Gunlake Quarries
Gunlake Quarry Project

ENVIRONMENTAL ASSESSMENT

RESPONSE TO SUBMISSIONS

MAY 2008

TABLE OF CONTENTS

TABLES

APPENDICES

1. Document Purpose

Gunlake Quarries have prepared this document in response to a request from the Acting Manager Extractive Industries of the Department of Planning dated 23rd April 2008. The request was made in accordance with section 75H(6) of the Environmental Planning and Assessment Act 1979 and requested that Gunlake Quarries prepare a response to the issues raised during the public availability period of the Gunlake Quarry Project Environmental Assessment.

This document responds to the submissions received from Government Agencies, the Community, and Special Interest Groups identified as having an interest in the hard rock quarrying industry in the Marulan area. Where appropriate, Specialist Consultants have been involved in the preparation of the responses.

Section 2 of this report describes a change made to the Project transport arrangements as a result of consideration of the submissions. Section 3 outlines Gunlake's objections to a consent condition proposed by DECC to manage potential noise impact.

Section 3 outlines reasons for Gunlake's objections to a consent condition relating to noise management proposed by DECC.

Section 4 summarises the responses received and details Gunlake's responses.

The Appendices includes correspondence and reports that support Gunlake's response. They also include the Project Statement of Commitments that reflect the submissions and company responses.

2. Project Changes

The community submissions highlighted a general concern about the proposed product transport hours.

After considering the submissions and its operational requirements, Gunlake has modified the proposed product transport hours. During Stage 1, the proposed hours of operation on Brayton Road will be reduced and product will only be transported along Brayton Road between 6am to 7pm Monday to Friday and between 7am and 1pm on Saturdays. The proposed product transport hours are consistent with arrangements for the currently-operating Johnniefelds Quarry.

During Stage 2, the trucks going south (i.e. along Brayton Road and through the edge of Marulan) would continue to operate during the same times as those for Johnniefelds. Trucks using the newly-constructed Bypass Road would operate from 2am Monday morning till 6pm Saturday afternoon. Truck numbers for each Stage will remain the same as described in the EA.

The community submissions and Goulburn Mulwaree Council also raised a number of issues that could be classified generally as amenity impacts. In order to respond to these types of submissions, Gunlake commissioned Town Planner, Mr Andrew Darroch from Mersonn Pty Ltd to assess likely amenity impacts due to the proposed Gunlake Quarry Project and to prepare a report for inclusion in this response document.

Mr Darroch was retained by the Department of Planning and Goulburn Mulwaree Council, as an expert Consultant Planner in the Land and Environment Court Case for the Ardmore Park Development. Mr Darroch provided an assessment of the likely amenity impact of the Ardmore Park proposal.

A copy of the Mr Darroch's Report on the amenity impact of the Gunlake Quarry Project is included in Appendix I. He included the following statement in the conclusion tom his report, *"It is considered that the amenity assessment after giving due consideration to the findings in CEAL Limited v Minister for Planning and Ors [2007] NSWLEC 302 and associated case law, and to the planning future of the haulage route as set by the 2020 Strategy and the draft planning instruments and draft development control plans, is considered acceptable subject to a reduction in the hours of use through the town of Marulan."* Gunlake has accepted the reduced haulage hours.

3. Proposed DECC Consent Conditions Re Noise

Gunlake has significant concerns with some of the draft consent conditions for noise proposed by DECC.

As stated in Item 6 of the DECC's submission, the noise level criteria given in proposed condition L6.1 are either:

- the predicted noise levels (where the predicted noise levels are greater than 35 dBA but less than the Project Specific Noise Levels (PSNLs)), or,

- 35 dBA where the predicted noise levels are less than or equal to 35 dBA.

However, it is clearly stated in the *"Application Notes – NSW Industrial Noise Policy"* dated 17 July 2006 that, *"The DEC requires noise impact assessments to apply the provisions of the INP, alternative approaches are not acceptable. The process for identifying Project-specific noise levels in Section 2 of the INP must be followed"*.

Accordingly, the Project Specific Noise Levels (LA_{eq}(15 minute)) intrusive criteria presented in the EA have been identified in accordance with the INP and should be used in place of the one proposed in L6.1.

In addition, the recommended Condition L6.4 indicates that the noise criteria proposed in L6.1 must be complied with during weather during conditions that are not consistent with those used in the Noise Impact Assessment (NIA). The weather conditions used in the NIA were selected to comply with the Industrial Noise Policy. The INP in Chapter 9 "Consent/Licence conditions states, *"..the agreed limits in the*

Consent or Licence apply under the meteorological conditions determined by the Policy to be relevant to the assessment site."

Gunlake require that the proposed consent condition should reflect the procedures nominated in the DECC's INP. The condition should be based on the PSNLs presented in the NIA and EA and should reflect the appropriate adverse weather conditions as determined by the INP.

4. Project Submissions and Gunlake Responses

Table 4.1 includes all submissions received from Government Departments and Agencies and includes Gunlake's responses.

Table 4.2 includes all submissions received from the Community together with Gunlake's responses.

Table 4.3 includes all submissions received from Special Interest Groups. These are groups identified as having an interest in the hard rock quarry industry in the Marulan area.

Table 4.1. Summary of Government Agency Submissions and Gunlake Responses.

ISSUE	GOVERNMENT AGENCY	RESPONSE AND COMMENTS
1.1 Environmental and amenity aspects of the haulage route should be assessed in relation to the principles established in the "Ardmore Park" decision.	Goulburn Mulwaree Council.	Gunlake commissioned Consultant Planner, Mr Andrew Darrock of Mersonn Pty Ltd to undertake an amenity assessment of the proposed haulage route. This included the modified transport hours now proposed by Gunlake. A copy of the Mersonn Report is included as Appendix I. Gunlake have already responded to Council in relation to this matter(Refer Gunlake letter dated 7th April 2008, Appendix II of this Report). Council sought further clarification.
1.2 Provision of a routine neighbour notification of scheduled works (eg. Blasting) and a "hotline" to enable the quarry operations to receive and resolve any complaints.	Goulburn Mulwaree Council.	Gunlake will develop the protocol and provide a phone contact.
1.3 Establish a site restoration fund to ensure compliance with the commitment to progressive restoration of the site.	Goulburn Mulwaree Council.	Gunlake do not believe this is necessary. Annual reporting will establish whether progressive restoration is occurring. Establishing funds will add unnecessary additional costs to the Project.
1.4 Bypassing the village of all heavy vehicle traffic entering and leaving the site is a possible solution to the amenity impacts on the village.	Goulburn Mulwaree Council.	It is essential for Gunlake to use Brayton Road to establish the quarry (Stage 1 transport arrangements). It is also essential to use Brayton Road through to the Freeway to enable product transport to the south of Marulan during Stage 2 of the development. The report by Consultant Planner, Andrew Darroch from Mersonn Pty Ltd (Appendix I) addresses the potential amenity

ISSUE	GOVERNMENT AGENCY	RESPONSE AND COMMENTS
		impacts. They conclude that amenity impacts are considered to be acceptable, subject to a reduction in the hours of haulage through the town. Gunlake accepts the reduced hours.
1.5 The Assessment of Significance Guidelines have not been correctly applied for the threatened species and endangered communities that occur on the site.	Department of Environment and Climate Change. (DECC).	This matter has been addressed by Ecotone Ecological Consultants and included as Appendix III in the Gunlake Quarries Report, "Response to DECC Comments" dated 12th March 2008. A copy of this report is included as Appendix III of this response document. Refer to Sections "Addressing Guidelines" and "Addressing of Steps 4 and 5 of the Part 3A Threatened Species Assessment Guidelines" in the 12th March Report.
1.6 Large areas of intact native vegetation within the subject site have not been adequately described within the EA.	DECC	The areas in question do support native species, however they also support a far larger component (biomass) of introduced species and are not considered to be native vegetation areas.
1.7 Dusk stag watching of all hollow trees requested by DECC.	DECC	This matter has been addressed by Ecotone Ecological Consultants and included as Appendix III in the Gunlake Quarries Report, "Response to DECC Comments" dated 12th March 2008. A copy of this report is included as Appendix III of this response document. Refer to Section "Hollow bearing trees"" in the 12th March Report.
1.8 More details required on the assessment of the endangered species (Speckled Warbler and Microbats).	DECC	This matter has been addressed by Ecotone Ecological Consultants and included as Appendix III in the Gunlake Quarries Report, "Response to DECC Comments" dated 12th March 2008. A copy of this report is included as Appendix III of this response document. Refer to Sections "Micro Bats" and "Speckled Warbler" in the 12th March Report.
1.9 DECC requested more information of the impact of the development on endangered ecological communities. Reference was made to disturbing 8.8ha of these communities	DECC	Gunlake modified the layout of the irrigation area and reduced the area affected to 4.19ha. This matter has been addressed by Ecotone Ecological Consultants and included as Appendix III in the Gunlake Quarries Report, "Response to DECC Comments" dated 12th March 2008. A copy of the Heggies Report is included as Appendix III of this response document (Refer to Section "Endangered Ecological Communities" in the 12th March Report). This Section also highlights proposed fencing off of areas of these communities and the establishment of off-set areas for ongoing conservation of the community.

1.10 All sites listed on the Aboriginal Heritage Information Management System (AHIMS) are not described in the EA. More recent archaeological reports should have been considered in the EA. The Consultation process should be described.	DECC.	The Specialist Consultant who prepared the Archaeological Assessment undertook a search of the AHIMS which covered an area within and adjacent to the proposal and which they believed was adequate to determine whether known archaeological material was located where it would be affected by the proposal and/or assist in interpreting any finds . This search was undertaken prior to the commencement of field work and sites that were identified during that search are discussed in EA Volume III, Part 6, Section 6.0. The EA describes the archaeological material that is potentially affected by the proposal. Local Aboriginal representatives were present during the field work and contributed to the assessment and the proposed management of the small number of items found in the Project Site. The Specialist Consultant searched for existing reports at the time of the study. They are aware of recent studies that were completed after their study, but were not available at the time. The consultation process is fully described in EA Volume III, Part 6, Section 2.
1.11 No comments received from the stakeholder groups in the EA.	DECC	Comments have been sought from the stakeholders and will be included in the Report when it is circulated to DECC and the various stakeholder groups.
1.12 Recommended consent conditions to address management of Archaeological material are listed together with requests for copies of the assessment report.	DECC	The proposed conditions are acceptable to Gunlake and form part of commitments already made. Gunlake will ensure that the Specialist Consultant used for the assessment has or will forward copies of documents as requested.
1.13 Recommended a series of consent conditions relating to management of potential impacts on Air Quality.	DECC.	The recommended conditions are acceptable to Gunlake. It is noted that the DECC recommend that the Ambient Air Monitoring occur at R1 as identified in the EA. Gunlake would prefer that this be identified as "..preferably R1, but failing this, a suitable location as agreed with the DECC and subject to site constraints". This would overcome any issues that may arise should access to R1 not be possible, agreement with the occupant cannot be achieved, or there are limitations to the suitability of the proposed site.
1.14 Recommended consent conditions were provided to address potential salinity and sodicity impacts.	DECC.	The recommended conditions are acceptable to Gunlake.
1.15 Recommended consent conditions in relation to proposed pollution control measures for water quality.	DECC.	Gunlake have met the requirements of the currently published Blue Book and cannot comment on whether it agrees with matters discussed in a "soon to be released" document. If the proposed new edition of the Blue Book is not released by the time Gunlake constructs the quarry it would be in a difficult position with regard to meeting the consent conditions.

		It is noted that the Department of Primary Industries has no objection to the proposed soil and water management measures recommended in the EA. The Sydney Catchment Authority and the Department of Water and Energy do not specifically address which Edition of the Blue Book should be used, but Gunlake believe these Agencies are referring to the current Blue Book. The other proposed conditions for water quality control are acceptable to Gunlake.
1.16 The DECC provide plenty of comment on the Noise Assessment, generally accepting the methodology and criteria determined.	DECC.	Gunlake believes the NIA has been undertaken professionally and predicts likely impacts accurately.
1.17 The duration of the construction is not identified and there is no By-pass Road construction noise assessment.	DECC.	As stated on page 24 of the Heggies Report (Refer EA Volume III, Part 4) the period of construction is between 4 and 26 weeks. The Specialist Consultant did not undertake a specific By-pass Road construction noise assessment as they determined that one was not required due to the distances between the proposed road and existing residences.
1.18 There are no Project Specific Noise Levels (PSNLs) for the Proposed Residence R5.	DECC.	The PSNLs for R5 are presented in Tables 15 to 18 of the Heggies Report (Refer EA Volume III, Part 4, Section 10.2).
1.19 Concerned about the noise of the proposed jaw crusher.	DECC.	This matter has been addressed by Heggies and included as Appendix II in the Gunlake Quarries Report, "Response to DECC Comments" dated 12th March 2008. A copy of this report is included as Appendix III of this response document. (Refer to "Item 1 Response to Issue 2.6" in the Heggies Report included in the 12th March Report).
1.20 DECC has concerns that the road traffic noise assessment has been underestimated, particularly for night-time traffic movements. It also appears that the NIA does not include an assessment of sleep disturbance for traffic movements associated with the site during night-time period.	DECC	Gunlake and Heggies believe that the DECC concern about the road traffic noise assessment results from misinterpreting data from Section 11 of the Heggies Report (Refer EA Volume III, Part 4, Section 11). Heggies have developed data presented in Tables 24, 26, 28, 29 and 30 that defines the "Maximum allowable vehicle movements". These are not the proposed vehicle movements, but have been derived to show that the proposed traffic levels resulting from the Gunlake Quarry Project are below the "Maximum allowable vehicle movements" as defined by the DECC criteria. The implications of the data in these Tables is discussed on the dot points on pages 31 and 32 of EA Volume III, Part 4, Section 11. An assessment of the potential for night time sleep disturbance is included in Appendix II in the Gunlake Quarries Report, "Response to DECC Comments" dated 12th March 2008. A copy of this report is included as Appendix III of this response document. (Refer to "Item 1 Response to Issue 2.8" in the Heggies Report included in the 12th March Report).

1.21 A cumulative noise assessment of traffic noise levels, taking into account traffic from Johnniefelds Quarry, Lynwood Quarry and Gunlake Quarry does not appear to be included in the NIA.	DECC	The traffic generated by the Johnniefelds Quarry forms part of the existing traffic flow data upon which the Gunlake Quarry traffic noise assessment was based. For the proposed Lynwood Quarry, operational traffic will use a "to be constructed" dedicated access road from the Hume Highway to the quarry, at an intersection approximately 3km south of Marulan. During construction of the Lynwood Quarry, traffic access is generally via Portland Avenue and Wilson Drive from the Hume Highway, not contributing any traffic to the Highway access roads to be used by Gunlake Quarry traffic. Only for the short period during the construction of the rail overpass will low levels of traffic (only 10 vehicle trips per day) access Stoney Creek Road via Brayton Road (Lynwood Project EIS). These vehicles will operate daytime only. The allowable additional truck movements through Brayton Village are 13 per hour (Refer Table 4.46 Gunlake Quarry Project Volume I). Consequently, the DECC's traffic noise criterion will still be met if both the proposed Lynwood traffic and the proposed Gunlake Quarry movements were to occur simultaneously.
1.22 A list of proposed Conditions of Consent to manage potential noise impacts are provided.	DECC.	Some of these proposed conditions are not acceptable to Gunlake. The reason for this is detailed in Section 3 of this response document.
1.23 The Department of Primary Industries provided a number of proposed consent conditions.	DECC	These proposed consent conditions are acceptable to Gunlake.
1.24 The Department of Water and Energy have no objections to the approval of the Gunlake Quarry Project. They request a number of recommendations to be implemented to alleviate potential groundwater impacts.	Department of Water and Energy (DWE).	These proposed conditions are acceptable to Gunlake.
1.25 The designs for the two creek crossings in Joarimin Creek and Chapman's Creek to be submitted to DWE for endorsement to ensure they are consistent with NSW Government guidelines.	DWE	Gunlake will submit the designs as requested prior to construction.
1.26 The RTA will require the closure of the existing median break on the Hume Highway prior to the commencement of Stage 2 of the development proposal.	Roads and Traffic Authority. (RTA).	Gunlake have committed to this closure at the RTA's request. Closure of this intersection and its environmental impacts is fully described in the EA. The Project Community Consultation program included information on the closure of this intersection. Gunlake will re-advise people affected by this activity closer to closure.

