)
	NSW Road Noise Policy (DECCW)
Traffic & Transport	
	Guide to Traffic Generating Development (RTA)
	Road Design Guide (RTA)
Socio-Economic	
	Draft Economic Evaluation in Environmental Impact Assessment (DoP)
	Techniques for Effective Social Impact Assessment: A Practical Guide (Office of Social Policy, NSW Government Social Policy Directorate)

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Appendix 2

Community Consultation

1. Multiquip Local Deliveries – Community Consultation Letter
2. Goulburn Post Extract 31 May 2013

(Total No. of pages including blank pages = 6)

MULTIQUIP QUARRIES

*Ardmore Park Quarry – Modification of PA 07_0155
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ENVIRONMENTAL IMPACT STATEMENT

Appendix 2

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1st May 2013

Ardmore Park Haul Route Proposal

The Ardmore Park Quarry (5152 Oallen Ford Rd) has been approved by the Department of Planning on the 20 September 2009.

Multiquip Quarries is seeking to amend the haul route by a variation to allow for local deliveries not covered by the approved haul route of Oallen Ford Rd (Opposite Lumley Rd) towards Bungonia - via a by-pass around the Bungonia Village and along Jerrara Rd to the Highway.

The proposal covers roads and locations that are not along this route and may be accessed by other local roads. The application to use these local roads is limited to 20,000 tonnes per year of the approved resource. This is 5% of the quarries annual approval.

Currently an application is getting prepared for the Department of Planning covering the following:

- **Traffic & Transport** – including:

- accurate predictions of the road traffic generated by the proposal;
- assessment of the traffic volumes likely to be generated on each of the proposed haulage routes;
- assessment of the capacity and safety of the proposed transport routes and local road network; and
- description of the measures that would be implemented to maintain and/or improve the capacity, efficiency and safety of the road networks;

- **Amenity** – including the potential noise, air quality, vibration and visual impacts of the proposal; and

- **Social & Economic** – including an assessment of the potential direct and indirect social and economic impacts and benefits to the community.





Ardmore Park Haul Route Proposal—Cont.

We are conducting meetings with community members throughout May 2013, to identify any issues that may arise during this application.

- Key components that are currently being considered include the following:

Limit of 20,000 tonne per year on these local roads

Limit of 5 truck loads per day for any local deliveries (10 movements per day)

No truck movements past Windellama Public School during school drop off & pick up times

Section 94 contributions will be paid to Council as a road damage levy

Deliveries will be between 7am to 6pm Monday to Friday & 7am to 1pm Saturday no deliveries Sunday & Public Holidays

- Current Benefits for the Community

Access to a good source of Sand & Blue Metal for local projects

Road contributions will be paid for road damage on these roads - this not required to be paid by other operators from quarries outside the Goulburn area

Consultation with Community groups can be ongoing by a local operator during the length of the quarry operation to allow for no deliveries during community of school major events

Deliveries from the quarry may shorten the journey of the deliveries resulting in lower road impacts for all road users

This document may be amended during this discussion process.

For further information or to discuss this proposal & make comment please email jason@multiquip.com.au

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GOULBURN POST ■ Friday May 31, 2013

UPFRONT

Land Services reform means \$5m reinvested

THE formation of Local Land Services has delivered a massive dividend for the State's primary industries sector with the creation of a \$35 million Future Fund and reinvestment of \$5 million per year for agricultural advisory services. Primary Industries Minister Katrina Hodgkinson announced this week.

"For the first time in NSW, our farmers and land managers will have a fund to underpin their agricultural advice, biosecurity and extension services and natural resource management," she said.

"The \$35m Local Land Services Future Fund will consolidate the cash reserves of the Livestock Health & Pest Authorities (LHPAs) and Catchment Management Authorities (CMAs) and the interest made available to Local Boards to meet local needs and priorities."

The new Local Land Services will be a substantial organisation with assets in excess of \$130 million.

Goulburn Mulwaree is part of the

'South East' Local Land Services region, one of 11 drawn up under the new reform.

"Local Land Services is a logical progression from the LHPAs, CMAs and DPI advisory services – it will be an organisation focussed exclusively on delivering relevant and modern services to our farmers and land managers," Ms Hodgkinson said.

"The benefits to farmers are clear and the reform puts farmers and land managers back at the centre of the decision making process."

"In addition to the creation of the Future Fund, the removal of duplication will see \$5 million in the first full year of operation returned to front-line services."

From January 2014, the advice and services from Local Land Services or the Department of Primary Industries will be available from 139 towns across NSW, an increase of 22 locations by bringing Livestock Health & Pest Authorities into the network.

Haulage bid could deliver another blow

Bungonia quarry operator seeks change

By LOUISE THROWER

BUNGONIA and district residents are bracing for another fight against a quarry developer.

This time, Multiquip Quarries, owner of the Ardmore Park quarry, is seeking to add to an approved haulage route.

The change would cater for "local deliveries," managing director Steve Mikosic told the Post.

He confirmed his company was submitting a variation to the development's state government approval. It is seeking to deliver 20,000 tonnes of sand and basalt annually using 10 truck movements daily on "local roads."

Angry residents say Council and not the state government should handle the application as the change is so great it cannot be regarded as a modification.

Mr Mikosic insisted Multiquip had not outlined a specific haul route and said his company wasn't seeking anything that other quarries weren't allowed to do.

His Oallen Ford Rd quarry, 4km from Bungonia, won state government approval in 2009, following several NSW Land and Environment Court challenges.

The approval set out road upgrade obligations along the approved haul route via Oallen and Jerrara Roads, over to the Hume Highway and including a bypass around Bungonia village. The quarry is allowed to extract up to 400,000 tonnes annually, which Multiquip said was destined for the Sydney market.

This route will remain in place. But now Mr Mikosic says he wants to make a "one off" 20,000 tonne sand and rock delivery to his Windellama neighbour.

This would require use of roads over to Windellama and Tarago and back again.

"Under the current approval, I can't turn left out of our (the quarry's) driveway and I'm seeking to do that," he told the Post.

But he conceded the amount of material could increase as Multiquip was supplying to sub-contractors working on the Gullen Range wind farm on Kialla Rd. The route the company will use to do so remains unclear.

We are conducting meetings with community members throughout May to identify any issues that may arise during this application

- Ardmore Park quarry flyer

Furthermore, if people wanted product delivered for buildings or driveways in those areas, he hoped to supply them.

But Mr Mikosic said he wasn't actively chasing contracts.

A flyer distributed to residents stated that work was underway predicting traffic and transport, amenity and social and economic impacts. This would be sent to the NSW Planning Department as part of the application. It also pledged appropriate road contributions.

"We are conducting meetings with community members throughout May to identify any issues that may arise during this application," the flyer states.

Yet Mr Mikosic told the Post he didn't see the need for any community meetings, beyond his discussions with Windellama Public School regarding bus times.

He declined to call a special meeting of the Ardmore Park quarry consultative committee, comprising company representatives, residents and council members.

Residents resist

Bungonia Progress Association president Bill Dobbie confirmed Multiquip had not made direct contact but distributed the flyer.

He called on Council to stand up and tell the developer the alteration was not state significant.

"Our immediate response is that when Mr Mikosic appealed the original Department of Planning's refusal, he went to the Land and Environment Court where the judge said the quarry activity and haul route can't be separated. It is a hand in glove situation," Mr Dobbie said.

"We think this should go to Council because it's not a state significant thing; it's different to what the judge defined."

Secondly, Mr Dobbie didn't believe local roads such as Oallen, Sandy Point and Cullulla were equipped to take extra trucks, some of which had broken edges, carried load limits and needed upgrading.

He argued that the Minda landfill on Oallen Ford Rd, which accepted asbestos from Canberra, was tightly regulated in terms of truck movements and the same should apply to Multiquip.

"Mr Mikosic, despite all that's gone on, doesn't understand that he can't take trucks anywhere," he said.

"The roads are narrow and not built to cater for heavy vehicles. The bottom line is they pose a hazard to other road users."

He said Windellama residents knew nothing of the plan until Bungonia people "tipped them off."

Mr Dobbie called on Council to take the Department of Planning to the NSW Land and Environment Court if the project were given approval.

Residents were already talking to local planners and lobbying councillors.

"We will fight every inch of the way until he (Mr Mikosic) does the job properly because we don't want accidents. It's us and our family using the roads," Mr Dobbie said.

Council's planning director Chris Stewart said Council would be consulted as part of the application, at which time it would do an assessment.

However he didn't believe it was uncommon for a quarry operator to seek an alternative haul route to that servicing the main market.

"At the end of the day it's a call for the Department of Planning but I'd be surprised if it didn't accept it," Mr Stewart said.

"It is really carrying out the same business with the option of delivering to the local market."




Divall's Bulk Haulage
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TALKING TRUCKS WITH TROY

A Team Effort
It is easy to forget about the people behind the scenes of a business like Divall's. If you have a subdivision or a road, you will see lots of machinery and trucks, with lots of operators and drivers, all doing a very professional job. Back at the office there are a bunch of people all doing the behind the scenes work. Paperwork. From quoting and pricing, to sourcing products, logistics, planning, accounts receivable, accounts payable, and every imaginable job in between. There are 17 people working out of the Carrick Quarry office, and the work couldn't happen without the Office Team.

DRIVING HINT: With winter upon us, some quick things to remember for the winter months.
- You should drive with headlights on. This is a good habit to get into, regardless of the weather conditions.
- Spend extra time in the safety of your driveway to defrost and defog your windscreen. The time you spend doing this could make driving a lot safer.
- Drive to the conditions and if you can't see, slow down.

UNUSUAL FACTS: If you count the tyres on each truck in the Divall's fleet, you will find that there are a massive 640 tyres rolling around every day!



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Kettle keeps top job
Bounces for second year as mayor

Plan in the 'balance'
Council's budget plan aims to balance the books

School zone survey

THE NRMA is asking schools and parent committees if school zone warning signs are up to scratch through its Keep Schools Safe survey.

NRMA Motoring & Services Deputy Director Alan Evans said the short survey would give parents and school committees the chance to provide feedback on the condition of existing signage at their school zone.