1.27 No support for the option to make a right hand turn from the Hume Highway to Portland Avenue.	RTA.	This was an option considered by Gunlake and rejected by the RTA and Council. Gunlake included the option in the EA to provide a complete description of the alternatives considered.
1.28 A list of considerations are provided for the Department of Planning to incorporate into any development consent conditions.	RTA.	These considerations are generally acceptable to Gunlake. However, Gunlake believes that there is no requirement for lighting and consequently does not agree with the proposed condition relating to lighting. The ability of other Government Departments or Agencies to require subsequent approvals to activities that are part of a Part 3A Project needs to be clarified. It appears that there are consents required from RTA subsequent to the Project Approval from the Department of Planning.
1.29 Sydney Catchment Authority raised a number of issues that they believed were inadequately addressed in the EA and made suggestions for appropriate development consent conditions.	Sydney Catchment Authority (SCA).	The development consent conditions suggested by SCA are acceptable to Gunlake with the following qualifying comments. Surface water monitoring should be restricted to monitoring water quality in Chapman's Creek and tributaries. Chapman's Creek is adjacent to the quarry site and will be the creek most exposed to potential impact. It is also intermittent and monitoring water flows is not beneficial in assessing impact. Joarimin Creek has a large catchment area above the proposed creek crossing and includes a wide range of land uses all with potential to impact the water quality. Requiring Gunlake to monitor water in Joarimin Creek will not add to the management database that Gunlake could utilise to manage environmental impacts. The proposal for a public positive covenant under Section 88 E of the Conveyancing Act 1919 is not acceptable to Gunlake. The fencing will be undertaken in accordance with the proposed locations as identified in the EA and the additional location as suggested by SCA. Gunlake believe there is no requirement for a covenant to ensure compliance and that the existing controls provided by the Project Approval are appropriate for that purpose.

Table 4.2. Summary of Community Submissions and Gunlake Responses.

ISSUE	COMMUNITY MEMBER	RESPONSE AND COMMENTS
2.1 Time of truck movements and the number of trucks.	Morgan and White Neville Thompson Switzer Red Hills Road Committee Stapleton Cameron Underdown and Toh Mitchell Potter	Gunlake have modified the proposed trucking hours as follows. During Stage 1 product will only be transported from the site from 6am to 7pm Mondays to Fridays and from 7am to 1pm on Saturdays. This is consistent with the current Johnniefelds Quarry trucking hours. During Stage 2, the trucks going south (ie. along Brayton Road and through the edge of Marulan) would continue to operate during the same times as those for Johnniefelds. Trucks using the Bypass Road would operate from 2am Monday morning till 6pm Saturday afternoon. Truck numbers for each Stage will remain the same as described in the EA.
2.2 Road conditions and the capability of the road to handle the proposed number of trucks. Submissions describe Brayton Road as a rural road.	Morgan and White Beattie Howard Mitchell Switzer D'Aprile Neville Nayanar	The Transport Study compiled by Christopher Hallam has assessed the capacity of the truck routes. (EA Volume II Part 1). Gunlake has proposed road improvements in accordance with the Council DCP and has undertaken a Pavement Structural Evaluation and commissioned a Pavement Remaining Life Report for all sections of the haul routes. Brayton Road is classified by Goulburn Mulwaree Council as an Arterial Road. It leads traffic to a grade-separated interchange on the Hume Highway at Marulan.
2.3 The Maywood Sands Proposal and subsequent Court Case was put forward to justify not approving the Gunlake Quarry Project.	Morgan and White Beattie Cameron Underdown and Toh	This application was refused consent on the grounds that the operational and transport noise impacts had not been addressed due to *the absence of a comprehensive appraisal* (in reference to a comprehensive acoustical appraisal) in addition the judge stated that *I have not been satisfied that the dust problems that are likely to be created by the operation of the same extractive industries have been adequately resolved.* Both the noise and dust potential impacts and their mitigation have been fully addressed in the Gunlake EA.
2.4 Payment of Levy for Road maintenance.	Morgan and White Beattie Switzer Cameron Underdown and Toh Mitchell	Gunlake has proposed a levy in accordance with Councils Section 94 Contribution Plan.

2.5 Noise and dust would be an unacceptable and ongoing impact from the Project. Cumulative dust and noise impacts have not been addressed.	Morgan and White Nayanar Beattie Howard Switzer Red Hills Road Committee Cameron Underdown and Toh D'Aprile Evans	Heggies assessments of noise and dust (EA Volume III Parts 4 and 5) demonstrate that this will not be the case. Management commitments are given in the EA to control and monitor these issues. Cumulative noise and dust impacts have been provided. For dust impacts refer to EA Volume III Part 5 Section 6.7 and Volume I Section 4B.5.8. For Noise refer to EA Volume III Part 4, Section 12 and Volume I Section 4B.4.9.5. Likely trucking noise impacts are described in Table 4B.50 of the EA and Table 25 of the Heggies Report. The location of the residences are shown on Figure 4.A3. Table 4B.42 of the EA and Table 12 of the Heggies Report shows the assessment criteria. The levels of increased dust fallout should not affect water quality.
2.6 The EA does not record every residence likely to be affected by the proposal.	Morgan and White Beattie Cameron	The EA records all residences adjacent to the Quarry and the haulage routes until Brayton Road passes through Marulan. The number of houses within Marulan was identified and background noise surveys were conducted at 17 Brayton Road. The EA identifies those residences that are the most likely to be impacted. The assumption being that if the impact criteria are met at the residence most likely to be adversely affected, then the criteria are likely to be met at all other residences.
2.7 The need for the quarry is challenged.	Morgan and White Beattie	The need for the quarry is addressed in Volume I in Section 2.1.1. The quarry will be located in an area identified by the State Government as ideally situated to replace the existing hard rock quarries that are running out of resources. The key objectives are to meet future demand and to provide competition in the market. These benefits are identified as positive in the Department of Primary Industries' response to the Environmental Assessment, *"The Project could make a significant long term contribution to meeting the coarse aggregate requirements of the Sydney region, the local area and markets to the south of Marulan. In addition, the entry of a significant additional producer into the coarse aggregate and manufactured sands markets would increase the current level of competition in these markets".* Additionally, the Gunlake Quarry will provide much needed competition to the local market.
2.8 It is proposed that the Project will adversely affect land values. Compensation should be offered.	Morgan and White Neville Nayanar Switzer Stapleton D'Aprile	The EA assesses the likely effects on land values (Refer EA Volume I Section4B.10.3.4). Given the low predicted environmental and amenity impacts for the proposal and the management commitments provided, a requirement for land acquisition or compensation is not warranted.

2.9 The proposal represents a conflicting land use.	Morgan and White Baker	The Council Local Environmental Plan permits Extractive Industries within the 1(a) zoning with approval. The EA process is part of seeking that approval. Gunlake believe that a conditional approval will ensure any land use conflicts are addressed or minimised.
2.10 B-double truck configurations are not appropriate for this area.	Morgan and White	Gunlake will seek approval to operate B-Doubles on the transport routes. The traffic impact assessment and the proposed transport route upgrades have taken into account the requirements for safe operations of B-Double vehicles.
2.11 Lack of capacity in the local power distribution system.	Morgan and White	Gunlake have had extensive discussions with Country Energy and will be supplied with power to meet their requirements.
2.12 Rumour of the closure of the right hand turn into Wollumbi Road.	Morizzi	This is not part of the proposal and is a rumour.
2.13 What measures are proposed by the RTA to prevent trucks from using Wollumbi Road to access Red Hills Road and then the quarry.	Morizzi Switzer	Gunlake will implement a Product Transport Protocol that will ensure all truck drivers are aware of the approved transport route. The approved transport route would be defined in Project Approval conditions.
2.14 Develop a common product transport and or access route in conjunction with the recently approved Readymix Lynwood Quarry.	Neville Nayanar Switzer\ Red Hills Road Committee Evans	This is not a viable option as Gunlake doesn't adjoin Readymix Lynwood and that quarry has a dedicated private haul road to the Hume Highway.
2.15 Truck numbers used in the EA should be doubled to allow for return trips.	Neville Howard	Return trips have been included in the vehicle numbers used in the EA. Unless otherwise identified, truck numbers refer to both loaded and unloaded vehicles.
2.16 Other trucks will be able to use Red Hills Road to avoid the RTA Weigh Station at Marulan.	Neville Beattie Switzer Red Hills Road Committee	This is a matter for the RTA and sanctions exist for purposefully avoiding RTA weigh stations.
2.17 Has the fact that school buses use the transport route been considered? Are safe/adequate bus stops available?	Thompson Beattie Howard Red Hills Road Committee	Gunlake consulted with the owner of the bus company and will provide approximately 3 pull over lanes for school buses to pick up and set down children along Brayton Road as well as advisory signs on the quarry site and haul road indicating the presence of the school bus. Further discussions with the bus operator and Council will determine detailed requirements closer to construction. Trucking contractors and site employees will be made aware of the use of the transport route by school buses. The bus company favours using the proposed By-pass Road as it is a safer route than the current use of the Hume Highway to get to and from Marulan.

2.18 The By-pass Road should be built at the commencement of the Project and all transport should be via that road.	Thompson Mitchell	The levels of production (and subsequently product transport) at the start of the Project cannot justify the construction of the By-pass Road from commencement. The By-pass Road will be built when the product transport levels exceed the average of 25 movements per day.
2.19 Additional vehicles will affect the comfort, sleep and safety of the current and future residents.	Thompson Switzer Morgan and White Beattie Cameron	This has not been shown to be the case. Refer Noise, Traffic and Amenity Assessments (Respectively refer to EA Volume III, Part 4; EA Volume II, Part 1; and Appendix I of this response document).
2.20 The community consultation process was not adequate.	Nayanar Beattie Baker	Gunlake undertook an appropriate community consultation process as described in the EA Volume I Section 3.2.2.1. The Company was invited to make a presentation to the Big Hill Community Meeting and was attended by Mr Ed O'Neil. In relation to the Beatties, Mr O'Neil tried to contact them personally but were unable to find them in the phone book and went to their house twice but the gate was locked on both occasions. The first newsletter was personally dropped into their letter box. Three Newsletters have been distributed, the last indicating the current stage of the development and the fact that the Environmental Assessment was available for review and comment. There was a community information evening as well as newspaper articles, radio items and advertising that has provided ample opportunity for the community to be aware of the proposal. Gunlake's Mr Ed O'Neil has personally been available for the community consultation activities and has had contact with many residents in the area.
2.21 Water flows in Joarimin Creek will be adversely affected by the Project.	Nayanar	This has been addressed in the EA.
2.22 Flora and fauna impact assessment inadequate. No beneficial effects and habitat destruction.	Nayanar Beattie Underdown and Toh	A comprehensive Flora and Fauna Assessment has been undertaken by Ecotone Ecological Consultants and Laterals Planning (Refer EA Volume IV Parts 7 and 9). Additional assessments were undertaken in response to submissions on the draft EA received from the Department of Environment and Climate Change. The results of the additional assessments are included as Appendix III in the Gunlake Quarries Report, "Response to DECC Comments" dated 12th March 2008. A copy of that report is included as Appendix III of this response document.
2.23 The quarry and associated traffic will adversely impact on the amenity and lifestyle of the community.	Nayanar Beattie Howard Switzer Cameron Baker Underdown and Toh	Refer to assessment report from Consultant Planner, Mr Andrew Darrock from Mersonn Pty Ltd (Appendix I this response document). This assessment concludes that, after a comprehensive review of relevant aspects, amenity impacts will be acceptable. The various Specialist Consultant studies undertaken for Gunlake do not indicate that the quarry and associated traffic will result in adverse impacts to the environment. Gunlake propose to implement a range of management actions to control and minimise any potential impacts identified. In all cases, it has been

		predicted that the Gunlake Quarry Project will achieve the recognised criteria.
2.24 Suggestion of the use of rail to distribute the product.	Beattie Onions	Gunlake cannot use rail transport to distribute the product from the proposed quarry.
2.25 Inadequate intersection and road design and safety.	Beattie Switzer	The intersections and road sections have been designed in accordance with relevant Standards (Refer EA Volume II, Part 1, Section 3. These standards address road capacity, safety view distances and other matters relevant to determining appropriate road and intersection design. The Jaorimin Road intersection is 160m south of the new By-pass Road intersection and will not have an increase in traffic that would require any modifications. Fog and frost are hazards that drivers should always be aware of and drive accordingly.
2.26 The proposal will affect surface water supplies and drinking water catchments.	Beattie Baker	This claim is not supported by a number of Government Departments and the various Specialist Consultant Studies commissioned by Gunlake and included in the EA. Refer EA Volume II, Part 2 for a detailed assessment of surface water quality impacts. In addition, the Sydney Catchment Authority consider, "… that the development is likely to achieve a neutral or beneficial effect on water quality.." providing a number of management issues were implemented. Gunlake will implement those requirements. The Department of Water and Energy have advised the Department of Planning that, "…they have no objections to the approval of the proposed Gunlake Quarry Project".
2.27 The 100kph speed limit is not appropriate.	Howard Switzer Mitchell	Gunlake has proposed an 80kph speed limit on the rural sections of the transport route and maintenance of existing limits where they are lower than this.
2.28 Blasting will cause damage to house.	Howard	This claim is not supported by the Specialist Consultant assessment of this matter (Refer EA Volume III, Part 4 Section 13). The assessment indicates compliance with even the most stringent human comfort criteria.
2.29 Removal of the ability of south bound traffic to make a right hand exit from the Hume Highway into Red Hills Road. The Bypass Road should not be built.	Switzer	This has been requested by the RTA for safety purposes. In a letter to Mulwaree Shire Council, dated 10th August, 2000, M.G&R Switzer Pty Limited objected to the original proposal for the opening of the intersection of Red Hills Road and the Hume Highway as their preferred option was for a road connecting Red Hills Road to Brayton Road. This is being proposed by Gunlake and has been historically recognised as an improvement to the local road network.
2.30 Provision of tree planting along the road to dampen road noise, dust suppression and visual pollution.	Switzer	Gunlake do not consider that this is necessary.