"School zone warning signs are essential for the safety of children and adults around school zones - we want to be sure they are clearly visible to drivers and doing an effective job," Mr Evans said.

To fill out the survey go to www.mynrma.com.au/schoolzonesafety.

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Appendix 3

Traffic Impact Assessment

Prepared by Christopher Hallam & Associates Pty Ltd

(Total No. of pages including blank pages = 28)



MULTIQUIP QUARRIES

*Ardmore Park Quarry – Modification of PA 07_0155
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MULTIQUIP QUARRIES

**LOCAL ROADS PROJECT APPLICATION FOR “ARDMORE PARK”
QUARRY, OALLEN FORD ROAD, BUNGONIA, NSW**

12TH JUNE 2013

CHRISTOPHER HALLAM & ASSOCIATES PTY LTD

PO BOX 265, KURRAJONG, NSW 2758

Telephone: 0245 731045

E-mail: chris@christopherhallam.com

JOB: 3311

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1.0 INTRODUCTION

1.1 Background

Development Consent was issued on 20 September 2009 for the construction and operation of a rock quarry located at “Ardmore Park”, on Oallen Ford Road some 4km south of the village of Bungonia. PA 07 0155 requires the staged upgrading of the Project Transport Route, along Oallen Ford Road , Bungonia Bypass, Mountain Ash Road and Jerrara Road. This route is currently the only route permitted by the consent (PA07 0155) for trucks to use, to access the site and to deliver quarry product from the Project Site.

1.2 This Proposal

As outlined above, PA07 0155 requires the staged upgrading of the Project Transport Route, with defined works to be completed prior to the Stage 1 transport operation, allowing up to 10 truck loads (20 truck movements with the return trip) per day.

The proposed modification to PA07 0155 (hereafter referred to as the “Proposal”) is to permit local deliveries within the Goulburn Mulwaree Local Government Area (LGA) using roads additional to the defined Project Transport Route, in order to meet local orders. PA07 0155 does not allow this. This would allow the operator, Multiquip Quarries, to make deliveries for Council roadworks and for local building and development within the LGA. Such deliveries would need to be made by some quarry operator, and hence would need to be transported by truck on local roads, i.e. excluding Multiquip from supplying these projects would not reduce the volume of trucks on local roads. In fact, the location of the “Ardmore Park” site would allow for shorter haulage routes than quarries outside of the area, and hence should allow for competitive delivery costs, as well as reducing the total kilometres of travel of trucks on the road network, with consequent environmental benefits.

This Proposal is to allow up to 5% of the approved quarry output of 400,000 tonnes per annum, being a maximum of 20,000 tonnes per annum, to be delivered within the LGA on any roads that are not restricted by load limits. The Proposal is to first construct the Project Site access intersection with Oallen Ford Road and Lumley Road (shown on Figure 1) and to then to allow local deliveries to be undertaken, prior to the completion of the roadworks on the Project Transport Route. No haulage would be undertaken along King Street, through Bungonia Village, either before or after the Bungonia Bypass is constructed.

Figure 2 shows the approved Project Transport Route, the proposed Local Haul Routes and locations where load limits restrict the transport of quarry product.

Deliveries to destinations within Goulburn Mulwaree Council area would be subject to the provisions of *Goulburn Mulwaree Section 94 Development Contributions Plan 2009, Amendment No.2* (14th March 2012). The levy for extractive industries is 4 cents per tonne.kilometre, on Council roads.

The traffic implications of this Proposal are set out in this report through the following Sections:

- Section 2 reviews recent traffic counts on the Project Transport Route and on Oallen Ford Road south of the quarry;
- Section 3 describes and reviews the Local Haul Routes proposed for local deliveries, and
- Section 4 sets out the Conclusions.

2.0 REVIEW OF TRAFFIC FLOWS

2.1 Flows on the Project Transport Route

The previous report by Christopher Hallam & Associates Pty Ltd (CHA) titled *Modified Ardmore Park Quarry Project Traffic Assessment* (2008), set out the results of traffic counts undertaken at two locations in the period 9th to 15th February 2006. These counts, at the same locations, have been repeated in the period 10th to 16th May 2013, to review if any base assumptions made in the assessment of the quarry had altered. For the Jerrara Road count, the counter was stolen, but the count was repeated with a new counter in the period 24-31 May 2013. Annexure A sets out the results of the May 2013 counts in more detail. Table 2.1 reproduces a table previously presented (CHA 2008), showing the average two-way daily traffic flows over the Monday to Saturday period, with the additional quarry truck traffic added, to show its relative impact.

**TABLE 2.1 Current (2006) and Projected Daily Two-Way Traffic Flows
Monday to Saturday Average**

Location	Current (2006) Heavy Vehicles	Current (2006) Total Vehicles	Future Total Heavy Vehicles	Future Total Vehicles
Oallen Ford Rd 2km South of Bungonia	37	303	125	391
Bungonia Bypass	0	0	88	88
Jerrara Rd 10km South Hume Highway	26	258	114	346

For comparison, Table 2.2 presents the equivalent results from the May 2013 traffic counts.

**TABLE 2.2 Current (2013) and Projected Daily Two-Way Traffic Flows
Monday to Saturday Average**

Location	Current (2013) Heavy Vehicles	Current (2013) Total Vehicles	Future Total Heavy Vehicles	Future Total Vehicles
Oallen Ford Rd 2km South of Bungonia	32	362	120	450
Bungonia Bypass	0	0	88	88
Jerrara Rd 10 km South Hume Highway	24	288	112	376

On Oallen Ford Road south of Bungonia, the average daily (Monday-Saturday) flows have increased since 2006, from 303 vehicles per day (vpd) to 363 vpd. However the number of heavy vehicles (Austroads class 3 and above) has slightly reduced, from 37 vpd to 32 vpd. When the approved quarry daily truck flows of 88 truck movements per day are added, the total daily traffic flows become 450 vpd. This figure of 450vpd remains less than the threshold figure of 500 vpd for road standards.

As displayed on Figure 2, the route from the North via Jerrara Road-Oallen Ford Road links onto the road through Nerriga, to Nowra. This route has been reconstructed and sealed since the 2006 traffic counts were undertaken. The increase in daily traffic flows is possibly due to induced traffic using this upgraded road to the Coast. The average Monday-Friday daily flow was 350 vpd. The Sunday flow was the highest of all days, at 474 vpd. This suggests strong recreational travel demand, with this demand probably increasing because of the upgrading of the Nerriga road.

With Jerrara Road, the average Monday to Saturday traffic flow was 288 vpd, or 30 vehicles per day more than the 2006 count. The Monday to Saturday average heavy vehicle movement was 24 vehicles a day, slightly less than the 26 vehicles a day observed in 2006. Over the full seven days of the count, Sunday had the highest flows, with 493 vpd. This suggests strong recreational travel demand, probably with the upgrading of the Nerriga road.

The total two-way traffic flow on Jerrara Road, after the addition of the 88 quarry truck movements, will be 376 vpd, a figure still substantially less than the threshold figure of 500 vpd for road standards.

2.2 Flows on Oallen Ford Road South of Project Site

Similar counts were undertaken on Oallen Ford Road approximately 500 metres south of the Project Site access junction, at Lumley Road, for the May 2013 period. Table 2.3 presents the results of these counts. The implications of additional heavy vehicle movements associated with the current Proposal will be further discussed in Section 3.3..

**TABLE 2.3 Current Average Daily Two-Way Traffic Flows on Oallen Ford Road
500 metres South of Lumley Road – 10-16 May 2013 – Monday-Saturday**

Light Vehicles	Heavy Vehicles	Total Vehicles
200	16	216

The average daily flow of 216 vpd is substantially less than the 362 vpd observed further to the North on Oallen Ford Road, suggesting that Lumley Road is carrying the balance, except for some local destinations. Table 2.4 sets out the daily variations in flows.

TABLE 2.4 Current Daily Two-Way Traffic Flows on Oallen Ford Road
metres South of Lumley Road – 10-16 May 2013

500

Day	Light	Heavy	Total
Monday	158	9	167
Tuesday	183	22	205
Wednesday	167	16	183
Thursday	205	11	216
Friday	240	17	257
Saturday	248	20	268
Sunday	306	15	321

Table 2.4 indicates that the weekend, particularly Sunday, has the highest daily traffic flows of the week, probably because of recreational traffic, with this traffic having probably increased since the upgrading of the Nerriga road.

Table 2.5 shows the two-way hourly traffic flows, averaged over the Monday-Saturday period.

TABLE 2.5 Current Hourly Traffic Flows on Oallen Ford Road
metres South of Lumley Road – 10-16 May 2013
Saturday

500

Monday to

Period	Northb	Southb	Total	Period	Northb	Southb	Total
0-1 am	0	2	2	12-1pm	12	12	24
1-2	0	0	0	1-2	12	12	24
2-3	0	0	0	2-3	16	13	29
3-4	0	0	0	3-4	14	18	32
4-5	2	0	2	4-5	9	20	29
5-6	6	1	7	5-6	9	17	26
6-7	9	4	13	6-7	4	13	17
7-8	12	8	20	7-8	3	7	10
8-9	17	11	28	8-9	3	7	10
9-10	13	9	22	9-10	0	5	5
10-11	17	12	29	10-11	0	4	4
11-12noon	11	12	23	11-12mnt	1	2	3

Note: "Northb" represents Northbound and "Southb" represents Southbound.

Table 2.5 indicates a relatively flat traffic distribution over the period 8am to 6pm, with peaks not particularly pronounced. A highest peak hour flow of 32 veh/hr is low in absolute terms, indicating a vehicle movement approximately every two minutes.

3.0 ROAD TRANSPORT ROUTES

3.1 Project Site Access

Figure 1 shows the approved site access intersection with Oallen Ford Road, opposite Lumley Road. This configuration is based on quarry trucks arriving from the North to make a left turn into the Project Site access road (along the alignment of the property boundary), and returning to the North via right turns from the Project Site access road. Widening to assist the left turn into the Project Site is part of the approved works. For the left turn out of the Project Site, widening of the inside of the corner is also part of the approved works. This would assist any trucks making local deliveries to the South or South-West.

Figure 2 shows the Road Network, including the Project Transport Route to the North, and “Local Haul Roads”. These roads are defined as access routes for deliveries within the local government area and are restricted only by load limits. As indicated on Figure 2, a Local Haul Route is proposed along Oallen Ford Road south of the Project Site. Thus some trucks would be expected to travel northbound along this road and make a right turn into the Project Site, requiring the possibility of the intersection needing to be upgraded.

The determination of the most appropriate form of intersection is generally based on standards and warrants. Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* provides such warrants. Figure 4.9 of this Guide, *Warrants for turn treatments on the major road at unsignalised intersections*, provides guidance when a Type BAR right turn treatment needs to be replaced by a CHR(S) or by a CHR. This requires the major road traffic volume (Q_m), which in this case is the two-way traffic flow along Oallen Ford Road plus the left turn into the Project Site. Q_r , the right turn volume into the Project Site, is self explanatory.

Looking at the recent traffic count undertaken 500 metres to the south of the site on Oallen Ford Road, and looking at the average weekday hourly traffic flows, the highest two-way flows in the morning occurred at 10-11am, with 10 veh/hr northbound and 8 veh/hr southbound. In the afternoon, the highest two-way flows occurred at 3-4pm, with 8 veh/hr northbound and 11 veh/hr southbound.

As for the right turn into the Project Site, this is harder to predict. The proposed 20,000 tonnes per annum for local deliveries, with 32.5 tonne loads, is 615 loads per year. To allow for possible smaller loads, this has been increased to 650 laden truck movements, or 1300 total truck movements. Over say 48 weeks times six days, this would average out at 2.25 loads a day. The relevant Austroads figure is reproduced in Figure 3, for traffic speeds of 100 km/hr or more. The right turn volume below which it does not matter what the main road volume is, is 5 veh/hr. With the local deliveries able to be made to the North, South or West (East deliveries are more problematic), empty trucks returning from the South along Oallen Ford Road would be very unlikely to reach 5 veh/hr. For this assessment, a design flow of 2 veh/hr has been assumed. For the surveyed average weekday peak hour flow of 20 veh/hr, plus an allowance for the left turn into the Project Site from the North, the site access right turn treatment would be at the point shown on Figure 3, marked by a cross, near the axis lines. This is very significantly below the threshold for the upgrade to a Type CHR(S), indicating that the potential for a conflict between a right turn vehicle and passing traffic is very low.

The upgraded intersection treatment shown on Figure 1 indicates that if a truck about to make a right turn into the Project Site was delayed by a southbound vehicle, they would need to stop just before the *Point A*. A truck + dog rig that is typically used for quarry product transport is approximately 19m long. As seen by the 15m scale on Figure 1, this truck + dog, if stopped, would block northbound traffic. As discussed above, the probability of a conflict arising is very low. From a traffic safety point of view, the question is whether in the unlikelyhood of a northbound vehicle having to stop behind a stopped truck, is it better to allow them to pass on the inside, through the Lumley Road approach to the intersection, or is it better for them to wait momentarily for the truck to turn right into the Project Site. The sight line from a northbound vehicle to a truck at the junction of the Project Site access and Lumley Road is very good, so the truck would be easily seen. The angle of Lumley Road approaching the junction might make it difficult for a northbound driver on Oallen Ford Road to see a north-eastbound vehicle on Lumley Road. On balance, it is recommended that no additional widening of Oallen Ford Road is undertaken on the south-west corner of the intersection.

As discussed above, the proposal is for up to 20,000 tonnes per annum to be delivered to destinations within the LGA. Up to 650 loads per year is proposed, which at 48 weeks per year and six days a week averages out to 2.25 loads per day, or 4-5 truck movements per day. Apart from the occasional small delivery, these local deliveries are expected to be in short term campaigns, with a contract for specific local projects to be filled. When these deliveries are being made, the loads per day would be greater than the average. A proposed maximum for local deliveries is 5 loads per day, on any day of the year, or 10 truck movements.

3.2 North

For deliveries within the area to the North and North-West, the Project Transport Route can initially be utilised to arrive at the Hume Highway, also with potential deliveries to properties on either side. North of the junction of Jerrara Road with the Hume Highway, deliveries could potentially be made to destinations on local roads.

However, for any deliveries from the Project Site to the North via the Project Transport Route, these could only be made after the Bungonia Bypass has been constructed, so that at no time would any quarry trucks pass along King Street Bungonia. Also, trucks will only use Jerrara Road after its Stage 1 upgrade has been completed.

For deliveries towards Goulburn City, there are three possible routes:

- a) Via Oallen Ford Road, Jerrara Road and Hume Highway
- b) Via Oallen Ford Road and Mountain Ash Road
- c) Via Oallen Ford Road (South) , Windellama and Qualigo locality

The third route is discussed in the following section. The first route needs no detailed review since it is along the Project Transport Route. This route can only be used after the Bungonia Bypass is constructed and the Stage 1 upgrade of Jerrara Road has been completed.

The second route is via Mountain Ash Road. This route could only be used after the Bungonia Bypass is completed. While this road itself is not weight restricted, there are restrictions beyond its western end, where it meets Windellama Road. Immediately south of this junction, Windellama Road has a 14 tonne load limit, on a bridge across a creek. This effectively excludes using Mountain Ash Road to access the northern end of Windellama Road.

Traffic turning right from Mountain Ash Road joins Windellama Road, which then joins Bungonia Road. Bungonia Road crosses the Mulwaree River at Lansdowne Bridge. This bridge has a weight limit of 42.5 tonnes. With the gross vehicle mass of a fully laden truck + dog trailer being 48 tonnes, these standard delivery vehicles cannot be used on this route. Smaller vehicles such as a single unit truck could be used.

The Mountain Ash Road route offers a reasonable two lane rural road route for trucks. While a specific carriageway inventory has not been undertaken, it appears to be an appropriate route for the occasional delivery by single unit trucks, with any additional trucks each day on this route unlikely to be noticed. This route also provides some direct property access.

3.3 South, East and West

Overview

The route to the South along Oallen Ford Road and to the North-West along Windellama Road has been reviewed in detail. A separate volume provides photographs of this route, along Oallen Ford Road and Windellama Road, towards Goulburn. From the Project Site, at chainage 0.0km, Oallen Ford Road travels in a southerly direction to its junction with Windellama Road, at chainage 17.4km. To the immediate south of this intersection, Oallen Ford Road has a 15 tonne load limit, preventing its use by quarry trucks. There is a greater limitation on Oallen Ford Road at the Oallen Ford Bridge, which has a 5 tonne load limit. The route continues along Windellama Road up to its junction with Brisbane Grove Road, at chainage 52.0km. Just to the north of this junction there is a 14 tonne load limit on Windellama Road at a bridge across a creek. The signposted Heavy Vehicle Bypass is along Brisbane Grove Road, to its junction with Braidwood Road, at chainage 55km.

Traffic Flows

Current traffic flows along Oallen Ford Road south of the Project Site are set out in Section 2.2, where it is shown that this road currently (May 2013) carries a Monday to Saturday average of 216 vpd, including 16 heavy vehicle movements. Average hourly flows are very low. The maximum proposed quarry truck movements for local deliveries are 5 loads a day, or 10 truck movements. If there was a project to the South or West requiring material, the maximum additional traffic would thus be 10 truck movements a day, taking the average daily flow from 216 to 226 vehicle movements a day, and the heavy vehicle movements from 16 to 26. While the proportional increase might appear high, in absolute terms, it would remain a low number. By comparison, the 2006 traffic counts found an average of 26 heavy vehicle movements on Jerrara Road, and 37 heavy vehicle movements on Oallen Ford Road between the Project Site and Bungonia.

Looking at the May 2013 counts of heavy vehicle movements, Table 3.1 sets out the average weekly heavy vehicle movements (two-way total), averaged Monday to Sunday, on this southern section of Oallen Ford Road.

TABLE 3.1 **Current Heavy Vehicle Weekly Two-Way Flows on Oallen Ford Road** **500m**
South of Lumley Road – May 2013 (vehicles/hour)

Period	Heavy Vehicles	Period	Heavy Vehicles
0-1am	0	12-1pm	1
1-2	0	1-2	2
2-3	0	2-3	3
3-4	0	3-4	1
4-5	0	4-5	2
5-6	0	5-6	2
6-7	2	6-7	1
7-8	1	7-8	0
8-9	3	8-9	0
9-10	1	9-10	0
10-11	2	10-11	0
11-12noon	2	11-12mnight	0

The current average hourly heavy vehicle movements are very low, with typically 2 trucks per hour between 6am and 6pm. At a maximum level of 5 loads a day during campaigns to the South, the additional trucks would average one movement an hour in the 6am to 6pm period, at a peak of 2 truck movements in an hour. This would have a low impact within this traffic environment.

Oallen Ford-Windellama Road Route

The separate volume provides photographs of this route every 500m. Some local features have been reviewed through further route assessment, with carriageway width measurements taken where the road appeared narrower than typical. This route inventory is set out in Table 3.2.

TABLE 3.2 **Route Inventory of Oallen Ford Road-Windellama Road**

Page 1 of 2

Chainage From Site	Local Road Feature
0.0	Project Site driveway
1.2	Carriageway width 6.8m
2.1	Speed advisory on bend 75 km/hr (speed limit is 100 km/hr)
4.2	35 km/hr speed advisory on approach to causeway (7.2m wide)
4.7	Carriageway width 6.9m to edge lines
6.5	Causeway; speed limit 80 km/hr; 5.8m carriageway
6.7	Speed limit returns to 100 km/hr

TABLE 3.2 Route Inventory of Oallen Ford Road-Windellama Road

Page 2 of 2

Chainage From Site	Local Road Feature
7.5	Carriageway width with shoulders 7.2m
14.2	Windellama Creek causeway; warning sign on southbound approach
14.5	Approaching crest; no centreline
17.4	Intersection with Windellama Road; wide intersection with good sight lines
19.3	Eloura Road junction; carriageway 7.8m on Windellama Road
20.0	Advance warning of 40 km/hr school zone ahead
20.2	Speed advisory on bend 65 km/hr
21.0	School Zone 40 km/hr
21.2	Windellama Public School
25.8	Intersection with Lumley Road
52.0	Brisbane Grove Rd junction, with Brisbane Grove Rd a designated Heavy Vehicle Bypass
55.0	Braidwood Road intersection

This route provides a reasonable standard for an average of 4-5 truck movements a day, or a maximum of 10 truck movements a day, without requiring upgrading. The contributions made under Council's Section 94 Contribution Plan will provide a source of funds for on-going maintenance and improvements.