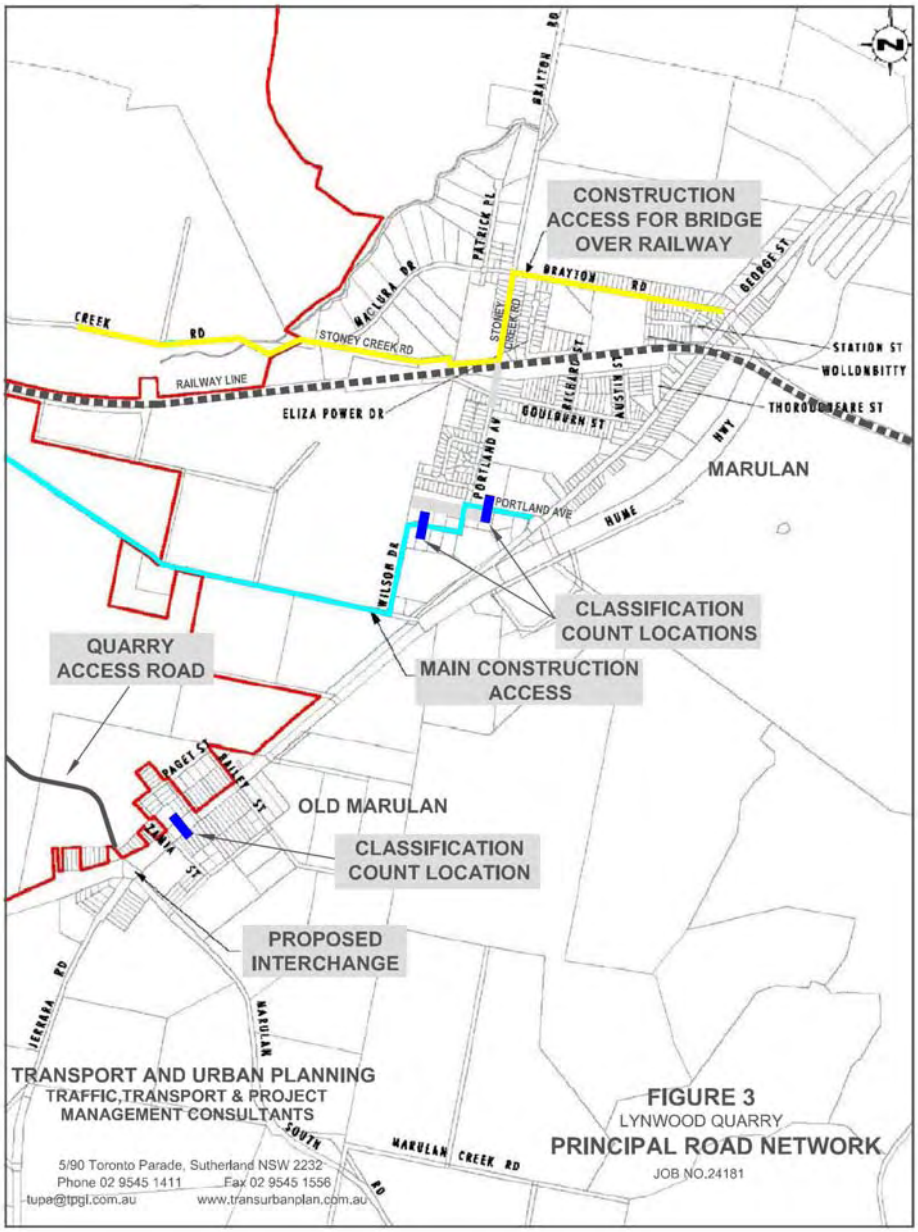
2.31 No formal approval of the road connection between Brayton Road and Red Hills Road has been granted by NSW Department of Lands or Goulburn Mulwaree Council.	Cameron	This approval process will follow the granting of consent by the Department of Planning. It is not efficient for the Council or the Department of Lands to approve road construction prior to the granting of Project Consent.
2.32 Gunlake's trucks will avoid the RTA Checking Station in Marulan.	Cameron	Gunlake trucks will access the Highway on an approved access road.
2.33 Gunlake must prove an adequate supply of water from start up.	Cameron	Gunlake have defined a secure water supply based on surface runoff water for general operating requirements and roof catchments for potable water supply.
2.34 Relocation of Indigenous archaeological sites.	Baker	This approach was preferred by the Aboriginal Community representatives as the method of ensuring the archaeological material is preserved. The Community representatives suggested this approach and Gunlake will undertake site relocation in accordance with their wishes.
2.35 The effect on affordable housing.	Baker	Gunlake do not believe their proposals will adversely affect the affordability of housing in Marulan or elsewhere. Provision of competition into the local market would contribute positively to housing affordability.
2.36 The introduction of quarries into the area will significantly reduce the development of emerging industries (arts and agriculture).	Baker	The area of land affected by the quarry is not highly productive agricultural land. Morse McVey have assessed that, *"…the development of the quarry, its access road and the Marulan By-pass will not affect any lands of significant agricultural value"*. The State Government and the local Council have identified the Marulan area as an area that is suitable for future hard rock quarrying. The Gunlake proposal is consistent with this recognition.
2.37 Impact on local tourism especially weekend blasting and inhaling dust.	Baker	Dust levels are not predicted to be a problem and there will be no blasting on weekends. The experience in the Hunter Valley is an example on a much larger scale of the ability of wine/tourism and mining to co-exist. Gunlake is proposing management actions that will minimise the likely environmental impact of the quarry.
2.38 Possibility of drying up other peoples bore water supplies.	Baker	The Specialist Consultant commissioned to undertake the groundwater assessment has predicted that the proposal is unlikely to affect regional groundwater bores Refer EA Volume II, Part 3, Section 12.4.3). Gunlake do not propose to obtain any water supplies from groundwater bores.
2.39 Minimal employment results from the Project.	Baker	Gunlake will employ 20 people directly on the quarry and 25 truck drivers. There will be additional contract employees involved in product transport and support industries and services. Gunlake believe that this is a significant contribution to employment.
2.40 No mechanism for land acquisition should the proponent fail to comply	Underwood and Toh	Gunlake believe that there is very low potential for not complying with guidelines for noise and air pollution and consequently do not believe it is

with the guidelines for noise and air pollution guidelines.		necessary to determine a potential land acquisition process for the Project.
2.41 Safety of continued horse riding on Brayton Road.	D'Aprile	Brayton Road is classified as an arterial road by Goulburn Mulwaree Council. This indicates that traffic levels are more likely to increase than decrease on this road. Horse riding along the road will require attention to safety aspects. These should be no greater than those required to safely ride horses on public roads elsewhere.
2.42 The EA fails to address the impacts on Lockyersleigh Station and the "Life Style" lots between the Station and the project site of the proposed development.	Onions	Gunlake have assessed the impact on the relevant "Life Style" lots. The sub-division plan that GHD refers to is part of DA# 012/214 and has been superseded by DA# MOD/0069/0607 to Development Consent No. 189/0405DA from Goulburn Mulwaree Council. Gunlake has correctly located the potential residence as drawn on sheet No.2 dated 22/09/05 ref.No:166001 from RJ Kell and Co. Consulting Surveyors as part of DA # 189/0405/DA. The EA does not specifically address Lockyersleigh Station. However, it does so indirectly and satisfactorily by addressing the impacts on the most likely affected residences and inferring that if the criteria are met at the most likely affected residences than they will also be met at all other residences.
2.43 A definitive timetable for the construction of Stage 2 By-pass should be established.	Onions	Stage 2 will be constructed when trucks movements will exceed the average of 25/day. This is a variable timeframe and cannot be defined in time. Gunlake predicts that it is likely to occur somewhere between 3 and 5 years after the start of production.
2.44 A Community Consultation Group be established.	Onions	Gunlake is amenable to this proposal. Consideration should be given to expanding the role of any existing Community Consultative Committees to provide for efficiency.
2.45 Traffic in George Street will be unacceptable.	Morgan Evans	George St will have only 2-3 trucks per day and only in Stage 1 and this will only be during the newly proposed operating hours (Refer 2.1). There will be no trucks travelling along George Street in Stage 2.
2.46 Impacts of crystalline silica.	Beattie Underdown and Toh	The reference to crystalline silica quotes an occupational hazard level and not an environmental hazard level. In addition, the units for dust concentration level quoted in the submission are mixed and the levels of crystalline silica predicted by Heggies (Refer EA Volume III, Part 5, Section 6.6) are still at least an order of magnitude below the occupational hazard level.

Table 4.3. Summary of Special Interest Groups' Submissions and Gunlake Responses.

ISSUE	COMMUNITY MEMBER	RESPONSE AND COMMENTS
3.1 Questions the need for another quarry.	Davies (Johnniefelds)	The need for the quarry is addressed in the EA Volume I, Section 2.1.1. The quarry will be located in an area identified by the State Government as ideally situated to replace the existing hard rock quarries that are running out of resources. The key objectives are to meet future demand and to provide competition in the market. These benefits are identified as positive by the Department of Primary Industries in their response to the Environmental Assessment, *"The Project could make a significant long term contribution to meeting the coarse aggregate requirements of the Sydney region, the local area and markets to the south of Marulan. In addition, the entry of a significant additional producer into the coarse aggregate and manufactured sands markets would increase the current level of competition in these markets"*. As Johnniefelds quarry is currently leased to Cemex by Mr Davies, another quarry would bring essential competition into the local market as Cemex with the Lynwood Quarry have a monopoly in the supply of concrete aggregates and sealing aggregates in the local area. Boral has no approval for road transport and will be unable to supply local markets. The Amenity Assessment (Appendix I this response document) notes that, *"The introduction of a second tier supplier is necessary to keep prices competitive"*.
3.2 Using Brayton Road for product transport is not appropriate.	Davies (Johnniefelds).	Brayton Road is classified by the Goulburn Mulwaree Council as an Arterial Road. It leads traffic to a major entry ramp onto the Hume Highway at Marulan indicating an expectation of heavy traffic use. Hallam has assessed the capacity of the truck routes. (EA Volume II, Part 1). Gunlake has proposed road improvements in accordance with the Council DCP and has had undertaken a Pavement Structural Evaluation and commissioned a Pavement Remaining Life report of all sections of the haul routes. The Amenity Assessment (Appendix I this response document) notes that using Brayton Road for future haulage of a wide range of products and materials is expected and has been planned for in various Council planning instruments.
3.3 The proposal to use the round about at Portland Avenue is not suitable.	Davies (Johnniefelds).	This was an option considered by Gunlake and was rejected by the RTA and Council. Gunlake included the option in the EA to provide a complete description of the alternatives considered.

3.4 A grade separation is required at the Red Hills Road and Hume Highway intersection, or use the proposed Lynwood Quarry intersection arrangements.	Davies (Johnniefelds).	Using the proposed Lynwood Quarry intersection arrangements is not a viable option as Gunlake doesn't adjoin Readymix Lynwood and that quarry has a dedicated private haul road to the Hume Highway. A grade separated interchange for the proposed number of trucks per day cannot be justified.
3.5 The hours of operation should be the same as those for Johnniefelds.	Davies (Johnniefelds).	Gunlake have modified the proposed trucking hours and they are now consistent with the current Johnniefelds Quarry. During Stage 1 product will only be transported from the site from 6am to 7pm Mondays to Fridays and from 7am to 1pm on Saturdays. During Stage 2, the trucks going south (ie. along Brayton Road and through the edge of Marulan) would continue to operate during the same times as those for Johnniefelds. Trucks using the newly-constructed By-pass Road would operate from 2am Monday morning till 6pm Saturday afternoon. Truck numbers for each Stage will remain the same as described in the EA.
3.6 The EA does not address visibility of the quarry from nearby residences.	Davies (Johnniefelds).	The quarry is not visible from nearby residences. This is stated in EA Volume I, Section 4B.8.1.
3.7 The EA does not comply with the DGRs as it fails to adequately assess the potential cumulative impacts of the Gunlake Project with Johnniefelds Quarry and Lynwood Quarry in respect of Traffic and Transport, and Noise.	Cemex	The EA does address cumulative impacts of traffic and transport and noise. For Noise refer to EA Volume III Part 4, Section 12 and Volume I, Section 4B.4.9.5. In their submission, Cemex state that it, *"…has interests in two hard rock quarry projects situated in the vicinity of the proposed Gunlake Quarry Project"*. These two quarries give Cemex a monopoly in concrete aggregates and sealing aggregates in the local market as Boral do not have approval for road transport. Cemex's statement that they have approval to move 100,000t of product along Stoney Creek Road is misleading. This route is only a temporary access for the construction of the rail overpass (Refer attached Plan). The EIS for the Lynwood proposal states, *"Stoney Creek Road's role during the construction period will be relatively minor (i.e. small number of employee and delivery trips for several months).* This small amount of vehicular movement along this road by Cemex will not contribute significantly to vehicle movements on that road. The Level of Service was assessed for Highway intersections. The traffic flows on Brayton Road are so low that the Level of Service will be A at all locations.


CONSTRUCTION ACCESS FOR BRIDGE OVER RAILWAY
CLASSIFICATION COUNT LOCATIONS
MAIN CONSTRUCTION ACCESS
QUARRY ACCESS ROAD
CLASSIFICATION COUNT LOCATION
PROPOSED INTERCHANGE
OLD MARULAN
MARULAN
BRAYTON RD
STONEY CREEK RD
RAILWAY LINE
ELIZA POWER DR
PORTLAND AVE
WILSON DR
HUME HWY
STATION ST
WOLLONDILLY
THOROUGHBARE ST
GOULBURN ST
PAGET ST
BAILEY ST
TRANSPORT AND URBAN PLANNING
TRAFFIC,TRANSPORT & PROJECT MANAGEMENT CONSULTANTS
5/90 Toronto Parade, Sutherland NSW 2232
Phone 02 9545 1411 Fax 02 9545 1556
tupa@tpgl.com.au www.transurbanplan.com.au
FIGURE 3
LYNWOOD QUARRY
PRINCIPAL ROAD NETWORK
JOB NO.24181

Appendix I.

Amenity Assessment. Gunlake Quarry Brayton Road Marulan. Proposed Hard Rock Quarry. May 2008. Mersonn Pty Ltd.

Amenity Assessment

Gunlake Quarry

Brayton Road, Marulan

Proposed Hard Rock Quarry

Part 3A Application

May 2008

Mersonn Pty Ltd
8/8A Wylde Street
Potts Point NSW 2011

CONTENTS

1.0 INTRODUCTION

1.1 Background

An application has been submitted by Gunlake Quarries to the Minister for Planning under the provisions of Part 3A for a Project Approval to develop and operate a hard rock quarry near the town of Marulan. The quarry is proposed to be located on a 230ha site approximately 8km north-west of the town. The proposed quarry excavation will only occupy approximately 6ha of the available site but will be able to produce up to 500,000 tonnes per annum of saleable product over thirty years. The proposal will generate employment for 20 on site employees and a further 25 haulage operators.

An Environmental Assessment has been prepared by Olsen Environmental Consulting Pty Ltd supported by specialist reports. The Key Issues for consideration have been identified through a process of stakeholder consultation with the relevant government entities, authorities and community. This has lead to a detailed examination of the proposal and its expected impacts which has been exhibited for comment. The exhibition process identified a number of areas which required further information and examination. One of these areas was the impact of traffic on the residential amenity along the proposed haulage routes.

The proposed development utilises a two stage approach to haulage. During the First Stage the haulage route utilises the existing road system of Brayton Road to access the Hume Highway underpass. Haulage during this Stage is restricted to an average of 25 truck movements per day. It is estimated that 2- 3 truck movements per day will occur through the town centre for trucks returning from the south.

During the Second Stage, in approximately 3 – 5 years, when truck movements will exceed the average of 25 truck movements per day, a by-pass will be constructed to connect Brayton Road to Red Hills Road for all north bound, and return trips and will accommodate approximately 75 truck movements per day. During the second stage the Brayton Road route will continue to accommodate 25 south bound trips per day for an estimated 100 truck movements per day in Stage 2.

The trucks utilising the haulage routes are proposed to be articulated semi-trailers and truck and dog rigs. A further 40 light vehicles movements are expected each day by staff working at the site.

The proposed hours of haulage are 24 hours per day with the exception of Saturday 6:00pm to Sunday 9:00pm during Stage 1.

The proposed hours of haulage during Stage 2 will be 9pm Sunday to 6pm Saturday for the by-pass route and Monday to Saturday 6:00am to 6:00pm through Marulan.

A number of submissions were made during the exhibition of the proposal which raised concern about the impact on residential amenity arising from truck on the designated haulage routes. While much of the route between the proposed quarry and the Hume Highway is rural land, approximately the last kilometre passes through land zoned for Village use.