Windellama Road past Windellama Public School is a sensitive location. The Proposal is that quarry trucks would not travel on this route past the school in the School Zone hours of Monday-Friday, 8.00-9.30am and 2.30-4.00pm. In addition, when quarry trucks pass this school on a school day, they will reduce their speed to 40km/hr within the limits of the school zone.

Local deliveries might also be made to sites and properties directly accessed from this route.

Tarago Route

Appropriate transport routes to the South and South-West are limited by the load limit on Oallen Ford Road south of Windellama. The most appropriate route is that section of Lumley Road west of its intersection with Windellama Road, through the locality of Bronte Hall, to Tarago. At Tarago the route joins a major road, Braidwood Road, for distribution to the North and South. This route is primarily unsealed. The features, starting at the Windellama Road junction, are set out in Table 3.3.

TABLE 3.3 Route Inventory of Tarago Route

Chainage from junction	Local Road Feature
0.0	Junction of Lumley Road & Windellama Road
0.5	Gravel/unsealed road commences
3.7	T-junction with Glenovel Road
4.9	Causeway
8.6	T-junction, route continues to the West (No Through Road to East)
14.8	T-junction, route continues to the West; road to east goes to Sandy Point
19.0	Intersection with Braidwood Road at Tarago

The use of this route would be limited to the deliveries within the LGA, with a maximum of 5 loads a day (10 truck movements) during any campaign. As with any heavy vehicle movements on unsealed roads, some deterioration will occur, which is why a Section 94 contribution would be paid, to reimburse Council for the on-going road maintenance. As a management measure, it is recommended that this unsealed road not be used during or after heavy rain.

If this route cannot be used during/after heavy rain, trucks will need to continue northbound along Windellama Road, turn left at Brisbane Grove Road, and then turn left at Braidwood Road, for travel back to the South. There is an east-west connection along Glenovel Road between Bronte Hall (vicinity) and Lake Bathurst, but again it is primarily unsealed and is in worst condition than the Lumley Road route. Glenovel Road is not recommended to be used, except for local deliveries on this road.

Further to the North on Windellama Road, there is an east-west connection at Painters Lane (approximately 15km north of Lumley Road). While sealed for the first 2.0 km, up to its junction with Meadow Lane, it is unsealed after that, for the 4.4km to its junction with Braidwood Road. Owing to the condition of this road west of Meadow Lane, it is not recommended for use except for local deliveries along its length.

Other Roads

Lumley Road, between the Project Site driveway on Oallen Ford Road and its junction with Oallen Ford Road, is a more direct route to the West than via Oallen Ford Road and Windellama Road. While initially sealed, the majority of the section to Windellama Road is unsealed. Given the availability of an alternative sealed route of an acceptable standard, the use of Lumley Road from the Project Site to Windellama Road is not recommended, except for local deliveries.

Between Lumley Road, approximately 10km west of the site entrance, Bullamalita Road provides a link through to Windellama Road. However as well as being unsealed, this road is currently not constructed to a high standard, although it was noted on the drive along this road that some improvements might be undertaken. Nevertheless, it is not recommended as Local Haul Route. Deliveries to destinations along its length could nevertheless occur.

3.4 Development Contributions Plan Requirements

The *Goulburn Mulwaree Development Contributions Plan 2009 Amendment No.2* dated 14th March 2012 sets out the requirements for contributions towards road maintenance and reconstruction. Section 2.2.6 – reproduced in Annexure B – sets out the formula, whereby for extractive industries, a contribution of 4 cents per tonne per kilometre of road travelled, controlled by Goulburn Mulwaree Council, is charged. There is no charge for transport on roads controlled by the Roads & Maritime Services, and on roads outside of the LGA. For transport along the Project Transport Route, these contributions apply.

The roads over which this contribution will be charged are those Local Haul Routes shown on Figure 2, plus the roads used for the final delivery to the destination. A monitoring system will be required, based on weighbridge records at the Project Site and the delivery destination. Log books at the weighbridge will record the load, the destination and the proposed route. These will be summarised at the end of each recording period, and the contributions calculated.

4.0 CONCLUSIONS

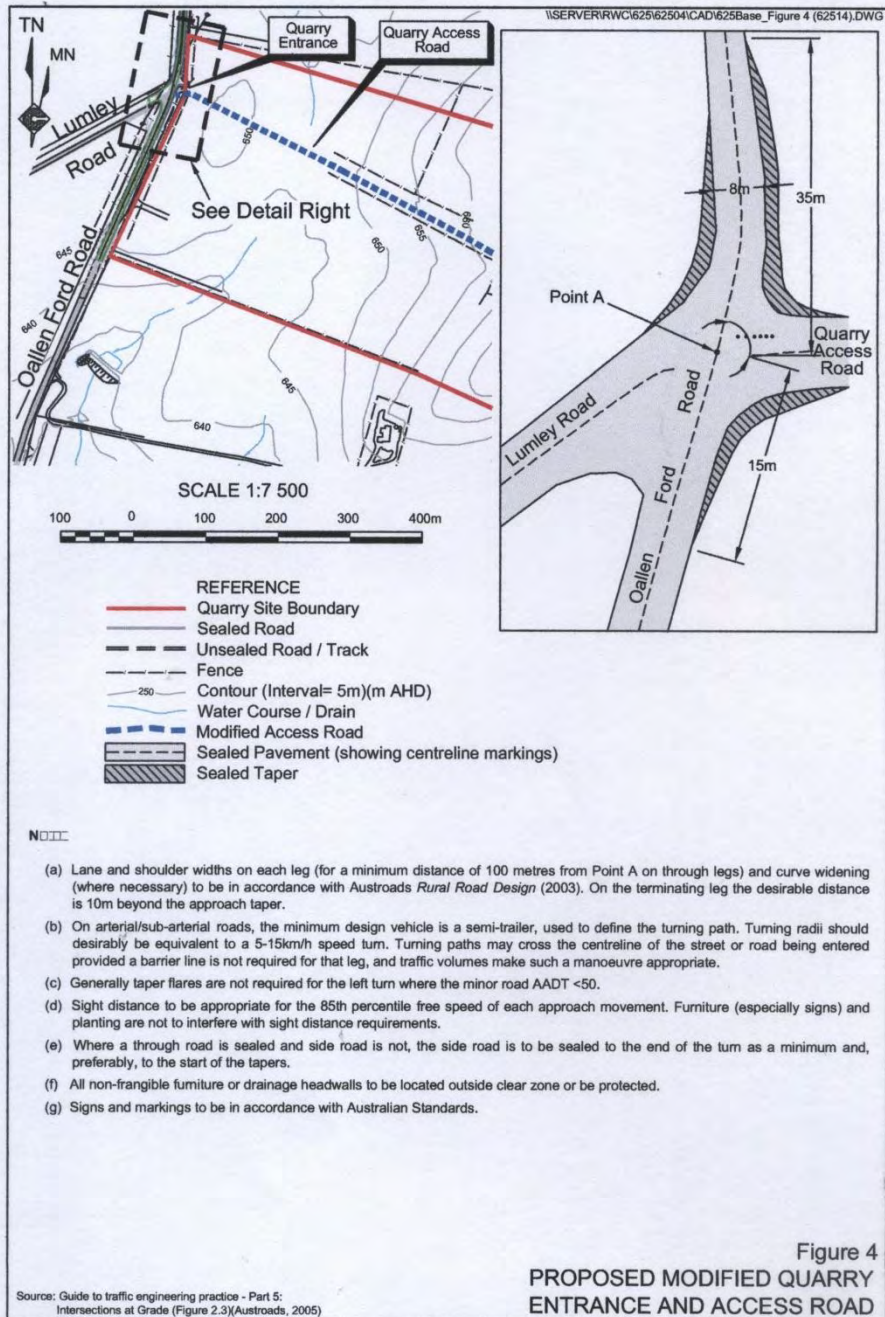
The following information provides conclusions and recommendations for use by product trucks to utilise the local roads within the LGA for delivery purposes.

1. The Proposal is for up to 20,000 tonnes per annum of quarry material to be delivered to destinations within the Goulburn Mulwaree LGA, with transport routes not restricted to the defined Project Transport Route along Oallen Ford Road-Bungonia Bypass-Jerrara Road. The transport of this quantity of material would average 2.25 loads per working day, or 4-5 truck movements.
2. During major campaigns, there is a possibility for a demand for a high volume of quarry material. This Proposal is that the maximum loads per day for local delivery shall be 5 loads, or 10 truck movements.
3. Figure 2 sets out the haul routes proposed. Apart from the Project Transport Route, the other Local Haul Routes proposed are Oallen Ford Road to Windellama (but no further south), Windellama Road as far as Brisbane Grove Road near Goulburn, Lumley Road between Windellama Road and Tarago and Mountain Ash Road (restricted to vehicles with a Gross Vehicle Mass not exceeding 42.5 tonne).
4. The Proposal is to permit these local deliveries immediately, prior to the completion of the upgrade of the Project Transport Route. However, no transport shall be permitted at any time through Bungonia village (via King Street), so the use of any roads north of the Project Site shall not commence until the Bungonia Bypass is completed. Jerrara Road will only be used after its Stage 1 works have been completed.
5. Any transport operations along Windellama Road, past Windellama Public School, are not to be scheduled in the school day periods of 8.00-9.30am and 2.30-4.00pm. In addition, when quarry trucks pass this school on school days, they will reduce their speed to 40km/hr within the school zone area.
6. The use of the Local Haul Route along the western section of Lumley Road, west of Windellama Road, is not recommended during or after periods of heavy rain.
7. Roads not listed on Figure 2 as the Project Transport Route or Local Haul Routes are not to be used for through transport, but may be used for local deliveries directly off such roads.
8. With the volume of truck movements proposed, and the current low traffic flows along Oallen Ford Road past the Project Site entrance, this site entrance does not need to be upgraded beyond the approved intersection shown on Figure 1. It is recommended that this standard be provided prior to any transport of quarry product from the Project Site.
9. All transport of quarry product will be subject to the requirements of the applicable Section 94 Development Contributions Plan, which requires payment of 4 cents per tonne per kilometre travelled. This contribution will be used to maintain these roads.