A recent decision of the Land and Environment Court involving an application for a hard rock quarry at Ardmore Park (CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302) concluded that "t*he planning scheme embodied by the LEP is to be discerned by a realistic appreciation of its intended operation and from the instrument read as a whole. It is unrealistic to assume that the LEP contemplates that impacts from development in one zone are irrelevant or immaterial if they are experienced in another zone. It is inconsistent with the provisions of the LEP to make that assumption. The relevance of impacts of development, irrespective of zone boundaries, is evident in many provisions in the LEP. It is implicit in: (i) the aims of encouraging the proper management of resources (cl 2(a)), (ii) the 1(a) zone objectives, particularly those contained in subcl (b), and (iii) the 2(v) zone objectives, particularly in their recognition of the "urban function" of villages and promoting development in them by, amongst other things, improving their amenity, and is explicit in cl 10(f). With respect to cl 10(f), it is difficult to accept that the planning scheme embodied by the LEP expressly concerns itself with the effects of development on the expansion of future settlement yet has no concern about the effects of development on existing settlement. Proper construction of the 2(v) zone objectives also does not permit this conclusion. The objective is to promote development within existing towns and villages compatible with their urban function. Improving the amenity of the various uses with the towns and villages is one nominated strategy to achieve this objective. Development that compromises or undermines the amenity of towns and villages also compromises or undermines part of the planning scheme embodied by the LEP whether or not the development occurs on land zoned 2(v). Whether that consequence is acceptable or not depends on balancing all relevant factors contained in s 79C(1). … The impacts of the proposed development on the village of Bungonia should be assessed within the context set by the LEP as a unified scheme."*

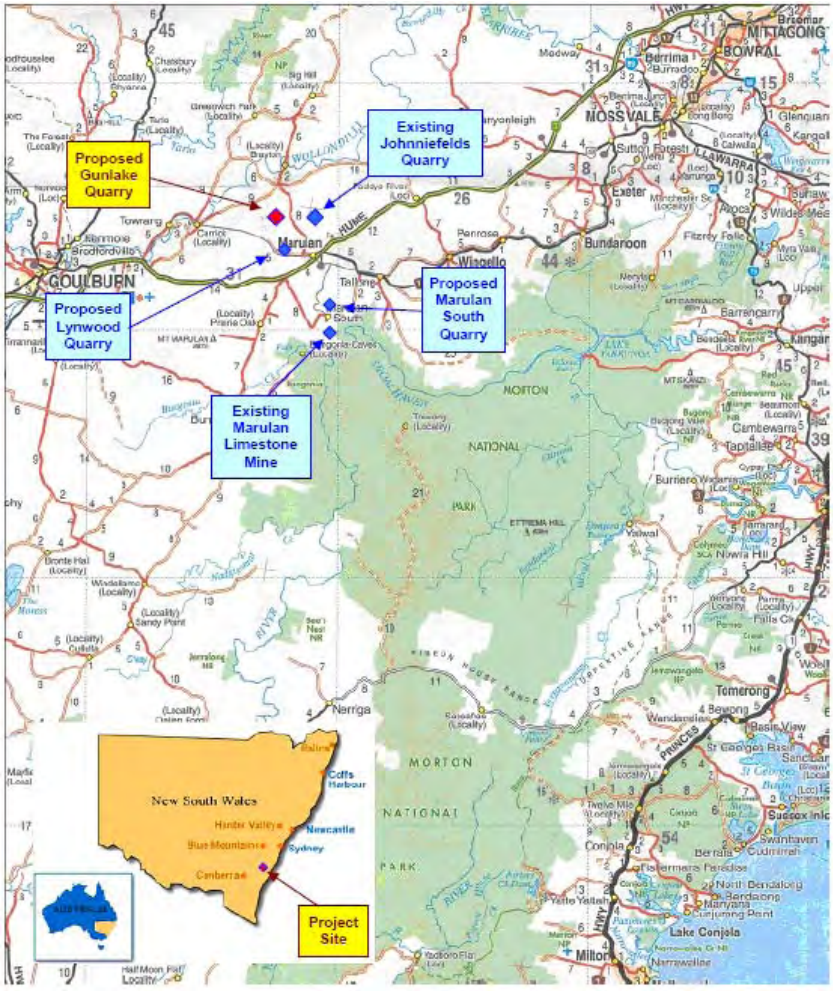
This means that the subject proposal needs to assess the amenity impacts experienced by residences along the haulage route and balance those assessed impacts against all relevant factors contained within s 79C(1). The purpose of this report is to carry out that assessment of amenity impacts and to balance those impacts against all relevant factors contained within s 79C(1).

1.2 Application History

Studies undertaken by the Department of Mineral Resources (2000) demonstrated that the future demands of the Sydney Region for hard rock aggregates cannot be met within 100km radius of Sydney due to the depletion of resources and land use pressures. The Penrith Lakes Scheme, which is a major source of hard rock product is due for depletion around 2010.

Gunlake Quarries intends to provide aggregates for its own concrete operations in Sydney as well as other potential markets. The proposed Gunlake Quarry will provide Gunlake operations with secure, long-term supplies of aggregate and manufactured sand. Purchase of aggregates from the major suppliers would be at a higher cost than from the proposed Gunlake Quarry. The higher cost is likely to affect the long term viability of Gunlake's planned concrete operations.

Readymix operate the Johnniefelds Quarry approximately 2.2km east of the proposed Gunlake Quarry. Boral and Readymix have planned new hard rock quarries in the Marulan area, to be known as the Marulan South Quarry and the Lynwood Quarry respectively. These quarries have been designed to provide these companies with their own secure sources of hard rock aggregates for their operations. The EIS for the Readymix Lynwood Quarry identified that the purchase of aggregates from non-Readymix quarries was not a viable option for Readymix based on the issues discussed above.



Source: OEC 2008 p1-5

It is widely understood and accepted in the quarry industry that each major concrete producer must have its own secure long-term hard rock resource. The Gunlake Quarry will provide security of supply for Gunlake's concrete operations.

In relation to road base products, the Sydney demand for fine crushed rock will have to be satisfied in the near future, by quarries located well outside the Sydney region. Existing road base quarries will soon be exhausted and future new subdivision work, together with other road and highway requirements for crushed rock will have to be supplied from more distant sources. The Gunlake Quarry will be one of these sources and is proposed to fill part of the increased demand particularly to the southwest and northwest growth areas of Sydney.

Extensive drilling in 2006 identified the subject site as a significant hard rock reserve. The viability of quarrying the hard rock on the site is determined by the depth of the resource, the depth to the resource and the rock hardness. The hard rock resource occurs at the surface in the proposed quarry area, and the proposed quarry is planned to commence at a location that enables easy access to the hard rock and minimises the amount of excavation required prior to quarry production commencing. The site typically has a thin top soil cover of less than 25mm and less than 2m of

overburden. The average depth of the hard rock is greater than 100m and the hardness of the rock makes it suitable for a wide variety of uses including concrete and sealing aggregates, rail ballast, manufactured sand and road base. The hard rock resource is highly fractured which significantly reduces the extent of blasting required during quarrying. These are all factors which make this resource environmentally and economically significant. The character of the resource is such that its exploitation incurs a lower environmental and economic cost than similar hard rock resources. The resource is considered to have an economic life in excess of 100 years.

The site was identified by Gunlake Quarries in 2006 as an economic and environmentally sustainable resource. Further investigation by the proponent identified that the area selected for quarrying has a low agricultural potential predominantly limited to restricted grazing. The proposed quarry site supports very little native vegetation and is typically characterised by intermittent and isolated trees and a variable ground cover of predominantly introduced species. The vegetation does not provide any high quality fauna habitat.

Consultation with landholders of properties immediately surrounding the Project Site commenced in 2006. Gunlake provided opportunity to make contact and inform the local community members about the proposal. Gunlake representatives met individually or in family groupings with many of the residents adjacent to the proposed haulage routes. Many non-resident landowners were also contacted and given an opportunity to get more detailed information either by contact or via phone, email or post.

On 27.2.07 Gunlake representatives addressed 10 members of the Big Hill community at a meeting of the Big Hill Progress Association. In February 2007, Gunlake produced and distributed the first Community Newsletter followed by a second newsletter in June 2007. In March 2008, a third Newsletter was distributed. This Newsletter outlined the status of the Project assessment process, public availability of the Environmental Assessment and how submissions could be made. The distribution was undertaken via the local mail service (with hand delivery to Brayton Road residents) and 400 Newsletters were distributed each time. Gunlake also used advertisements and articles in the local newspaper, the Goulburn Post to advertise activities such as the Community Information Evening and to provide information to the regional community

A Community Information Evening on 9th August 2007 which was advertised on radio and in the Goulburn Post. The meeting was also promoted by 700 leaflets distributed throughout the local community. Approximately 35 people attended the evening and were able to obtain details of the proposal and to make comment on the proposal.

Community leaders and service group representatives were contacted and provided with information about the Project and given the opportunity to provide feedback. Groups contacted included the

Marulan Business and Tourism Association, Marulan Public School and the Big Hill Progress Association and the operator of the school bus on Brayton Road and Red Hills Road.

The matters raised in this consultation were addressed in the preparation of the Environmental Assessment.

Representatives of the Department of Planning, Goulburn Mulwaree Council, the Sydney Catchment Authority, the Department of Environment and Conservation, the Department of Water and Energy and the Department of Primary Industries (Mineral Resources) attended a Planning Focus Meeting held in February 2007 in the Marulan Community Hall and convened and co-ordinated by the Department of Planning. The RTA did not attend, however the proponent has liaised extensively with them subsequent to the Meeting. The Planning Focus Meeting provided each agency with an opportunity to gain an understanding of the proposal and to inspect the Project Site prior to formally providing their written requirements for the preparation of the Environmental Assessment.

All agencies subsequently forwarded their written requirements to DoP which formed the basis of the Director-General's Requirements. A presentation about the Project has been made to Goulburn Mulwaree Council to keep it informed of the developments and proposals. The Proponent has met Council Officers on a number of occasions since to discuss the proposals and to obtain Council's detailed requirements for the assessment.

The Environmental Assessment was prepared by Olsen Environmental Consulting Pty Ltd with supporting documentation from a variety of specialist consultants and completed on 14 February 2008. The EA was submitted to the Department of Planning on 4 March 2008 and placed on public exhibition until 9 April 2008.

Submissions received during the exhibition process raised a number of issues which required further information. The assessment of the amenity impacts of the proposed haulage routes was one of the matters raised in the submissions. The submission by the Goulburn Mulwaree Council objected to the proposal on the basis that the environmental and amenity impacts of the haulage route had not been adequately addressed. The report considered by the Council stated:

The key off site issue with quarry operations relates to the designated haulage route. The 'Ardmore Park' decision is instructive in this regard. The decision made it clear that the environmental and amenity impacts along the haulage routes were relevant matters for assessment. This decision also concluded that the likely amenity impacts of truck traffic through a village were unacceptable.

The submitted assessment for the proposal does not seem to have clearly addressed these principles established in the Ardmore Park decision. These principles are now included in the Draft DCP currently on public exhibition….

The Ardmore Park proposal has a comparable number of vehicle movements in its initial stage (ie:28 trucks per day). The Court found that the Ardmore Park proposal had an unacceptable amenity impact on the Bungonia Village. It can be expected that there would be similar amenity impacts on the Marulan township with heavy vehicles passing through the village. It should be noted that expansion of the village is proposed in the 2020 Strategy Plan on the northern side of Brayton Road. The haulage route has the potential to "split" the village.

The Ardmore Park Hearing discussed the concept of amenity impacts of a haulage route. This was considered not just to be compliance with published standards (eg: noise and vibration standards) but included an assessment of the impact on all aspects that contributed to the "pleasantness" (eg: sense of place) of the locality. The submitted assessment does not appear to have examined this broader view.

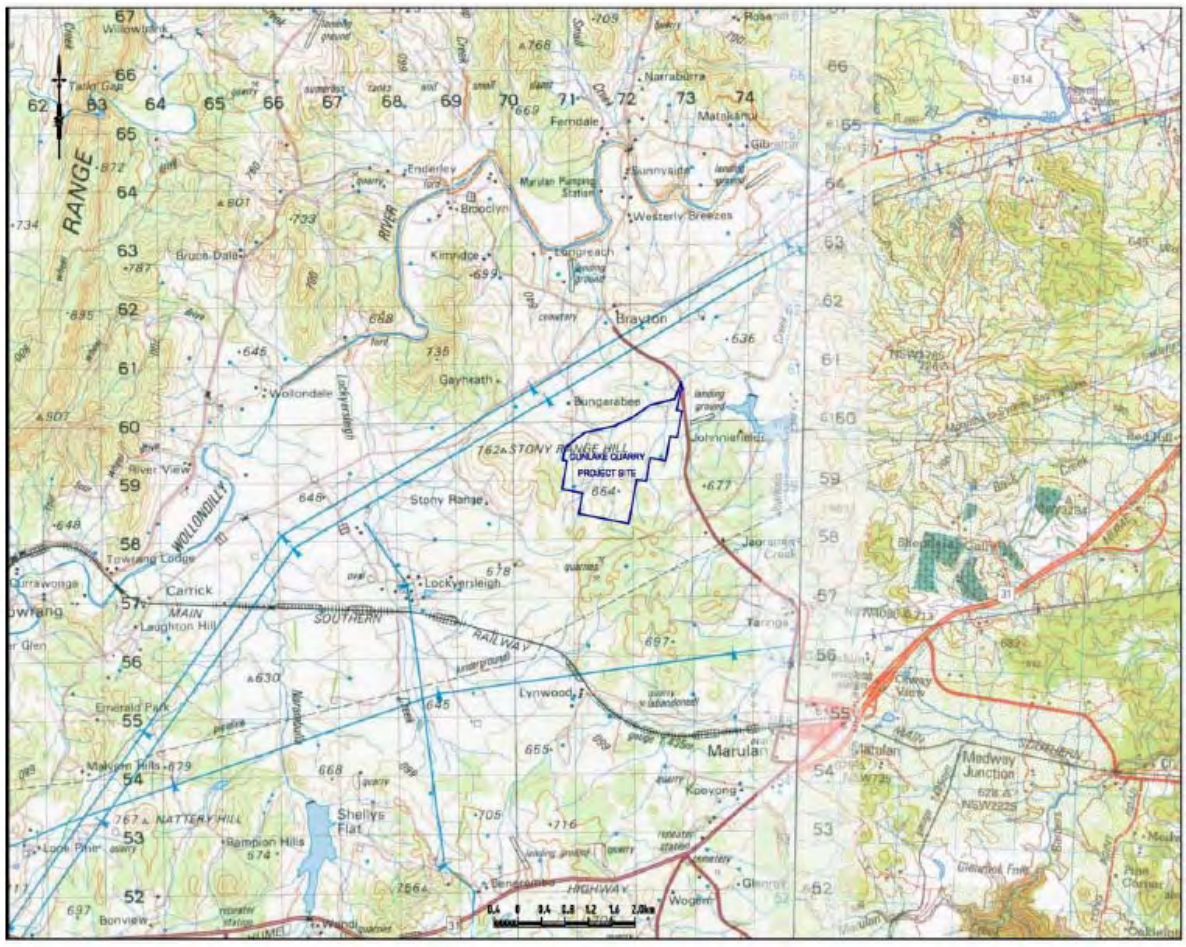
The purpose of this report is to give consideration to those environmental and amenity impacts along the haulage route in the light of the current land use character and that planned for in the existing planning instruments and those under preparation following the 2020 Strategy Plan and the draft LEP and draft DCP. This is essentially a consideration balancing the environmental and amenity impacts against all of the relevant factors contained within s79C(1) as required by the Ardmore Park decision.

1.3 Location

The Gunlake Quarry is located approximately 165 km south of Sydney in approximately 8km north-west of Marulan in the Goulburn-Mulwaree Local Government Area. It is located approximately 8 kms from the Hume Highway and 30 kms east of Goulburn.

Source: OEC 2008 p ii

The Gunlake Quarry is located generally in the area to the north-west of the town of Marulan and to the west of Brayton Road. The area is characterised by the existing Johnniefelds Quarry, the recently approved Lynwood and South Marulan Quarries and the abandoned hard rock quarries to the south of the site. It is an area which has a strong history of quarrying which is an important economic support of the village of Marulan. The Blue Circle Cement Limestone Quarry is located in south Marulan and is recognised as one of the most important resources of this kind nationally.