ASSESSMENT OF PROPOSED MODIFIED
QUARRY ENTRANCE AND ACCESS ROAD

- 11 -

MULTIQUIP QUARRIES

Ardmore Park Quarry
Report No. 625/14

R.W. CORKERY & CO. PTY. LIMITED

FIGURE 1 PROJECT SITE ACCESS

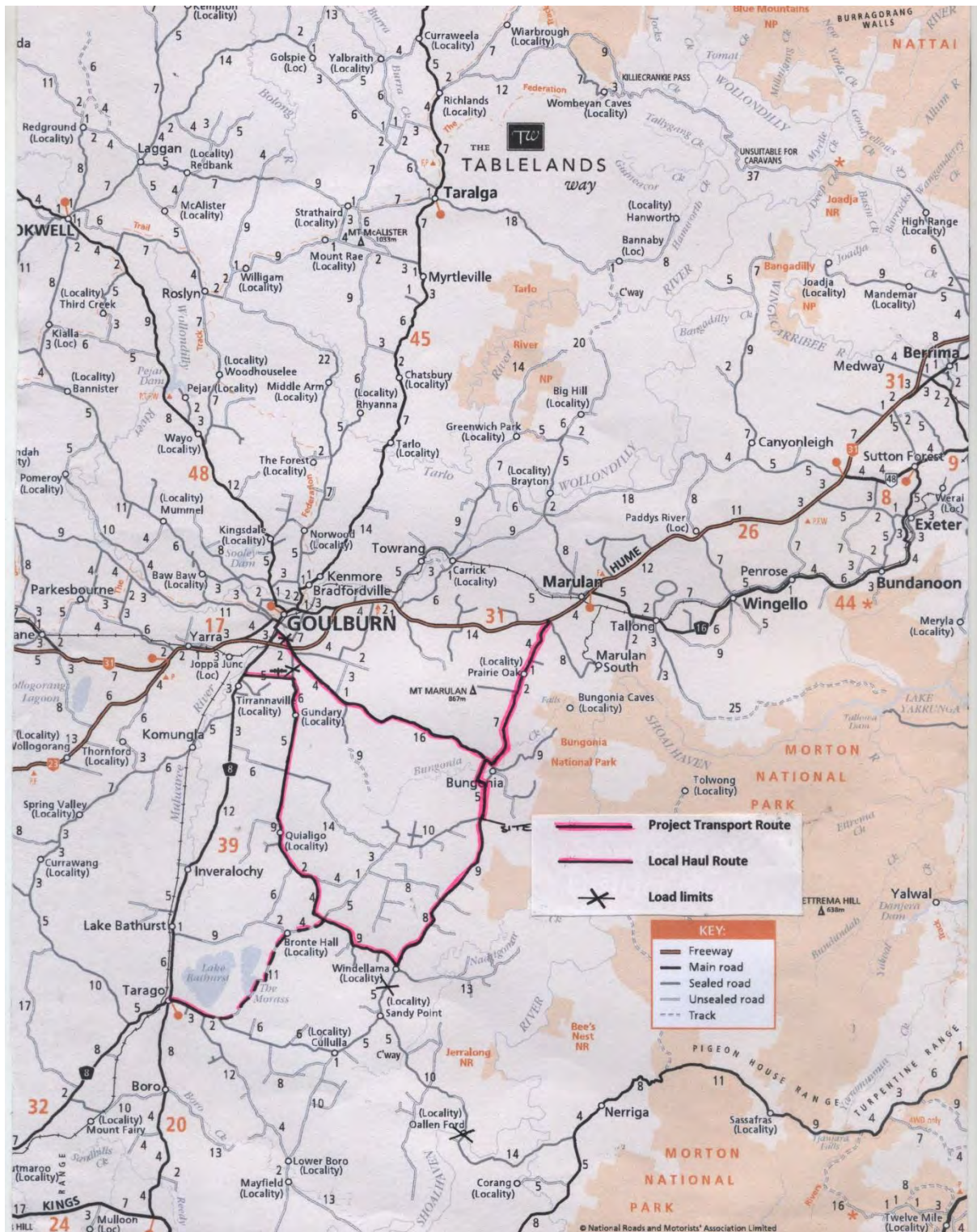
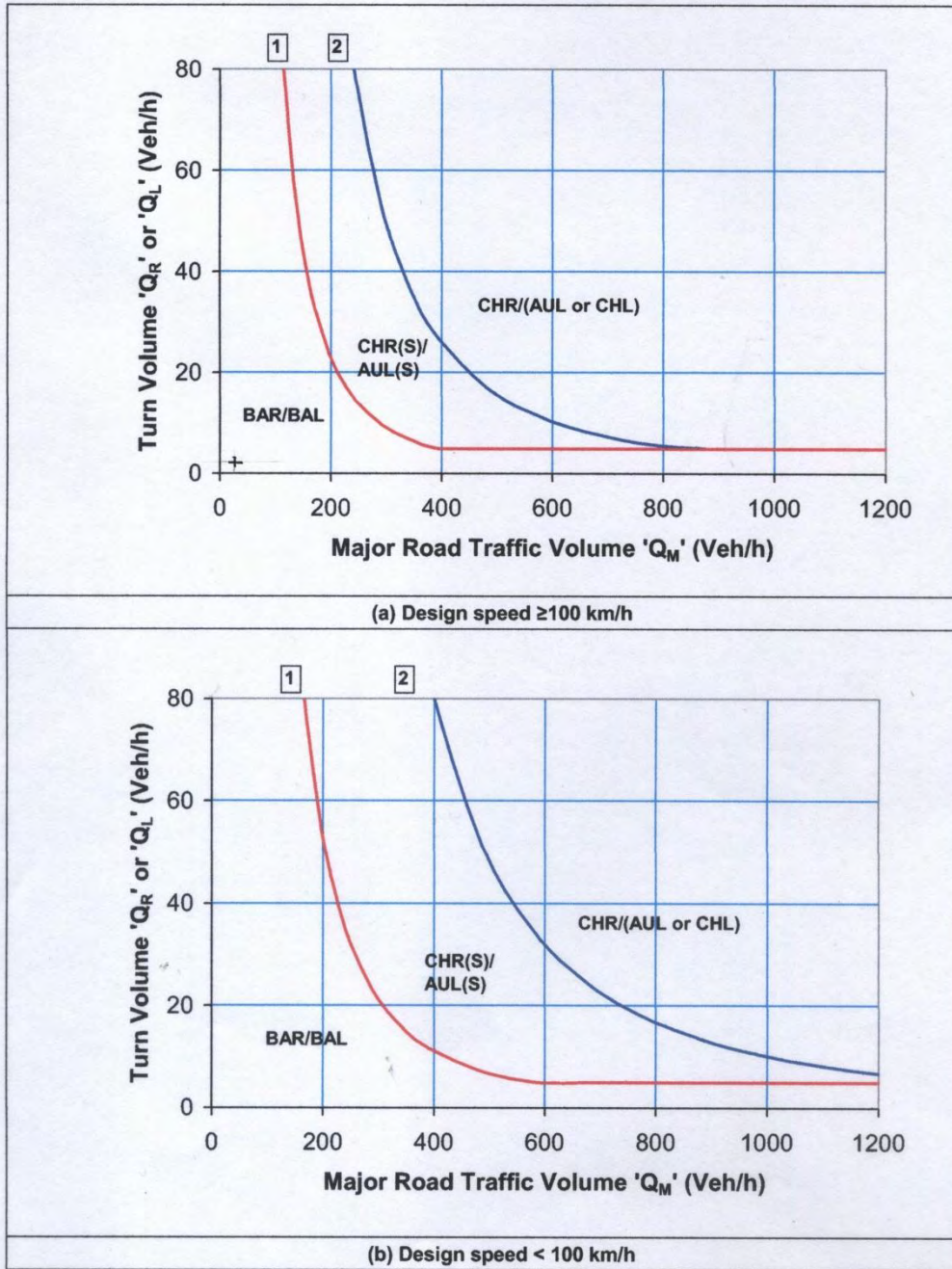


FIGURE 2 ROAD NETWORK

Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections



Source: Amdt and Troutbeck (2006).

Figure 4.9: Warrants for turn treatments on the major road at unsignalised intersections

Austrorads 2009

— 46 —

FIGURE 3 AUSTROADS AUXILIARY LANE WARRANTS

Traffic Count Summary Report

CfeIT bob.white@cfeit.com (02) 9740 8600

Count Number 9352 Ref : CHAL Lat/Long : S34 52 22.2 / E149 56 16.6 GOOGLE
Street OALLEN FORD ROAD, BUNGONIA : Between LOOKDOWN ROAD & WINDELLAMA LOCALITY (bidirectional) :
Location About 2 kms south of King Street/Lookdown Road, on guard rail Carriageway

Start Date 10-MAY-13
Start Time 100
Duration 7 DAYS
Interval 1 HOUR
Weekly 50th Percentile Speed 91
Weekly 85th Percentile Speed 104
Five Day AADT 350
Seven Day AADT 378

TOTAL COUNT MATRIX

	MON 13TH	TUE 14TH	WED 15TH	THU 16TH	FRI 10TH	SAT 11TH	SUN 12TH	5 Day Total	5 Day Average	Total	7 Day Average
Midnight - 1am	2	3	2	2	2	2	0	11	2	13	2
1am - 2am	0	1	0	0	0	1	2	1	0	4	1
2am - 3am	1	0	0	0	0	0	1	1	0	2	0
3am - 4am	2	0	0	1	0	1	0	3	1	4	1
4am - 5am	4	3	4	1	2	0	2	14	3	16	2
5am - 6am	2	7	12	6	11	3	2	38	8	43	6
6am - 7am	16	16	14	15	12	8	6	73	15	87	12
7am - 8am	22	21	22	17	20	17	15	102	20	134	19
8am - 9am	33	35	26	30	13	36	21	137	27	194	28
9am - 10am	25	18	27	14	16	33	32	100	20	165	24
10am - 11am	31	16	23	37	30	36	41	137	27	214	31
11am - Midday	22	14	23	23	29	31	49	111	22	191	27
Midday - 1pm	18	14	24	23	24	42	36	103	21	181	26
1pm - 2pm	23	22	24	23	24	29	35	116	23	180	26
2pm - 3pm	26	43	21	18	33	33	40	141	28	214	31
3pm - 4pm	33	33	20	25	30	51	46	141	28	238	34
4pm - 5pm	19	29	30	27	41	28	62	146	29	236	34
5pm - 6pm	24	23	26	20	37	25	35	130	26	190	27
6pm - 7pm	13	15	14	24	22	17	20	88	18	125	18
7pm - 8pm	10	4	5	10	15	11	10	44	9	65	9
8pm - 9pm	8	4	5	6	24	10	10	47	9	67	10
9pm - 10pm	7	3	2	1	16	5	5	29	6	39	6
10pm - 11pm	0	3	3	8	5	3	1	19	4	23	3
11pm - Midnight	7	1	2	4	3	3	3	17	3	23	3
Total	348	328	329	335	409	425	474	1749	349	2648	378

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Page : 1

Data displayed has been compiled from pneumatic traffic count processes and is subject to the documented limitations

ANNEXURE A1 TRAFFIC COUNTS ON OALLEN FORD ROAD 2KM SOUTH OF BUNGONIA

Daily Classification Summary

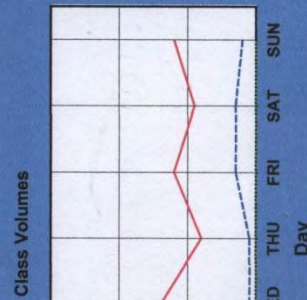
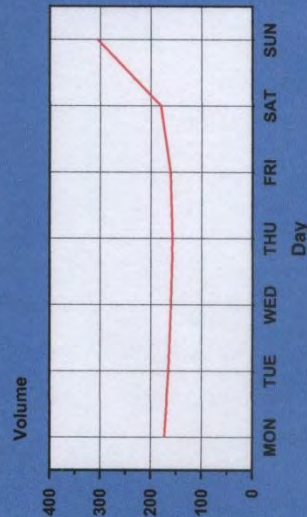
CfeIT bob.white@cfeit.com (02) 9740 8600

Count Number 9352 Ref : CHAL Lat/Long : S34 52 22.2 / E149 56 16.6 GOOGLE
Street OALLEN FORD ROAD, BUNGONIA : From WINDELLAMA LOCALITY to LOOKDOWN ROAD : NORTH BOUND
Location About 2 kms south of King Street/Lookdown Road, on guard rail Carriageway

Start Date 10-MAY-13
Start Time 100
Duration 7 DAYS
Interval 1 HOUR
Weekly 50th Percentile Speed 91
Weekly 85th Percentile Speed 104
Five Day AADT 168
Seven Day AADT 191

THE BODY OF THIS REPORT
SHOWS :
TRAFFIC SEVENTH DAY

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	Total
MONDAY	0	141	5	15	9	3	1	0	0	0	0	0	0	0	174
TUESDAY	1	140	8	11	0	0	2	1	3	0	1	0	0	0	167
WEDNESDAY	1	135	11	14	0	0	1	0	0	0	0	0	0	0	162
THURSDAY	11	141	8	8	0	0	0	0	0	0	1	0	0	0	169
FRIDAY	4	131	16	12	0	0	3	0	0	0	0	0	0	0	166
SATURDAY	3	157	12	9	0	0	2	0	0	1	0	0	0	0	184
SUNDAY	8	260	32	11	1	0	1	0	1	0	0	0	0	0	314
5 Day Total	17	688	48	60	9	3	7	1	3	0	2	0	0	0	838
5 Day Pct	2	82	6	7	1		1								
7 Day Total	28	1105	92	80	10	3	10	1	4	1	2	0	0	0	1336
7 Day Pct	2	83	7	6	1		1								



Daily Classification Summary

CfeIT bob.white@cfeit.com (02) 9740 8600

Count Number 9352 Ref : CHAL Lat/Long : S34 52 22.2 / E149 56 16.6 GOOGLE

Street OALLEN FORD ROAD, BUNGONIA : From LOOKDOWN ROAD to WINDELLAMA LOCALITY : SOUTH BOUND

Location About 2 kms south of King Street/Lookdown Road, on guard rail

Carriageway

Start Date 10-MAY-13

Start Time 100

Duration 7 DAYS

Interval 1 HOUR

Weekly 50th Percentile Speed 86

Weekly 85th Percentile Speed 99

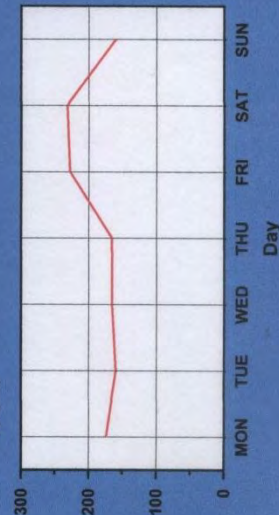
Five Day AADT 182

Seven Day AADT 187

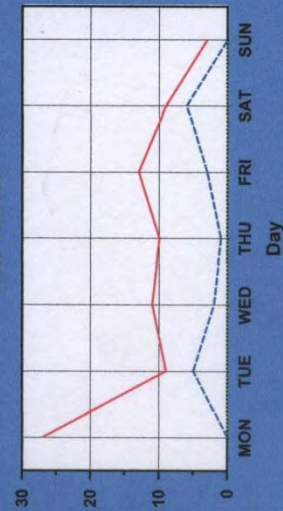
THE BODY OF THIS REPORT
SHOWS :
TRAFFIC SEVENDAY

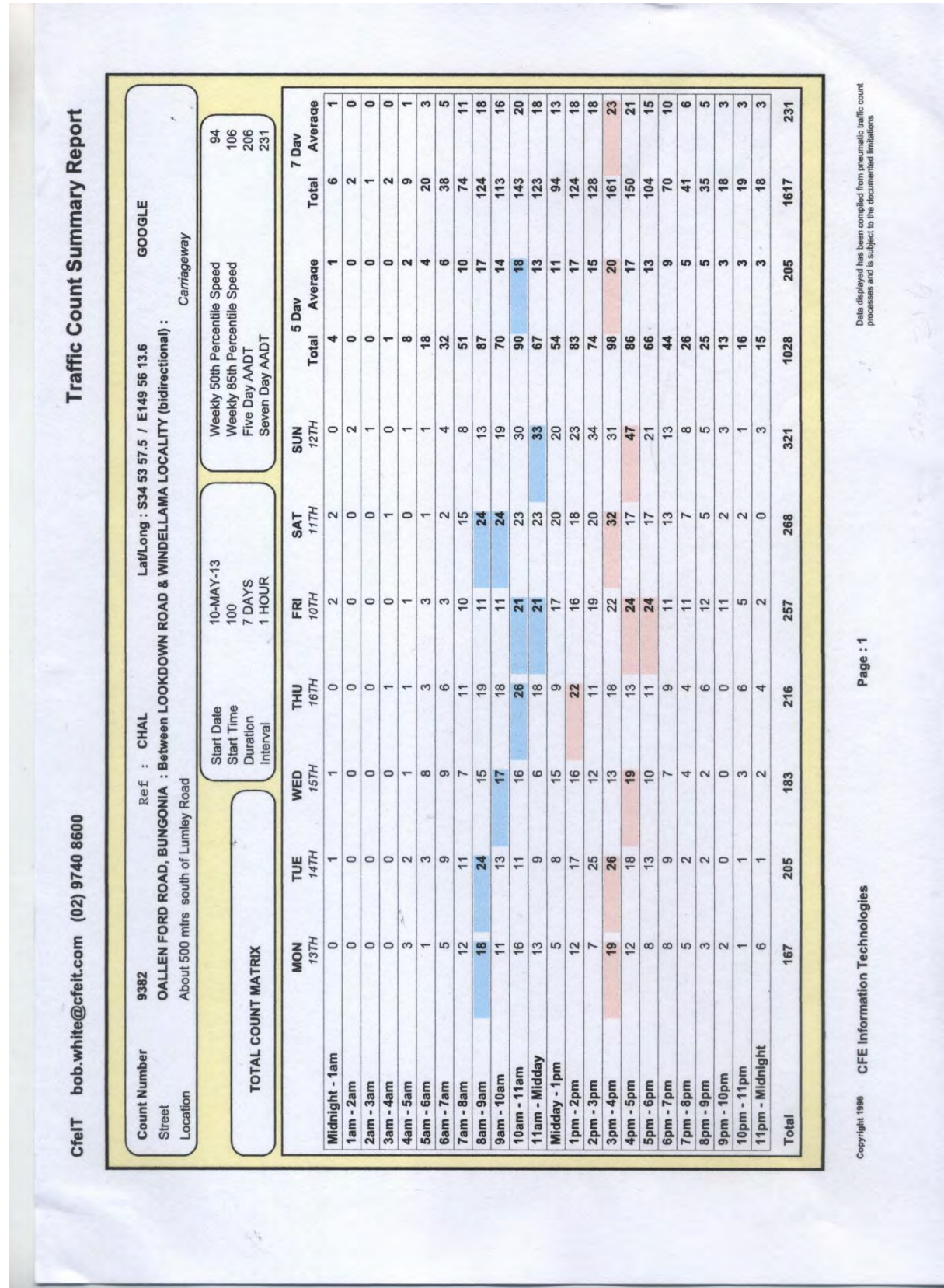
Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	Total
MONDAY	0	138	9	14	9	4	0	0	0	0	0	0	0	0	174
TUESDAY	1	140	6	9	0	0	0	1	3	0	1	0	0	0	161
WEDNESDAY	1	140	13	10	1	0	0	0	0	1	1	0	0	0	167
THURSDAY	0	141	14	10	0	0	0	0	0	1	0	0	0	0	166
FRIDAY	15	193	19	11	2	0	2	0	1	0	0	0	0	0	243
SATURDAY	9	188	29	9	0	0	5	0	0	1	0	0	0	0	241
SUNDAY	0	145	12	3	0	0	0	0	0	0	0	0	0	0	160
5 Day Total	17	752	61	54	12	4	2	1	4	2	2	0	0	0	911
5 Day Pct	2	83	7	6	1										
7 Day Total	26	1085	102	66	12	4	7	1	4	3	2	0	0	0	1312
7 Day Pct	2	83	8	5	1	1									