Source OEC 2008 p4A-6

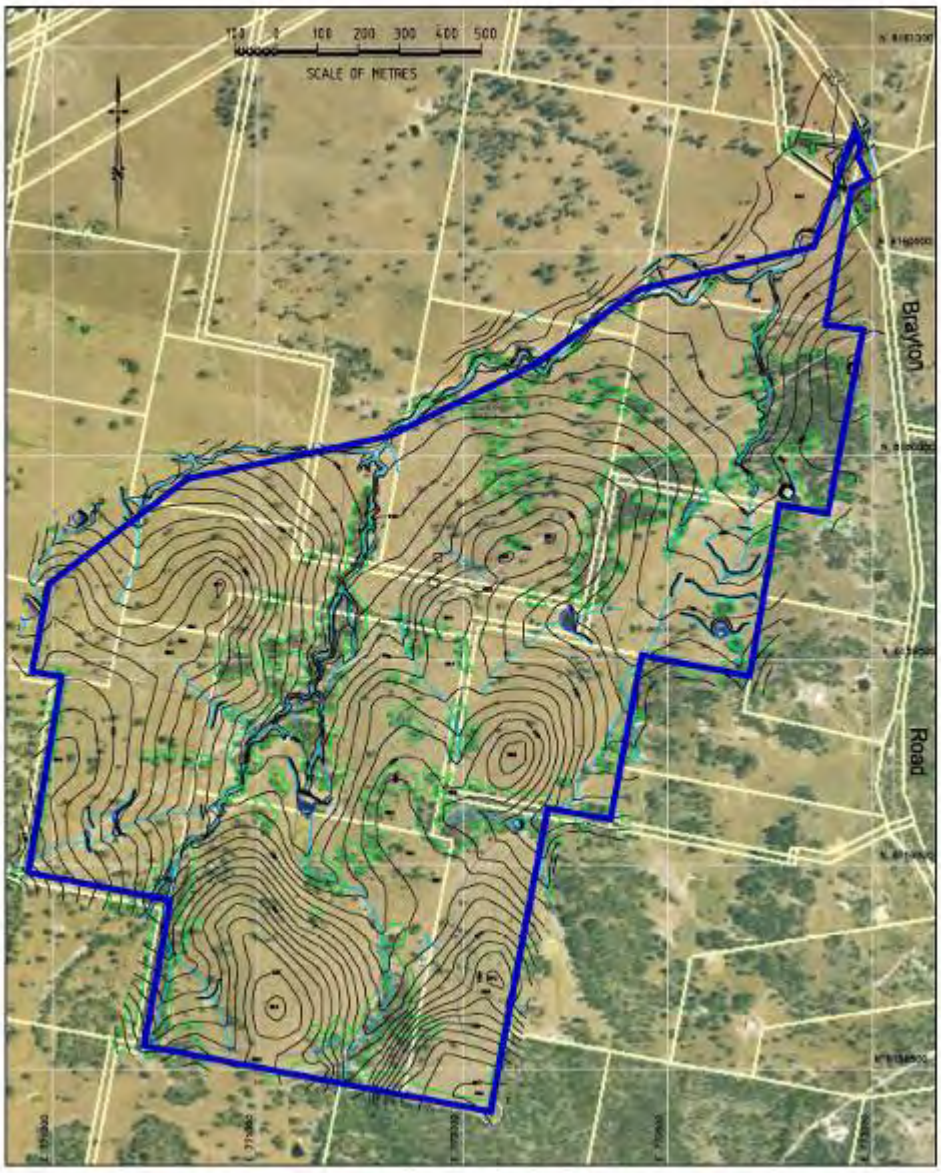
Limestone quarrying at Marulan has been carried out to varying degrees since about 1875. Marulan is the largest limestone quarry in Australia, and the current site has been worked by a number of companies since the 1920s. By the 1970s there were two major adjoining quarries, each independently owned and operated.

In its primary capacity as a cement raw material, Marulan limestone has played a major role in the development of New South Wales and the Australian Capital Territory for the greater part of this century. Many examples of Marulan's role are instantly recognisable. They include the Snowy Mountains Hydro Electric Scheme, Warragamba Dam, Sydney Opera House, New Parliament House in Canberra, and the Darling Harbour complex. On the ocean floor, Marulan-based cement is in the submarine outfalls for Sydney's sewage system and in the immersed tubes of the Sydney Harbour Tunnel.

Since the 1920s Marulan limestone has been the cornerstone for nearly half of the cement in the whole of our existing built environment across the State and National Capital. Today, cement originating from Marulan limestone still contributes nearly half of that required for the region's annual

need for new homes, schools, shops, hospitals, tourist accommodation, office and factories as well as dams, sewage works, concrete highways and other civil works.[1]

The area of land on which quarrying and quarrying-related activities are proposed covers an area of approximately 230ha.



Source: OEC 2008 p1-11

The area of the proposed open cut quarry at year 30 is expected to occupy an area of 6.0ha of the site. The on site services and facilities will occupy areas additional to this. The proposed quarry operations rely upon road transport to move product from the quarry to the end markets. The road transport is intended to utilise the Hume Highway to provide access to the Sydney markets to the

[1] Southern Tablelands Regional Library Southern Tablelands History Matters Dec 2007

north and markets to the south. The haulage route between the proposed quarry and the Hume Highway interchange at Marulan is proposed to be used in two stages. The Stage1 haulage route follows the route utilised by the current Johnniefelds Quarry operation by Readymix and by the now abandoned quarries south of the subject site. The haulage route can be divided into two parts, the rural area which occupies the first 7 kilometres and the Village area which occupies the last 1 kilometre of the route to the Hume Highway interchange.

Source: OEC 2008 p2-7 Stage 1 Haulage Route

The Stage 2 haulage route involves the construction of a by-pass route linking Brayton Road and Red Hills Road with access to the Hume Highway. This by-pass is proposed on land north of Marulan upon which the Proponent has an option to purchase and across a Crown Road Reserve. This Stage 2 by-pass is proposed to be a public road and will be available to the quarry traffic which currently passes through Marulan.

Source: OEC 2008 p2-8 Stage 2 Haulage Route

1.4 The Applicant

The proponent for the Gunlake Quarry Project is Gunlake Quarries, a division of Roller Australia Pty Ltd. Gunlake is a second tier concrete producer in the Sydney Region and is establishing the quarry to provide aggregate for its own operations as well as other potential markets.

The occurrence of concrete producers operating quarries to supply their own needs is common in the region and particularly in the locality where Readymix and Boral Resources both have quarries within the Marulan area. If Gunlake were not to have its own long-term supplies of aggregate and manufactured sand it would be required to purchase these products from the major suppliers (Readymix, Hanson and Boral) for their concrete manufacture at a cost higher than from quarrying which would affect the long term viability of the Gunlake Concrete operations.

1.5 CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302

The site of the proposed quarry in this matter was mostly cleared grazing land and with an area of about 185 hectares, of which about 76 hectares was to be affected by the development. The site is 4 kilometres south of Bungonia, 25 kilometres southeast of Goulburn and about 160 kilometres south of Sydney. The site is zoned 1(a) (General Rural) under the Mulwaree Local Environmental Plan 1995 (the LEP). The areas surrounding the site are also zoned 1(a) and used for various agricultural purposes.

The site fronts Oallen Ford Road a two lane sealed rural road connecting with King Street, the primary road through the village of Bungonia. The village of Bungonia is zoned 2(v) (Village) under the LEP. King Street connects with Jerrara Road, another two lane sealed rural road which heads north to intersect with Marulan South Road about 50 metres from the turn-off to the Hume Highway. Jerrara Road traverses land zoned 1(a) and has a length of about 15 kilometres. The distance from the site to the intersection with the Hume Highway is about 20 kilometres.

Mulwaree Shire Council had prepared a settlement strategy in November 2003 which identified Bungonia as a village where it is difficult to cater for future growth. The village contains 115 lots. There are 14 dwellings in the village, with a population of 35 in the 2001 census and 91 vacant lots. The village contains a community hall, two churches and rural fire station. It does not have reticulated sewerage services or town water or the amenity of a convenience store, postal or medical facilities. The strategy describes the regional position of Bungonia as follows:

> *Bungonia is away from the main corridor of movement and development, around the Hume Highway. Most of the economic momentum in the future is likely to be focused*

on this corridor due to the Sydney-Canberra Corridor Strategy, and the level of access available. Growth in Bungonia is more likely to be focused on servicing the surrounding agricultural region and housing for people that want a tranquil rural lifestyle in a historic village.

The development application involved establishing a sand and hard rock quarry and transporting the extracted material by road to the Hume Highway and thence to various markets in Sydney and Canberra. The revised development proposal involved a maximum of 48 truck movements per day, being 24 loads, during the hours of 7.00am to 6.00pm Mondays to Saturdays excluding public holidays. Phase 1 involved a maximum of 14 loads, or 28 truck movements, per day. Phase 2 involved a maximum of 24 loads, or 48 truck movements, per day.

There were numerous locations along the proposed haul route that did not meet the minimum standards for road design. It was apparent that implementing the traffic engineer's requirements would have potential environmental impacts. The amended environmental impact statement and supplementary information lodged by the applicant did not address potential environmental impacts associated with implementing these requirements.

The 2(v) zone on the zoning map designates the area of Bungonia village. The village is surrounded by land zoned 1(a). The vast majority of land from the parish of Oallen in the south to the Hume Highway in the north is subject to the 1(a) zone. King Street is the main street through the village and is zoned 2(v). King Street is a sealed road about 400m long. It is subject to a 50kmh speed limit. To the west of King Street towards the southern end of the village are the local community hall and associated facilities. Towards the middle and northern end of the village is a park containing a picnic and BBQ area with some seating and a children's play area, as well as the local war memorial. Some privately owned and occupied buildings are located in between, most of which have strong historical associations with the development of the village. One is the old schoolhouse now used to house an electron microscopy business. Another is the old police station now used as a residence. The public land on which the community hall and park are located runs from King Street to the creek.

It was acknowledged that noise levels generated by trucks could vary with human input and that the criteria could be complied with if the trucks were modern, well maintained and responsibly driven. The measurements showed levels of 53 and 54dBA in Bungonia at an offset distance of 17m so there was some scope for a marginal increase without exceeding the criteria. The distance of 17m was measured from the centreline of the road but trucks returning from the site would be closer than 17m to facades of residential dwellings on King Street. They also failed to take into account any proposed widening of King Street. The measurements related to levels at the facades of dwellings, not outdoor areas. An increase of 3 to 4 dBA was calculated in the village by reason of the

development using average noise levels from cars and trucks, whereas the applicant's acoustical consultant had calculated an increase of 1 to 2dBA using the specific truck measurements.

The current average traffic flows on King Street totalled 421 vehicles. Of that total, 24 vehicles were rigid trucks and 4 were articulated trucks. Rigid trucks, for this purpose, include all non-articulated vehicles other than cars, four-wheel drives and cars and four-wheel drives with trailers. The proposed development would introduce an additional 48 articulated trucks between the hours of 7am and 6pm. The average number of heavy vehicles (including all rigid trucks and articulated vehicles) would increase from 28 to 76 but the articulated vehicles would increase from 4 to 52 and increase of 13x.

The village had a quiet country town character that could not be sustained with the introduction of high levels of industrial traffic. The impacts should be considered cumulatively in terms of effects on character and noise measurements at residential facades are not an exclusive indicator of amenity impacts because much of life, activity and amenity in country villages such as Bungonia is experienced outdoors and on the street. The impacts would not be limited to residents, as the hall, churches and park attract people from the wider Bungonia community and tourists. There was also concern about the visual effect of the truck movements on the village's character, as well as the frequency of these movements becoming a barrier to pedestrians, given that the truck movements were compressed over an 11 hour period. It was considered that the application had not adequately addressed the regional resources available and the costs of their exploitation so as to warrant the grant of consent to the development, given what he characterised as the high environmental costs of the proposal.

Bungonia expresses a strong village character, with a sense of arrival, place and community. The development would result in a marked and negative change to the character of the village, disrupting the connection between the two halves of the village.

This development pre-supposes the existence of the right to pass along a public road. The existence of this right does not mean that the traffic generated by a particular development, and its potential environmental impacts, are irrelevant under s 79C(1). The potential for a particular development to generate traffic along particular roads, and the environmental consequences of that potential, are relevant considerations under s 79C(1). For this development, there is an obvious potential for material impacts between the site and the Hume Highway. It was necessary for the applicant and the consent authority to consider those impacts. Once the quarry traffic reaches the Hume Highway, it is equally obvious that its presence is immaterial. The site in this case is not close to a major transport route and, accordingly, the proposed development gives rise to issues with respect to the haulage of extractive materials.

The actual context of the village, in terms of location, function, zoning, and existing and likely future

amenity, is relevant. The village of Bungonia is zoned 2(v). People living within such a village or having recourse to it for various purposes are entitled to have different expectations about amenity from those living in the 1(a) zone, even if the reasonableness of their expectations is properly affected by the actual context of the village. Different expectations arise because of the different functions of the zones within the planning scheme embodied by the LEP and the different strategies adopted by the scheme to achieve its objectives. In particular, land zoned 2(v) is intended to perform an urban function. Land zoned 1(a) is not. The reasonableness of the expectations of people living within designated urban and rural areas is to be assessed within the context set by the planning scheme.

"Amenity" has consistently been described as a wide and flexible concept, embracing such matters as the character of a place and the attributes of place which a community values as important contributors to its character. The likely impacts of development (s 79C(1)(b)) include impacts on amenity understood in this sense. Once the concept of "amenity" is understood in this manner it is apparent that resolution of the debate about the nature, extent and propriety of the impacts on the village of Bungonia should be answered in the broad strategic planning context discernible from the available material.

The information available of alternative haul routes was insufficient to allow a satisfactory assessment of the competing advantages and disadvantages. The assessment of route options in the environmental impact statement did not factor in the costs and benefits and the limited information available about increased haulage costs due to increased distance is but one factor relevant to a coherent analysis of this issue which means that the assessment of the impacts of the proposed haul route could not be approached as if that route were the only available option after a rigorous exclusion of all other options.

The broad strategic planning context discernible from the LEP includes recognising the urban function of existing towns and villages and promoting development within those existing towns and villages compatible with their urban function. Strategies adopted by the LEP to achieve that objective include improving the amenity of the existing towns and villages. The LEP embodied this strategy knowing the location of the existing towns and villages zoned 2(v), their likely capacity for future growth, their relationship to surrounding 1(a) zones and proximity to major transport corridors. In this context the existence of a road through Bungonia while relevant to the assessment, does not render the amenity of the town or village immaterial or undermine its importance to the planning scheme as a whole. I also do not accept that the small number of people living in Bungonia (approximately 37) has this effect. The churches, hall and park are valuable assets for the broader Bungonia community. The Bungonia area has a significant tourist attraction nearby (the conservation reserve) and the park is also an asset for those people. The evidence about the village being a meeting point for a broader community than those residing there was persuasive. The hall, the churches and the park encourage

the use of Bungonia village for this purpose, as does its location. The settlement strategy, with its reference to servicing the surrounding rural community, also bears out a broader interest in the Bungonia village than that of the people living there.

The vibration impacts would satisfy and the noise impacts would be capable of satisfying the relevant objective criteria, however, the Court did not see those facts as exhausting the relevant inquiry. The particular amenity of the village is accurately conveyed by the settlement strategy. As it is away from the main movement corridors, growth in Bungonia is likely to focus on servicing the surrounding agricultural region and housing people who want a “tranquil rural lifestyle in a historic village”.

The entrenching of King Street as part of a dedicated quarry haul route, would have serious and unacceptable impacts on the amenity of the village as a whole. These impacts are not the subject of the ECRTN or vibration criteria. They are not offset by the available information about the value of the resource or potential benefits of the development. They are not made immaterial by reason of compliance with the environmental goal of 200 vehicles per hour for local residential streets. The routine passage along King Street of 48 articulated vehicles as proposed throughout the daylight hours is likely to undermine the existing tranquil rural lifestyle in respects that are objective, specific, concrete, observable. The articulated trucks to be used are far larger than the vehicles falling within the class of rigid trucks and are different altogether from car traffic. The articulated trucks will be seen and perceived for what they are – very large vehicles travelling along a dedicated haul route to the Hume Highway. King Street currently experiences very few articulated vehicles (4 per day on average). The development will increase that number thirteen times and would dramatically alter the existing ambience of the village.

Maintaining the amenity of King Street is important to the immediate and broader functions of the village as a whole. The zoning extracts and subdivision plan of the village disclose the role of King Street connecting the residential development on the eastern side of the road with the public lands on the western side where the park is located and access to the creek is obtained. The quarry vehicles, by reason of their size, frequency and routine presence through the village, would be likely to adversely affect the relationship between the main residential area and the available community facilities. The pleasant ambience of those public places also would be dramatically altered for all but the most fleeting visitor. So too would the pleasant ambience of the outdoor areas of the properties fronting King Street, which I am satisfied makes an important contribution to the enjoyment of life of the people residing there. Becoming part of a dedicated haul route to the Hume Highway would fundamentally alter the character of the village, visually, acoustically and by reference to the less tangible qualities that contribute to that character – the quiet ambience, the pleasant pedestrian environment absent formal and defined pedestrian paths, the easy and free flowing relationship between the main area of residential development and the park, and the capacity to fully use and enjoy outdoor spaces.

The haul route through Bungonia village would undermine important aspects of the amenity of the village and thus an important part of the planning scheme embodied in the LEP. On the available information, and assuming that all other issues are capable of being adequately resolved through conditions, the quarry would have these impacts on Bungonia village absent sufficient justification and the development application was also refused consent for this reason.

1.6 Purpose of this Report

This report provides an Environmental and Amenity Assessment to accompany the Project Plan and Environmental Assessment prepared by Olsen Environmental Consulting Pty Ltd for approval under Part 3A of the EPA Act for Gunlake Quarries. The report has been prepared to respond to and address the matters which arose in CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 which concluded that consideration should be given to the amenity impacts of a proposed haulage route.

The essence of CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 is considered to be that the actual context of the village, in terms of location, function, zoning, and existing and likely future amenity, is relevant. People living within such a village or having recourse to it for various purposes are entitled to have different expectations about amenity from those living in the 1(a) zone, even if the reasonableness of their expectations is properly affected by the actual context of the village. Different expectations arise because of the different functions of the zones within the planning scheme embodied by the LEP and the different strategies adopted by the scheme to achieve its objectives. In particular, land zoned 2(v) is intended to perform an urban function. Land zoned 1(a) is not. The reasonableness of the expectations of people living within designated urban and rural areas is to be assessed within the context set by the planning scheme.

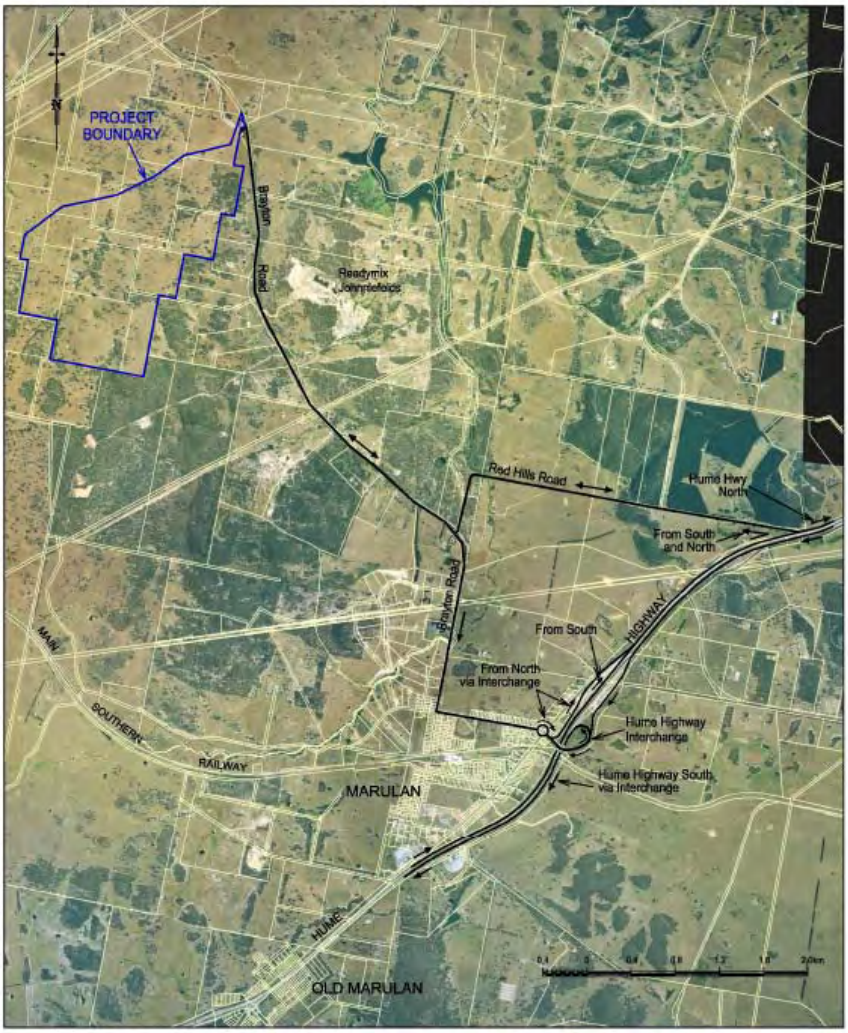
This report undertakes that assessment and also gives due consideration to the planning future of the haulage route as set by the 2020 Strategy and the draft planning instruments and draft development control plans which have relevance and weight under the provisions of s79C(1).

2.0 SITE ANALYSIS

2.1 Property Description and Area

The land the subject of this application is illustrated in Figures below which show the haulage routes for Stage 1 and Stage 2.

Source: OEC 2008 p2-7 Stage 1 Haulage Route



Source: OEC 2008 p2-8 Stage 2 Haulage Route

The subject site is currently owned by Gunlake Quarries. It occupies approximately 230 hectares of land bounded grazing land on all sides with a limited frontage to Brayton Road in the north-east corner.

The site is located in the Goulburn-Mulwaree Local Government Area and the State Electorate of Goulburn.

Lot and DP numbers

The subject site comprises an irregular shaped parcel of land described as:

48 750003 Auto Consol 14176-39 Part
111 750053 Auto Consol 14176-39 Part

52 750003 Auto Consul 10774-211 Part
50 750003 Auto Consul 10774-211 Part
149 750003 Auto Consul 10774-211 Whole
73 750003 Auto Consul 7907-112 Whole
74 750003 Auto Consul 7907-112 Whole
260 750053 Auto Consul 7907-112 Whole
53 750003 Auto Consul 14176-38 Whole
148 750053 Auto Consul 14176-38 Whole
10 254042 Auto Consul 13729-90 Part
42 750003 Volume 12203 Folio 65 Part
76 750003 Volume 12203 Folio 66 Part
54 750003 Volume 1589 Folio 245 Part
1 750003 Volume 2300 Folio 46 Whole
1 328725 Folio Identifier 1/328725 Part

The proposed By-pass road to connect to the Hume Highway (Freeway) passes through Lot 1 of Deposited Plan 868065.

2.2 Location and Context

The Gunlake Quarry is located approximately 165 km south of Sydney in approximately 8km north-west of Marulan in the Goulburn-Mulwaree Local Government Area. It is located approximately 8 km from the Hume Highway and 30 km east of Goulburn.

The Gunlake Quarry is located generally in that area to the north-west of the town of Marulan to the west of Brayton Road. The area is characterised by the existing Johnniefields Quarry, the recently approved Lynwood and South Marulan Quarries and the abandoned hard rock quarries to the south of the site. It is an area which has a strong history of quarrying which is an important economic support of the village of Marulan. The Blue Circle Cement Limestone Quarry is located in south Marulan and is recognised as one of the most important resources of this kind nationally.

2.3 Surrounding Land Uses and Services

The proposed quarry site is located in rural land characterised by grazing lands, quarrying and hobby farms. At the Site access, Brayton Road has a sealed width of 5.7 m, and with a speed limit of 100 km/hr. The alignment is typical of a relatively lowly used country road, with flat sections interspersed

with some rolling hills. Brayton Road generally maintains this width until the access to Johnniefelds Quarry is reached, when the road widens out, maintaining a wider carriageway width until it meets a T-junction on the outskirts of Marulan, where Brayton Road makes a right-angle bend to the East and Stoney Creek Road continues to the South. Stoney Creek Road is relatively short, ending at the Main Southern Railway Line. Stoney Creek Road has residential uses on each side.[2] The rural section of Brayton Road accommodates some rural residential development which is generally well setback from the road. The shoulders of the road reserve accommodate intermittent plantings and vegetation but do not have the character of continual vegetated corridors associated with some of the rural roads to the east of the Hume Highway.

The Stoney Creek Road T- junction marks the outskirts of the Marulan Village. Between its junction with Stoney Creek Road and George Street, Brayton Road travels through an urban residential section of Marulan, generally with dwellings on each side. The dwellings are generally modest single dwellings on 700m^2 to 1000m^2 allotments setback 10 – 15m from the street. The dwellings are generally of post-war construction and are in the main 40 – 50 years old although some more recent dwellings are located closer to Stoney Creek Road.

George Street (the old Hume Highway) extends from the Highway Service Centre south of the town, past the Portland Avenue roundabout, which has access off the current Hume Highway, through the Marulan town centre to Brayton Road. George Street has kerbside parking on both sides, plus travel lanes. As well as shops, there is a school on George Street. North of Brayton Road, George Street becomes a cul-de-sac, after passing the disused truck checking stations.

George Street forms the central spine of Marulan Village and accommodates the commercial and communal uses which give the Village its character. The character of Marulan Village is of a Highway Village. The original village was located south of the existing Highway and relocated to the current position when the Great Southern Railway was completed and took hold as a Highway stop when the then Hume Highway which passed along the alignment of George Street was concreted in the 1950's. The site of the original truck stops at the northern and southern end of George Street remain. The Hume Highway has since by-passed Marulan and the current large scale truck stops flank the Highway outside of the town.

The proposed by-pass section and Red Hills Road is located in rural land characterised by grazing lands, forestry and hobby farms. The area accommodates some rural residential development which is generally well setback from the road. The shoulders of the road reserve accommodate intermittent plantings and vegetation but do not have the character of continual vegetated corridors associated with some of the rural roads to the east of the Hume Highway.

[2] Christopher Hallam and Associates Transport Study of Proposed Gunlake Quarry, Brayton Road, Marulan 2008 p2

2.4 Haulage Route

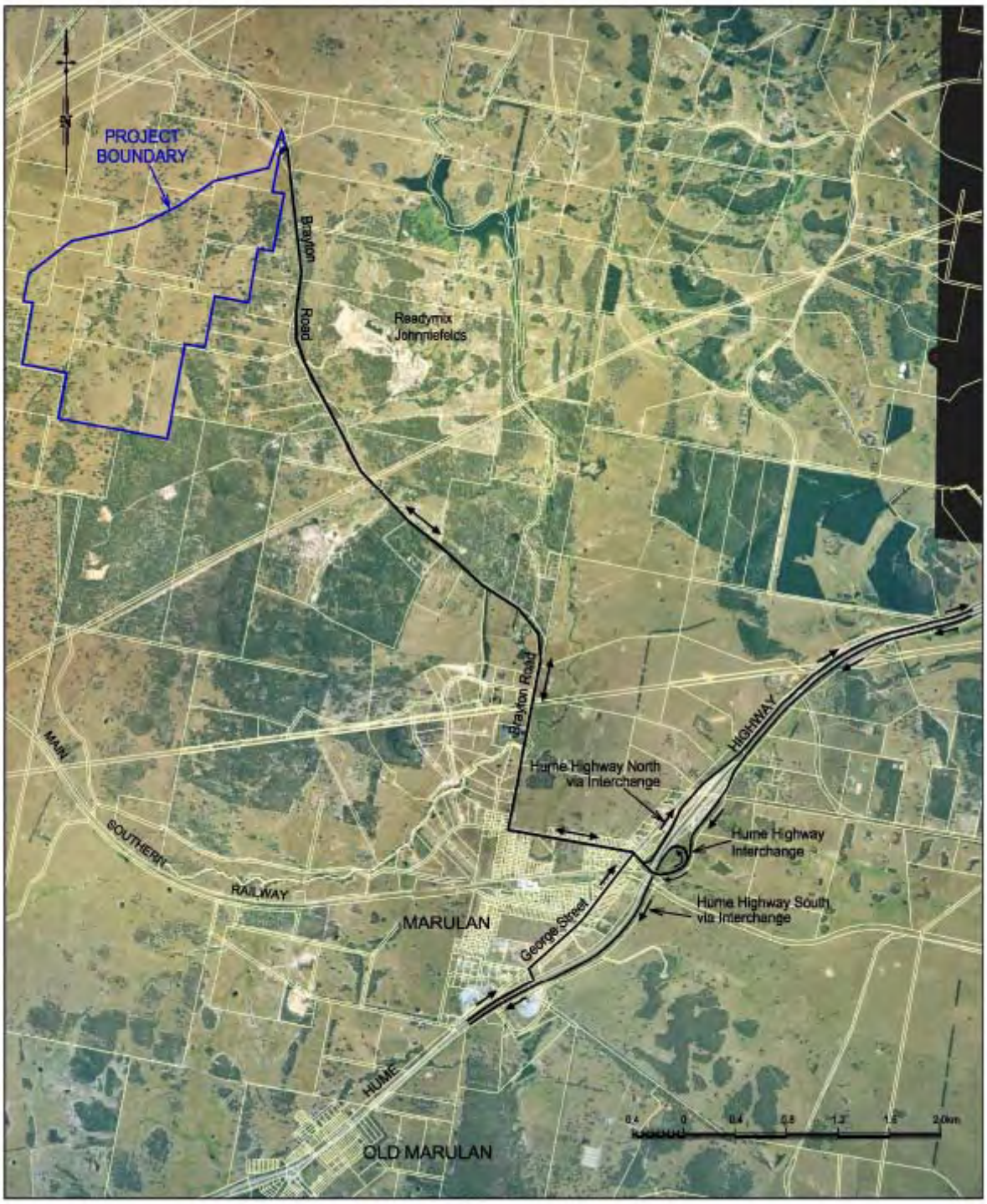
2.4.1 Stage 1

The Stage1 haulage route follows the route utilised by the current Johnniefelds Quarry operation by Readymix and by the now abandoned quarries south of the subject site. The haulage route can be divided into two parts, the rural area which occupies the first 7 km and the Village area which occupies the last 1 km of the route to the Hume Highway interchange.

At the Site access, Brayton Road has a sealed width of 5.7 m, and with a speed limit of 100 km/hr. The alignment is typical of a relatively lowly used country road, with flat sections interspersed with some rolling hills. Brayton Road generally maintains this width until the access to Johnniefelds Quarry is reached, when the road widens out, maintaining a wider carriageway width until it meets a T-junction on the outskirts of Marulan, where Brayton Road makes a right-angle bend to the East and Stoney Creek Road continues to the South. Stoney Creek Road is relatively short, ending at the Main Southern Railway Line. Stoney Creek Road has residential uses on each side.[3] The rural section of Brayton Road accommodates some rural residential development which is generally well setback from the road.

The Stoney Creek Road T- junction marks the outskirts of the Marulan Village. Between its junction with Stoney Creek Road and George Street, Brayton Road travels through an urban residential section of Marulan, generally with dwellings on each side. The dwellings are generally modest single dwellings on 700m^2 to 1000m^2 allotments setback 10 – 15m from the street. The dwellings are generally of post-war construction and are in the main 40 – 50 years old although some more recent dwellings are located closer to Stoney Creek Road.