Volume



Class Volumes





ANNEXURE A2 TRAFFIC COUNTS ON OALLEN FORD ROAD 500m SOUTH OF LUMLEY ROAD

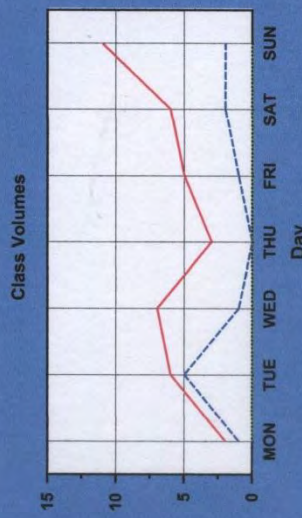
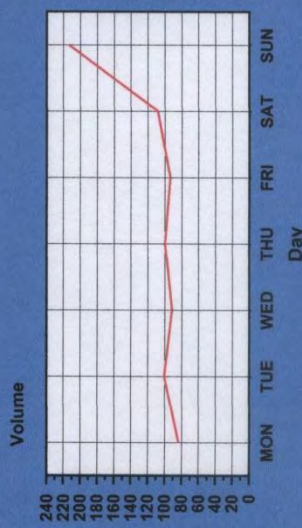
Daily Classification Summary

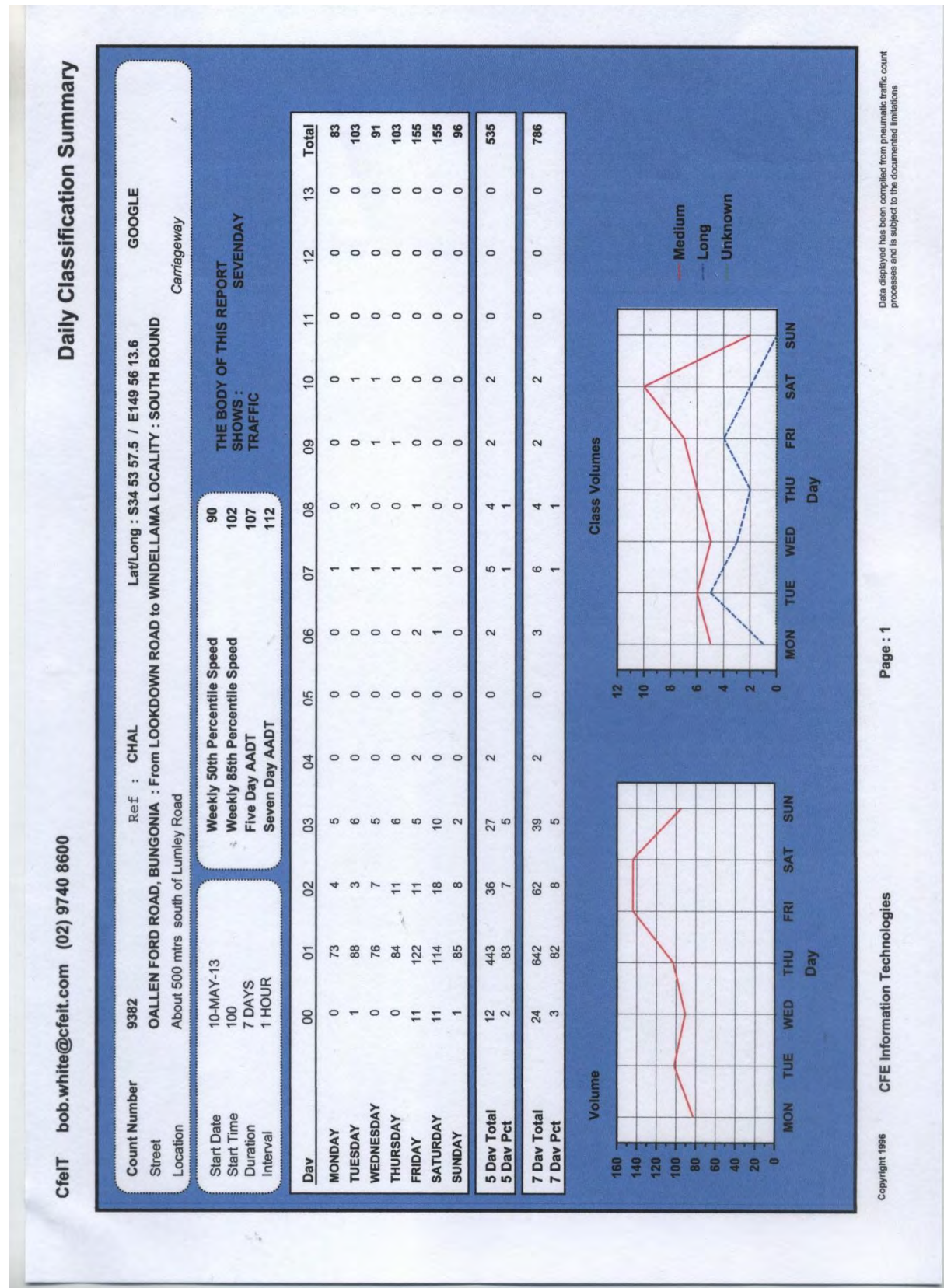
CfeIT bob.white@cfeit.com (02) 9740 8600

Count Number 9382 Ref : CHAL Lat/Long : S34 53 57.5 / E149 56 13.6 GOOGLE
Street OALLEN FORD ROAD, BUNGONIA : From WINDELLAMA LOCALITY to LOOKDOWN ROAD : NORTH BOUND
Location About 500 mtrs south of Lumley Road Carriageway

Start Date 10-MAY-13
Start Time 100
Duration 7 DAYS
Interval 1 HOUR
Weekly 50th Percentile Speed 94
Weekly 85th Percentile Speed 106
Five Day AADT 99
Seven Day AADT 119
THE BODY OF THIS REPORT SHOWS : SEVENDAY TRAFFIC

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	Total
MONDAY	0	76	5	2	0	0	0	1	0	0	0	0	0	0	84
TUESDAY	1	85	5	6	0	0	0	1	3	0	1	0	0	0	102
WEDNESDAY	0	75	9	7	0	0	1	0	0	0	0	0	0	0	92
THURSDAY	13	91	6	3	0	0	0	0	0	0	0	0	0	0	113
FRIDAY	8	77	11	5	0	0	1	0	0	0	0	0	0	0	102
SATURDAY	4	93	8	6	0	0	2	0	0	0	0	0	0	0	113
SUNDAY	11	176	25	10	1	0	1	0	1	0	0	0	0	0	225
5 Day Total	22	404	36	23	0	0	2	2	3	0	1	0	0	0	493
5 Day Pct	4	82	7	5					1						
7 Day Total	37	673	69	39	1	0	5	2	4	0	1	0	0	0	831
7 Day Pct	4	81	8	5		1									





2.2.6 Extractive Industries, mines and like development road maintenance levy

Contribution type	Formula
Road maintenance / reconstruction	<p>Contribution per tonne (cents) = $4(L_1 \times P_1 + L_2 \times P_2 \dots L_n \times P_n)$</p> <p>Where:</p> <p>$L_1$ Length of road route 1 used by the development P_1 Estimated percentage of material trucked along route 1 4 4 cents per tonne as the contribution towards pavement maintenance, repair, rehabilitation and reconstruction. (Refer to rationale). L_2 Length of road route 2 P_2 Estimated percentage of material trucked along route 2</p>

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Appendix 4

Noise Traffic Impact Assessment

Prepared by SLR Consulting Australia Pty Ltd

(Total No. of pages including blank pages = 8)



MULTIQUIP QUARRIES

*Ardmore Park Quarry – Modification of PA 07_0155
Report No. 625/17*

ENVIRONMENTAL IMPACT STATEMENT

Appendix 4

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18 June 2013

610.12766 Traffic Noise 20130618

R.W. Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
BROOKLYN NSW 2083

Attention: Mr Rob Corkery

Dear Rob

**Ardmore Park Quarry via Bungonia, NSW
Multiquip Quarries
Traffic Noise Impact Assessment**

1 Traffic Noise Impact Assessment

1.1 Traffic Noise Criteria

The NSW Road Noise Policy (NSW RNP) is the relevant policy for the assessment of road noise in NSW, replacing the EPA's 'Environmental Criteria for Road Traffic Noise' (ECRTN) policy in July 2011, that was originally utilised within the "Modified "Ardmore Park" Quarry Proposal - Noise and Vibration Impact Assessment" by Heggies (Heggies 2008). The NSW RNP adopts a classification scheme for assessing noise impacts on an existing road network from additional traffic generated by a project as presented in **Table 1**.

Table 1 Road Traffic Noise Assessment Criteria for Residential Land Uses (dBA re 20 µPa)

Type of Project and Land Use	Total Traffic Noise Criteria ¹
Land use developments generating additional traffic on existing local roads	Daytime 55 LAeq(1hour) ²
	Night-time 50 LAeq(1hour) ²

Source: Table 3 of the NSW RNP.

Note 1: Daytime 0700 hrs to 2200 hrs, Night-time 2200 hrs to 0700 hrs.

Note 2: LAeq = equivalent continuous noise level.

In relation to situations where exceedances of the road traffic noise assessment criteria are predicted, the NSW RNP provides that:

"Where existing traffic noise levels are above the noise assessment criteria, the primary objective is to reduce these through feasible and reasonable measures to meet the assessment criteria. A secondary objective is to protect against excessive decreases in amenity as the result of a project by applying the relative increase criteria.

In assessing feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person.

For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'."

Regarding non-residential land uses the NSW RNP states that:

“In some cases there will be existing land uses that are sensitive to noise (e.g. hospitals and schools) where more stringent standards are expected, and there are other land uses where different criteria than those specified for residential land use are more appropriate. For existing schools, child care facilities, hospitals, places of workshop and recreation, specific criteria have been set so the characteristic activities for each of these land uses will not be unduly disturbed.