[3] Christopher Hallam and Associates Transport Study of Proposed Gunlake Quarry, Brayton Road, Marulan 2008 p2



Source: OEC 2008 p2-7 Stage 1 Haulage Route

Just east of Stoney Creek Road the carriageway width is 11.8 m. Then, for a section approximately 400 m long, the carriageway slightly reduces to 10.0 m wide, with no kerbs/gutter on the northern side and a roll kerb on the southern side. A gutter is provided on the northern side, just west of Wollondilly Street, with the carriageway reducing slightly to 9.6 m. For the 400 m west of Wollondilly

Street, there is no residential development along the southern side. The road pavement in this section has been recently upgraded. Between Wollondilly Street and George Street, there are kerbs/gutters on both sides, with a carriageway width of 11.0 m.

George Street (the old Hume Highway) extends from the Highway Service Centre south of the town, past the Portland Avenue roundabout, which has access off the current Hume Highway, through the Marulan town centre to Brayton Road. George Street has kerbside parking on both sides, plus travel lanes. As well as shops, there is a school on George Street. North of Brayton Road, George Street becomes a cul-de-sac, after passing the disused truck checking stations.

The eastern extension of Brayton Road passes under the Hume Highway, as part of the Marulan Interchange. The underpass has one travel lane per direction. Southbound traffic on the Highway offloads near the truck checking station and travels under the Highway to access Brayton Road and Marulan. Traffic from Marulan and Brayton Road wishing to travel south uses this underpass to access the southbound load ramp on the eastern side of the Highway. Traffic from Marulan wishing to travel north turns left off Brayton Road onto the load ramp on the western side of the Highway.

Northbound traffic on the Highway cannot offload to Brayton Road. Traffic wishing to make this movement needs to offload at Portland Avenue. The at-grade interchange of the Highway with Portland Avenue provides left-turn deceleration and acceleration lanes on the Highway to cater for left turns into and out of Portland Avenue. There is a right turn bay with a deceleration lane in the median for the right turn from the Highway North into Portland Avenue. There is also an acceleration lane in the median to assist vehicles turning right out of Portland Avenue. The median is wide enough to shelter these right turning vehicles, prior to acceleration and merging with southbound traffic. Sight distance at this intersection is good. Just west of this intersection there is a roundabout on Portland Avenue, with George Street (from Marulan town) and the Old Hume Highway (from the highway service centre) forming a junction with Portland Avenue. This is a large roundabout designed for large heavy vehicles.[4]

2.4.2 Stage 2 By-pass

The Stage 2 haulage route involves the construction of a by-pass route linking Brayton Road and Red Hills Road with access to the Hume Highway. This by-pass is proposed on land north of Marulan upon which the Proponent has an option to purchase and across a Crown Road Reserve. This Stage 2 by-pass is proposed to be a public road and will be available to the quarry traffic which currently passes through Marulan.

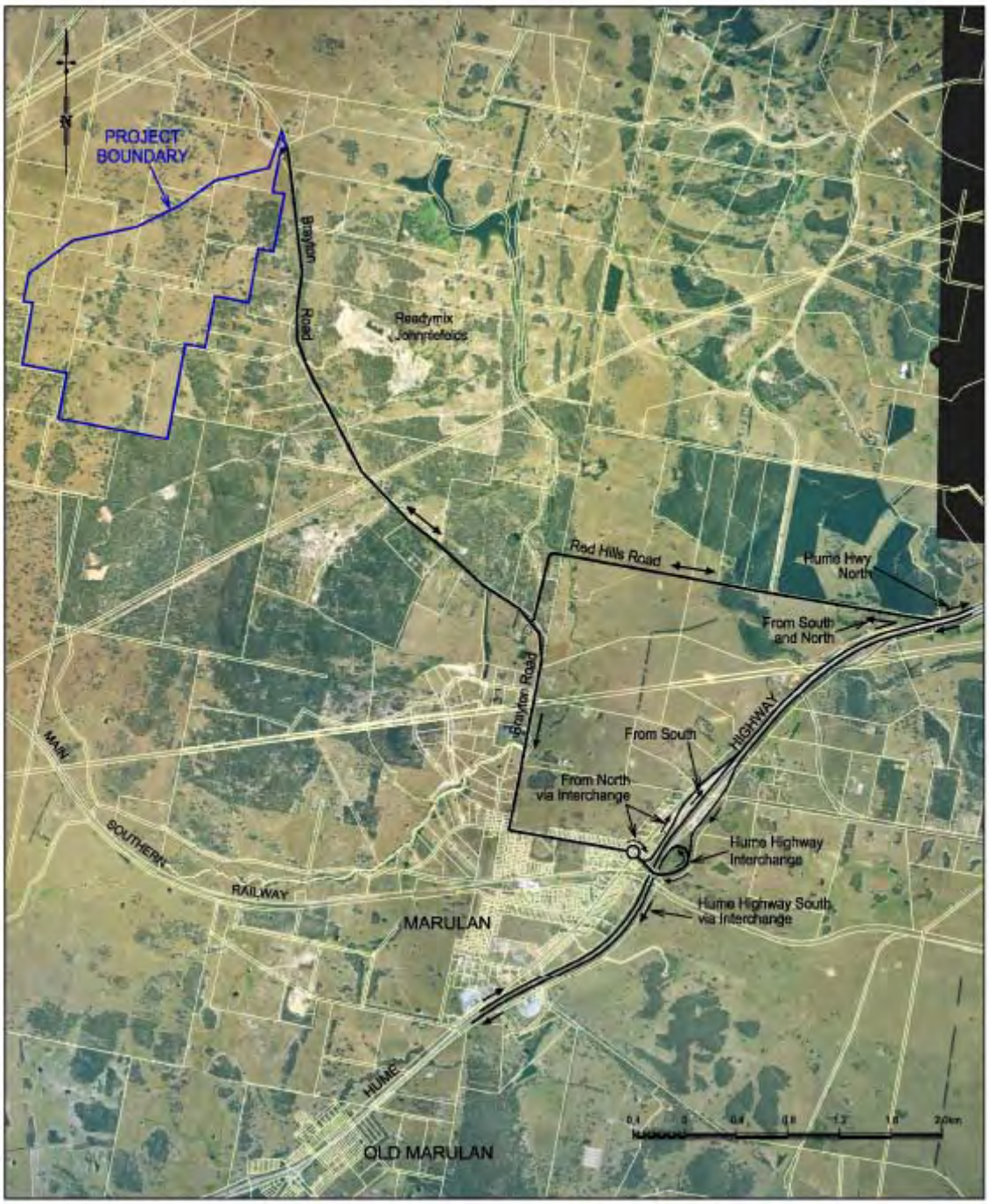
[4] Ibid p3

The existing junction of Red Hills Road with the Hume Highway allows for all movements, at-grade, with a 65 m long right turn lane in the Highway median for southbound vehicles wishing to turn right into Red Hills Road. For the 110 km/hr design speed on the Highway, this deceleration and right turn lane is substandard in its length. Vehicles can turn right out of Red Hills Road. The median width provides some scope for a driver making this manoeuvre to first cross the northbound traffic before entering the southbound traffic, but it does not constitute seagull chanellisation. There are no left-turn lanes for the movements into or out of Red Hills Road. Sight distance is very good.

There is a Truck Parking Area just south of Red Hills Road, on the Highway. The entrance to this area is approximately 400m south of the junction of Red Hills Rd and the Hume Highway. Red Hills Road approaches the Highway junction via a sharp turn adjacent to a property access. Red Hills Road has a sealed width of 8.1 m at this point. [5]

The proposed by-pass section and Red Hills Road is located in rural land characterised by grazing lands, forestry and hobby farms. The shoulders of the road reserve accommodate intermittent plantings and vegetation but do not have the character of continual vegetated corridors associated with some of the rural roads to the east of the Hume Highway.

[5] Ibid. p4



Source: OEC 2008 p2-8 Stage 2 Haulage Route

2.5 Traffic Environment

Current traffic flows in the Marulan area were collected over the seven day period Friday 25th to Thursday 31st May 2007, using automatic counters at four locations and in addition, previous traffic counts in the area have been collated.

Brayton Road

This section of road will be the primary haul route from the quarry, initially all the way to Marulan, and ultimately just to the proposed new By-Pass road. The current average daily traffic flows are relatively low, at 373 veh/day. However the proportion of heavy vehicles is high, with 27% overall, including 15% Rigid Trucks (Class 3-5) and 12% Articulated Trucks (Class 6-13). The heavy vehicle numbers reduce on the weekend, particularly on Sunday. The weekly 85%ile northbound speed was 90 km/hr while the weekly 85%ile southbound speed was 102 km/hr. The speed limit is 100 km/hr. Table 2.4 sets out the average hourly flows over the week, including a breakdown of Rigid Trucks and Articulated Trucks.[6]

The hourly flows are not strongly peaked. The highest morning flows were 36 veh/hr in the 8.00-9.00am, with the highest afternoon flows of 30 veh/hr in 3.00-4.00pm and 4.00-5.00pm. These flows are of a very low order.[7]

Brayton Road continues into Marulan. During the Stage 1 this section of Brayton Road will be used by all quarry trucks. In Stage 2 it will only be used for trucks travelling to the South. The daily traffic flows on Brayton Road east of Wollondilly Street, Marulan, (within the township), the are still only moderate, well within usual environmental capacity limits for local residential streets. However the numbers of heavy vehicles are higher than typical in residential streets. The overall percentage of heavy vehicles is 11.6%, of which 6.1% is articulated vehicles. Over the week, the eastbound 85%ile travel speed was 56 km/hr while the westbound 85%ile speed was 60 km/hr.

There is no strong peak hour trend in the flows. The highest flow in the morning was 67 veh/hr in the 10.00-11.00am period, while the highest flow in the afternoon was 77 veh/hr in the 4.00-5.00pm period. Heavy vehicle movements are concentrated in the daytime period of 7.00am to 5.00pm.[8]

George Street

[6] Hallam 2008 p5
[7] Ibid: p6
[8] Ibid:p8

George Street will be used by quarry trucks arriving from the Highway South during Stage 1 only. Southbound trucks leaving the quarry will travel directly to the Highway at the Marulan Interchange. Intersection turning movement counts were undertaken in February 2005 by Transport & Urban Planning, as part of their *Traffic and Transport Impact Assessment* for the proposed Lynwood Quarry. The peak hourly flows are moderate for the main street access into a town centre.

Hume Highway Interchanges

Relatively minor truck movements will utilise the interchange at Brayton Road, adjacent to the RTA truck checking station. Consideration of the current daily traffic flows on the underpass at this interchange shows the eastbound flows are generally at least double the westbound flows. The total two-way flows of 535 veh/day are relatively low for a highway interchange. The overall proportion of heavy vehicles is 12%.

The hourly flows are relatively low for a highway interchange, with two-way flows of less than 50 veh/hr. The eastbound flows predominate, following from the daily trends.

The construction of a roundabout is proposed at the intersection of George Street and Brayton Road for southbound trucks on the Highway to make a U-turn and return north onto the highway to make a left turn into Red Hills Road.

Red Hills Road

A new By-Pass road is proposed to link Brayton Road with Red Hills Road. Red Hills Road currently carries very low traffic flows. The daily traffic flows are very low, albeit with some heavy vehicle activity. As would be expected, the average hourly flows are very low with the "peak" hour flows 9 veh/hr in the periods 8.00-9.00am and 4.00-5.00pm.

2.6 Acoustic Environment

Unattended background noise monitoring was conducted between Wednesday 6th June 2007 and Thursday 21st June 2007 at a number of representative locations in the vicinity of the proposed quarry operations. Environmental noise loggers were used to continuously record noise levels at the respective monitoring locations over the survey period.[9]

[9] Heggies Pty Ltd. Proposed Gunlake Quarry, Marulan NSW Construction, Operational and Transportation Noise and Blasting Impact Assessment 2008 p14.

Within the periods selected as being representative of the background noise level, noise data during periods of any rainfall and/or wind speeds in excess of 5 m/s (approximately 9 knots) were discarded. A summary of the results of the background noise surveys is presented for the proposed operational hours of the quarry. The LAeq is the equivalent continuous noise level defined as the level of noise equivalent to the energy average of noise levels occurring over a measurement period. In accordance with INP procedures, if the RBL is below 30 dBA, then 30 dBA shall be the assumed RBL.

At selected locations, operator-attended noise surveys of 15 minutes duration were conducted during the deployment and collection of the noise loggers on Wednesday 6th June 2007 and Thursday 21st June 2007 respectively.

The operator-attended noise measurements were conducted using a precision integrating sound level meter in order to qualify the results obtained with the unattended noise loggers. During the attended noise surveys, the operator identified the character and duration of acoustically significant ambient noise sources. Wherever possible, the operator quantified local traffic flows and made a qualitative assessment of the prevailing weather conditions.

The operator-attended noise measurement results confirm the results obtained from the unattended noise loggers and support the use of the noise levels in being representative of the background noise environment at all residences, except at the eastern boundary residence. Farming plant was constructing a dam at the time of this attended measurement, therefore the results for this location were considered unrepresentative. In order to obtain a better indication of representative noise levels at this location, a typical weekday fifteen minute monitoring period was selected from the noise logger data.

Road vehicle noise on public roads, including the bypass road, utilise different noise assessment criteria apply than as part of the quarrying operations noise sources. In some instances, an intermediate approach between the “private” and “public” roadway assessment approaches may be appropriate. This could, for example, apply to the access roads well away from construction, quarrying and processing operations, where the vehicle noise would be clearly perceived as “traffic” noise, rather than as part of the operations.

In June 1999, the DECC (then the EPA) issued a document entitled “Environmental Criteria for Road Traffic Noise”. In terms of the functional categories of roads, the DECC’s document states that:

“It is noted that some industries (such as mines and extractive industries) are, by necessity, in locations that are often not served by arterial roads. Heavy vehicles must be able to get to their bases of operation, and this may mean travelling on local roads. Good planning practice recognises that we

must acknowledge this type of road use and develop ways of managing any associated adverse impacts.

To this end, the concept of 'principal haulage routes' has been endorsed by the Department of Urban Affairs and Planning's North Coast Extractive Industries Standing Committee. Ways of identifying 'principal haulage routes' and managing associated adverse impacts have not yet been fully defined. Where local authorities identify a 'principal haulage route', the noise criteria for the route should match those for collector roads, recognising the intent that they carry a different level and mix of traffic to local roads."[10]

Accordingly, the Project related traffic on Brayton Road, the bypass road (Red Hills Road) as well as on the Interchange Underpass and George Street (adjacent to the new roundabout) has been assessed as a collector road. This sets LAeq(1hour) Daytime Criteria at 60 dBA and LAeq(1hour) Night-time Criteria at 55 dBA. Where feasible and reasonable, existing noise levels should be mitigated to meet the noise criteria. Examples of applicable strategies include appropriate location of private access roads; regulating times of use; using clustering; using "quiet" vehicles; and using barriers and acoustic treatments. In all cases, traffic arising from the development should not lead to an increase in existing noise levels of more than 2 dBA.

The noise impact of the quarry related road traffic on the Brayton Road and Red Hills Road was conducted via the prediction of future (with the quarry operating) peak hourly traffic noise levels on the subject roads. The US Environment Protection Agency's method was used for the prediction of the LAeq traffic noise levels for the offset distances of the closest residences adjacent to the proposed quarry. The US EPA's method for prediction of the LAeq noise levels from traffic is an internationally accepted theoretical traffic noise prediction model which takes into account the LAmax vehicle noise levels (light and heavy), receiver offset distance, passby duration, vehicle speed, ground absorption (based on the ratio of soft ground and average height of propagation), number of hourly vehicle movements, receiver height, truck exhaust height and the height and location of any intervening barriers.

The daytime and night-time traffic noise level predictions for Brayton Road, south of the quarry entrance, at the closest residential receiver to the road are presented in Table 24 of the Heggies Noise Impact Assessment (Refer Environmental Assessment Volume III, Part 4. This residence is located 71 m from Brayton Road. Also presented in Table 24 are the maximum allowable truck movements (passbys), based on the DECC's criteria.

[10] Ibid p.18

Table 25 of the Heggies Assessment presents the predicted existing and future traffic noise level predictions for the other more distant residences on this section of Brayton Road.