The noise assessment criteria in Table 4 must be applied for assessing the impact and determining mitigation measures in the following situations:

- *when there is a new road or road redevelopment*
- *when there is a land use development with the potential to generate additional traffic on local, sub-arterial or arterial roads.”*

The recommended internal criterion for school classrooms is presented in **Table 2**.

Table 2 Road Traffic Noise Assessment Criteria for School Classrooms Affected by Proposed Traffic Generating Developments

Assessment Criterion Day (7.00 am - 10.00 pm)	Additional Consideration
LAeq(1hour) 40 dBA (internal) when in use	In the case of buildings used for education or health care, noise level criteria for spaces other than classrooms and wards may be obtained by interpolation from the “maximum” levels shown in Australian Standard AS 2107:2000 (Standards Australia 2000)

Source: Table 3 of the NSW RNP.

1.2 Traffic Noise Assessment Methodology

The minimum offset distances of non-project related residences, adjacent to the proposed transport routes, are presented in **Table 3** together with the respective design speed limits and proposed maximum truck speed limits imposed by PA07_0155.

Table 3 Offset Distances of Residences Along the Modified “Ardmore Park” Quarry Transport Route

Road	Design Speed Limit	Truck Speed Limit	Minimum Offset Distance
Oallen Ford Road	100 km/hr	80 km/hr	35 m
Windellama Road	100 km/hr	80 km/hr	35 m
Brisbane Grove Road	100 km/hr	80 km/hr	35 m
Braidwood Road	100 km/hr	80 km/hr	35 m
Tarago Road/Cullulla Road	100 km/hr	80 km/hr	35 m
Windellama Public School	100 km/hr & 40 km/hr	40 km/hr	40 m

The existing total (light plus heavy) and heavy vehicle traffic movements for Oallen Ford Road (500 m south of Lumley Road) were reported in Table 2.5 and Table 3.1 respectively of the report by Christopher Hallam & Associates Pty Ltd entitled “Local Roads Project Application for “Ardmore Park” Quarry, Oallen Ford Road, Bungonia, NSW” (“Hallam Report”), dated June 2013. The combined tables are presented in **Table 4**.

Table 4 Existing Two-way Hourly Traffic Flows on Oallen Ford Road

Period	Light Vehicles	Heavy Vehicles
12:00am to 1:00am	2	0
1:00am to 2:00am	0	0
2:00am to 3:00am	0	0
3:00am to 4:00am	0	0
4:00am to 5:00am	2	0
5:00am to 6:00am	7	0
6:00am to 7:00am	11	2
7:00am to 8:00am	19	1
8:00am to 9:00am	25	3
9:00am to 10:00am	21	1
10:00am to 11:00am	27	2
11:00am to 12:00pm	21	2
12:00pm to 1:00pm	23	1
1:00pm to 2:00pm	22	2
2:00pm to 3:00pm	26	3
3:00pm to 4:00pm	31	1
4:00pm to 5:00pm	27	2
5:00pm to 6:00pm	24	2
6:00pm to 7:00pm	16	1
7:00pm to 8:00pm	10	0
8:00pm to 9:00pm	10	0
9:00pm to 10:00pm	5	0
10:00pm to 11:00pm	4	0
11:00pm to 12:00am	3	0

Source: Modified after Hallam (2013) - Tables 2.5 and 3.1.

As stated in Section 2.4.2 of the Environmental Assessment (May 2013) for the Project “*the delivery of products would be undertaken on a campaign basis, subject to customer demands. This campaign basis of deliveries would not exceed 5 loads per day to the local customers. Therefore, no more than 10 movements would be on these routes in any one day.*”

On this basis, it is anticipated that there would be a maximum of 4 quarry related truck movements on the local roads in any given hour (between 7.00 am and 6.00 pm Monday to Friday and between 8.00 am and 1.00 pm Saturday only).

Traffic noise emissions are determined by the type and speed of the vehicle. In order to accurately assess the noise emissions from the modified “Ardmore Park” Quarry vehicles as well as light local vehicles, attended monitoring was conducted (in April 2007) of full and empty trucks as well as light vehicle passbys adjacent to the closest residence on Jerrara Road (offset 35 m) with a heavy vehicle speed of 80 km/hr. This is the maximum truck speed committed to by the Proponent.

At the measurement location noise levels of a number of laden and unladen truck passbys were measured in each direction of travel as well as of a selection of local light vehicles in order to accurately determine the traffic noise levels for the nominated future traffic mix. The measured vehicles were of both the configuration and size that would be used for the transportation of the sand and hard rock products from the quarry.

Using the measured vehicle emissions and the existing and predicted traffic flows, the $L_{Aeq}(1\text{hour})$ traffic noise emissions for the existing traffic levels and proposed transport operations at the minimum offset distance of non-project related residences from Oallen Ford Road (35 m) have been calculated.

The resulting total traffic noise levels, based on the site and fleet specific traffic noise measurements, are presented in **Table 5** for the hour of the day during which the quarry related plus existing traffic would be highest ie the hour with maximum existing heavy vehicles. The worst case assessment hour was 2.00 pm to 3.00 pm for Oallen Ford Road (3 existing heavy, 26 existing light and 4 future quarry vehicle passbys).

Table 5 $L_{Aeq}(1\text{hour})$ Traffic Levels on Oallen Ford Road

Offset Distance	Speed	Noise Level	
		Existing Traffic Level	With Proposed Transport Operations
35 m	80 km/hr	51 dBA	52 dBA

Review of the results presented in **Table 5** indicates that for full quarry road transport operations, the traffic noise levels are below the criterion (of 55 dBA $L_{Aeq}(1\text{hour})$) recommended in the NSW RNP, based on the additional maximum 4 truck movements per hour.

For the other quarry access roads listed in **Table 3**, for an offset distance of 35 m, the allowable number of additional trucks per hour is 30 (ie extra to the proposed maximum of 4 quarry related trucks) for compliance with the NSW RNP criterion of 55 dBA ($L_{Aeq}(1\text{hour})$), at a speed of 80 km/hr.

Reference to **Table 4** indicates that the current measured heavy vehicle movements on Oallen Ford Road is only 3 per hour.

For comparison, compliance with the $L_{Aeq}(1\text{hour})$ traffic noise criterion of 55 dBA would also be met (at an offset distance of 35 m and a speed of 80 km/hr) with 60 light vehicles and 10 heavy vehicles per hour, extra to the proposed maximum of 4 quarry related heavy vehicles per hour. This is 57 light and 7 heavy vehicles more than the maximum hourly vehicle numbers recorded on Oallen Ford Road in May 2013.

In relation to Windellama Public School, Multiquip has committed to not pass the school during school drop off and pick up times (8.00 am to 9.30 am and 2.30 pm to 4.00 pm) as well as to limit the trucks to a speed of 40 km/hr past the school during all other times (refer to Section 2.3.5 of the EA).

On this basis, the maximum hourly traffic noise contribution from the quarry related trucks is 43 dBA ($L_{Aeq}(1\text{hour})$).

Reference to **Table 2** indicates that this traffic noise level is 7 dBA lower than the adjusted (internal to external adjustment in accordance with the EPA's *Environmental Criteria for Road Traffic Noise* document) criterion of 50 dBA $L_{Aeq}(1\text{hour})$ applicable to outside school classrooms.

Assuming the measured maximum hourly light/heavy vehicle flows on Oallen Ford Road (of 26 light and 3 heavy vehicles) the predicted combined (quarry and non-quarry related) road traffic noise level increases to 46 dBA, a combined traffic noise level 4 dBA below the criterion.

2 Road Transportation Vibration

2.1 Assessment Criteria

German Standard DIN 4150-3 1999 "Structural vibration Part 3: Effects of vibration on structures" provides criteria for evaluating the long-term (or continuous) effects of vibration on structures as presented

Table 6 Continuous Vibration Criteria for Long-term Effects on Structures (DIN 4150-3)

Line	Type of Structure	Vibration Velocity in the Horizontal Plane
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	10.0 mm/s
2	Residences and buildings of similar design and/or occupancy	5.0 mm/s
3	Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (eg listed buildings under preservation order)	2.5 mm/s

2.2 Predicted Vibration Levels and Assessment

Vibration measurements were conducted at the nearest accessible receiver (at an offset distance of 35 m) to truck passbys at Bungonia in June 2004. The maximum peak vibration level recorded at this 35 m offset distance at a speed of 50 km along with the predicted future vibration levels arising from truck passbys via reference to “*Transit Noise and Vibration Impact Assessment*” (US Federal Transit Administration, May 2006) are presented in Table 25 together with the relevant assessment criteria.

Table 7 Predicted Truck Generated Peak Component Vibration Levels

Offset Distance	Truck Passby Speed		Vibration Criterion
	50 km/hr	80 km/hr	
35 m	0.06 mm/s ¹	0.10 mm/s	5 mm/s

Note 1: The measured maximum truck vibration level in Bungonia (at 50 km/hr) on a poorly maintained section of road was 0.5 mm/s peak.

2.3 Structural Damage Assessment

The predicted peak component vibration levels are well below even the most stringent damage criterion of 5 mm/s applicable to residences.

3 REFERENCES

- German Standard DIN 4150-1999 “*Structural Vibration Part 3 Effects of Vibration on Structures*”.
- NSW EPA, “*Environmental Noise Control Manual*”, 1994. ???
- NSW EPA “*Road Noise Policy*”, March 2011.
- NSW EPA “*Environmental Criteria for Road Traffic Noise*”, May 1999.
- NSW EPA “*Industrial Noise Policy*”, 2000. ???
- US Federal Transit Administration (May 2006) “*Transit Noise and Vibration Impact Assessment*”.
- Heggies Report “*Modified “Ardmore Park” Quarry Proposal - Noise and Vibration Impact Assessment*”, June 2008.
- Christopher Hallam Report “*Local Roads Project Application for “Ardmore Park” Quarry, Oallen Ford Road, Bungonia, NSW*”, June 2013.

Yours sincerely



DICK GODSON

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