Review of the road traffic noise level predictions indicates that the existing daytime and night-time LAeq(1hour) noise levels are lower than the NSW DEC's recommended assessment criteria of 60 dBA and 55 dBA at the closest residences on Brayton Road, south of the proposed quarry, and at the closest residence on Red Hills Road but exceed the criteria at the closest residence in Marulan Village (based on the measured maximum hourly traffic flows).

Based on the controlling traffic flow scenarios of the existing maximum daytime hourly traffic and the existing 7 day average maximum hourly night-time traffic on Brayton Road, south of the quarry, plus quarry traffic, the allowable number of trucks to comply with the 60 dBA and 55 dBA LAeq(1hour) criteria for the daytime and night-time are 170 trucks per hour and 52 trucks per hour respectively.

Based on the controlling traffic flow scenarios of the 7 day average maximum hourly daytime and night-time traffic on Brayton Road, through Marulan Village, the allowable number of trucks to comply with the allowable 2 dBA increase in the existing LAeq(1hour) traffic noise levels are 13 trucks per hour during daytime and 4 trucks per hour during the night.

Based on the controlling traffic flow scenarios of the 7 day average maximum hourly daytime and night-time traffic on Red Hills Road, the allowable number of trucks to comply with the 60 dBA and 55 dBA LAeq(1hour) criteria respectively are 2,000 trucks per hour and 650 trucks per hour respectively.

The existing daytime and night-time LAeq(1hour) noise levels from traffic on the Interchange Underpass are lower than the NSW DECC's recommended assessment criteria of 60 dBA and 55 dBA at the closest residence to the proposed roundabout. Based on the controlling traffic flow scenarios of the existing maximum daytime and night-time hourly traffic on the Interchange Underpass, plus quarry traffic, the allowable number of truck movements to comply with the 60 dBA and 55 dBA LAeq(1hour) criteria for the daytime and night-time are 23 truck movements per hour and 6 truck movements per hour respectively.

The existing peak hour LAeq(1hour) noise levels from the traffic on George Street are higher than the NSW DECC's recommended assessment criteria at the closest residence to the proposed roundabout. Based on the controlling 1730 hours to 1830 hours peak traffic flow scenario on George Street, the allowable number of truck movements to comply with the allowable 2 dBA increase in the existing peak LAeq(1hour) traffic noise level is 6 truck movements per hour.

3.0 FUTURE CONSIDERATIONS

3.1 S117 Directions

Section 117 of the EPA Act enables the Minister to direct a council or public authority to exercise functions under the Act. The Minister has made a series of directions under that section, including general directions to all councils and specific directions to nominated councils. On 6 December 1994, general direction G28 – coal, other minerals, petroleum and extractive resources was notified in the NSW Government Gazette. The direction requires councils to consult with the Department of Mineral Resources when preparing local environmental plans that are likely to prohibit or restrict the mining of minerals and extractive resources. It also requires the Department to notify councils of the location of known and potential mineral resources. In April 2004, the Department notified areas containing operating mines/quarries, identified mineral resources and potential mineral resources. The notice states its purpose as assisting in better land use planning decisions to "steer development away from areas containing important mineral resources where possible so as not to sterilise them unnecessarily". The notice records that most extractive resources such as sand, gravel and hard rock aggregate are not classified as "mineral resources" administered by the Department, but the Department had an accepted role in advising at State level about those resources. After 6 December 1994, the Department identified areas for high, medium and low priority ratings for notification. All high and most medium priority areas had been notified. The April 2004 notice was triggered by the amalgamation of councils.

In support of the notice, the Geological Survey of New South Wales issued a Resource Assessment report for the Greater Argyle Shire LGA. This report identifies important mineral and extractive resources in the Greater Argyle Shire which includes the area in which the Gunlake Quarry is proposed. The report classifies the mineral and extractive resources around Goulburn and Marulan as having a High Priority Status for notification indicating the importance that the State Government places on them. To date, the Marulan South and Gunlake Quarries have not been specifically identified in the Resource Assessment report. However, now that these two quarries contain proven resources, the Department of Primary Industries - Mineral Resources has advised that they will be included in the next issue of the Resource Assessment. Both sites will be added when the data is revised as part of the current State-wide review of LGAs which is scheduled to be completed by 2010.

3.2 Mulwaree Local Environmental Plan 1995

The Mulwaree Local Environmental Plan 1995 is the planning instrument which currently applies to the subject site, the town of Marulan and the proposed Haulage routes in both Stage 1 and Stage 2. This instrument in its entirety should be given consideration to understand the desired future character and planning objectives for the area in order to understand the character and amenity expectations of the residents and balance those with the objectives for employment and non-residential uses.

The aims and objectives of the plan are stated as:

Aims, objectives, etc.

2. The general aims and objectives of this plan are:

(a) to encourage the proper management, development and conservation of natural and man-made resources within the Mulwaree area by protecting, enhancing, and conserving:

(i) prime crop and pasture land;

(ii) timber, mineral, soil, water and other natural resources;

(iii) places of significance for nature conservation;

(iv) features and places of high scenic or recreational value; and

(v) places and buildings of archaeological or heritage significance, including aboriginal relics and places; and

(b) to replace the existing planning controls with a single local environmental plan to help facilitate growth and development of the Mulwaree area in a manner which is consistent with the objectives specified in paragraph (a) and which:

(i) minimises the cost to the community of fragmented and isolated development of rural land;

(ii) facilitates the efficient and effective delivery of services and facilities;

(iii) facilitates a range of residential and employment opportunities in accordance with demand;

(iv) facilitates farm adjustments;

(v) ensures that the efficiency of arterial roads is not adversely affected by development on adjacent land;

(vi) identifies suitable localities and standards for the development of rural small holdings;

(vii) provides for the protection and enhancement of heritage items within the towns, villages and other localities within the Mulwaree area; and

(viii) facilitates the protection of the Warragamba and Shoalhaven Catchment areas; and

(c) to afford protection to the environmental heritage within the Mulwaree area by:

(i) conservation of the environmental heritage;

(ii) integration of heritage conservation into the planning and development control processes;

(iii) providing for public involvement in matters relating to the conservation of the environmental heritage; and

(iv) ensuring that development is undertaken in a manner that is sympathetic to and does not detract from the heritage significance of heritage items and their settings.

The site the subject of the proposed quarry is within land zoned 1(a) General Rural. This zoning also covers the majority of the Haulage route up to the outskirts of the Marulan town. The 1(a) zoning also applies to the Stage 2 by-pass route. One gives consideration to the objectives of this zone and the attendant special provisions of the instrument to understand the anticipated character and amenity expectations of this zone.

Zone No. 1(a) (General Rural)

1. Objectives of zone
The objectives of this zone are to promote the proper management and utilisation of resources by:

(a) promoting, enhancing and conserving:

(i) agricultural land, particularly prime crop and pasture land, in a manner which sustains its efficient and effective agricultural production potential;

(ii) soil stability by controlling and locating development in accordance with soil capability, as identified by the Department of Conservation and Land Management;

(iii) forests of existing and potential commercial value for timber production;

(iv) valuable deposits of minerals, coal, petroleum, and extractive materials by controlling the location of development for other purposes in order to ensure the efficient extraction of those deposits;

(v) trees and other vegetation in sensitive areas and in any place where the conservation of the vegetation is significant to the protection of scenic amenity or natural wildlife habitat or is likely to control or contribute to the control of land degradation;

(vi) water resources and water catchment areas for use in the public interest;

(vii) localities of significance for nature conservation, including localities with rare plants, wetlands, permanent watercourses and significant wildlife habitat; and

(viii) places and buildings of archaeological or heritage significance, including aboriginal relics and places;

(b) minimising the costs to the community of:

(i) fragmented and isolated development of rural land; and

(ii) providing, extending and maintaining public amenities and services; and

(iii) providing land for future urban development, for rural residential development and for development for other non-agricultural purposes, in accordance with the need for that development, and subject to the capability of the land and its importance in terms of the other objectives of this zone.

Dwelling-houses on land fronting certain roads

21. (1) This clause applies to land having frontage to a road listed in Schedule 2.

(2) The Council shall not consent to the erection of a dwelling-house or rural worker's dwelling-house on land to which this clause applies unless the dwelling is to be erected at a distance greater than 100m from the road boundary.

SCHEDULE 2 (clause 21)

	Roads
State Highways	*2, 3*
Main Roads	*54, 79, 248, 256, 258, 268*
Collector Road	*SR 30*
Currowang Road	*SR 90*
Oallen Ford Road	*SR 24*
Windellama Road	*SR 42*
Sandy Point Road	*SR 95*
Cullulla Road	*SR 33*

Mayfield Road	*SR 111*
Mogo Road	*SR 133*
Brayton Road	*SR 75*
Lumley Road	*SR 112*
Old Marulan South Road	*SR 83*
Marulan South Road	*SR 73*

The town of Marulan, where Brayton Road passes through the existing residential area on route to the Hume Highway underpass is located with the 2(v) Village zone. This is a necessarily broad zone by the nature of this instrument which encapsulates a wide variety of uses and village characters.

The instrument states the objectives of this zone as:

Zone No. 2(v) (Village)

1. Objectives of zone
The objective of this zone is to promote development in existing towns and villages and to allow future development in them in a manner which is compatible with their urban function by:

(a) ensuring the orderly and efficient use of land and infrastructure within each town and village;

(b) improving the amenity of residential, commercial, civic and community uses within the towns and villages; and

(c) conserving the buildings, landscape features and streetscape features that contribute to the character and identity of the villages

It is of note that the opening line of the objectives makes the distinction between towns and villages and cites both falling within this zoning. This is of particular importance when one considers the difference in land use generally experienced as the scale of a place changes from a town to a village and by inference to a hamlet or settlement like Bungonia.

The 2(v) Village zoning allows a broad range of uses understood by a consideration of how little is prohibited in this zone:

2. Without development consent Nil.

3. Only with development consent
Any purpose other than a purpose included in item 4.

4. Prohibited
Extractive industries; industry; intensive livestock keeping establishments; junkyards; liquid fuel depots; mines; offensive or hazardous industries.

While industrial uses are prohibited, light industrial uses, warehousing, transport depots, commercial uses and the like are all permissible uses within this zone. This has meant that the planning instrument does not provide the gradation of uses within larger towns that one would expect. It is noted that the draft LEP does change this approach. However, the result of the current zoning is that the residential development along the Village portion of Brayton Road sees a mix of land use including traditional single dwelling residential and light industrial and road transport facilities.

It is abundantly clear on visiting the town of Marulan that the centre of the town is located within the area away from Brayton Road to the south centred on George Street as the main street. This area contains the retail and commercial heart of the town along with the social and community attractions of schools, childcare, hotels, community facilities and parks.

The extension of Brayton Road through the town part of Marulan passes through the outskirts of the town in a location which contains dwellings as well as light industrial uses and road transport facilities consistent with the broad zoning of this land.

3.3 Draft Goulburn Mulwaree Strategy 2020

The Council in consultation with State Government Agencies and extensive community input has developed the draft Goulburn Mulwaree Strategy 2020 as a basis for the preparation of a comprehensive Local Environmental Plan for the Goulburn Mulwaree local government area. The new Goulburn Mulwaree Local Environmental Plan will replace the current two local environmental plans that currently apply. The strategy describes Marulan in the following terms.

Marulan is located on the Hume Highway, approximately 160 kilometres from Sydney and 31 kilometres north of Goulburn. Although primarily residential in character, Marulan has provided the function of a highway service centre. Marulan is also located along the Main Southern Railway, with passenger and freight services operating through the Marulan Railway Station, between Sydney, Canberra and Melbourne. Marulan provides local community services and utilities, including a primary school, shops, a hotel, a police station, and bushfire and medical services.

Key employment activities include several existing and proposed industrial activities, such as the Lynwood Quarry, Marulan South Quarry and the Marulan Waste Management Facility, and a number of industries located within the industrial zone. A substantial residential and industrial development proposal has been identified along Wilson Drive, east of the town. Marulan provides an important employment base for the local government area and will be of key importance to the future growth of Goulburn Mulwaree.[11]

Mining and transport storage are identified as key industries for Marulan each employing 12.4 per cent of the Marulan workforce.

The physical structure that supports economic and social activity in Goulburn Mulwaree is based on three key town centres and numerous supporting villages. The two town centres include Goulburn, as the commercial and administrative centre, Marulan as a key residential and employment growth centre, and Tarago.[12]

[11] Parson Brinckerhoff Draft Goulburn Mulwaree Strategy 2020 November 2006 p17
[12] Ibid p17

Increases in urban growth will bring about change to the acoustic environment, while community expectations for highly amenable residential environments will remain. Land use planning provides the opportunity to avoid land use conflicts arising from noise. Methods include:

Avoiding conflicts by locating noise incompatible land uses away from each other through zoning and physical buffers.

Ensuring noise generating land uses and activities implement best practice measures to manage noise emissions.

Recognising that residual noise impacts may exist beyond boundaries even where best practices are implemented.

Mitigating impacts by recognising that sensitive land uses affected by residual noise should be oriented, designed and constructed to ensure internal amenity is achieved.

Noise management strategies should be applied to all new development that may be affected by noise. The following noise policies are relevant:

NSW Industrial Noise Policy (Environment Protection Authority 2000).

Environmental Criteria for Road Traffic Noise (Environment Protection Authority 1999).

Rail Traffic Noise, Environmental Noise Control Manual (Environment Protection Authority 1994).[13]

It is noted that while the Strategy aims to manage noise through best practice measures it recognises that residual noise impacts may exist beyond boundaries even where best practices are implemented. The Strategy clearly recognises a balancing between desired growth and local amenity. The Strategy presents the following vision for Marulan.

- *Well planned growth (supported by sewage treatment system and reliable water supply).*
- *Industrial and commercial development promoted to provide employment opportunities.*
- *Significant increase in residential development on both sides of highway of a scale to support a new high school.*
- *Commercial development focused on George Street (the town centre) and establish Main Street program.*
- *Maintain rural character of surrounding areas, including Tallong through zoning control and minimum lot size provisions.*[14]

[13] Ibid. p28

The Strategy undertook a significant level of community consultation to establish the desired future character for Marulan. The Community desires were expressed as:

The Marulan community felt that residential development should be directed towards the north west of the village with potential areas including behind Collins Street and Loseby Avenue. There is a need for larger residential lots such as 2 hectares/5 acre lots to be developed outside of the current village boundary to north of Marulan on Brayton Road.

Suggested minimum lots sizes for Marulan include 700m² and 1,000m² with the density ranging from low to medium. Wider street frontages, increased Council services to Marulan, minimum water tank requirements and diversity in houses are some residential development issues.

Commercial development should be concentrated in the centre of George Street. The narrowing of George Street, establishment of more parks and the concentration of commercial development should lead to a more active commercial centre in Marulan as well as creating a safer environment. The community do not want to see Marulan split by the highway and stress the importance of the public domain and concentration of services.

Suggestions were made that identified areas south west of the highway being potential locations for industrial development as well as sites adjacent to the Ready-Mix site. Industry in Marulan should be graduated with the least intrusive industrial development located closest to residential areas. Buffer zones between industrial and residential land uses should also be established to prevent land use conflicts.

The community feel that the current highway crossing is dangerous and needs to be improved. Several suggestions were made to improve this crossing including making it conditional that any development to the east should establish a crossing for light vehicles and to encourage the proposed Ready-mix flyover for trucks.

Marulan will continue to operate as a key town servicing surrounding rural areas and villages. Based on a detailed assessment of Marulan and its function as a rural centre within Goulburn Mulwaree, the Strategy proposes to reinforce the status of Marulan and support modest growth. The strategy also seeks to formalise existing and future heavy industry west of Marulan and in south Marulan.

The existing Village zone is proposed to be amended to Zone R1 General Residential which will enable a variety of residential densities to be accommodated. Some extension of the existing Village

[14] Ibid p27

to the north is proposed to enable growth of the town. This area is proposed to be Zoned R2 Low Density Residential to reflect the range of housing types that may be expected.

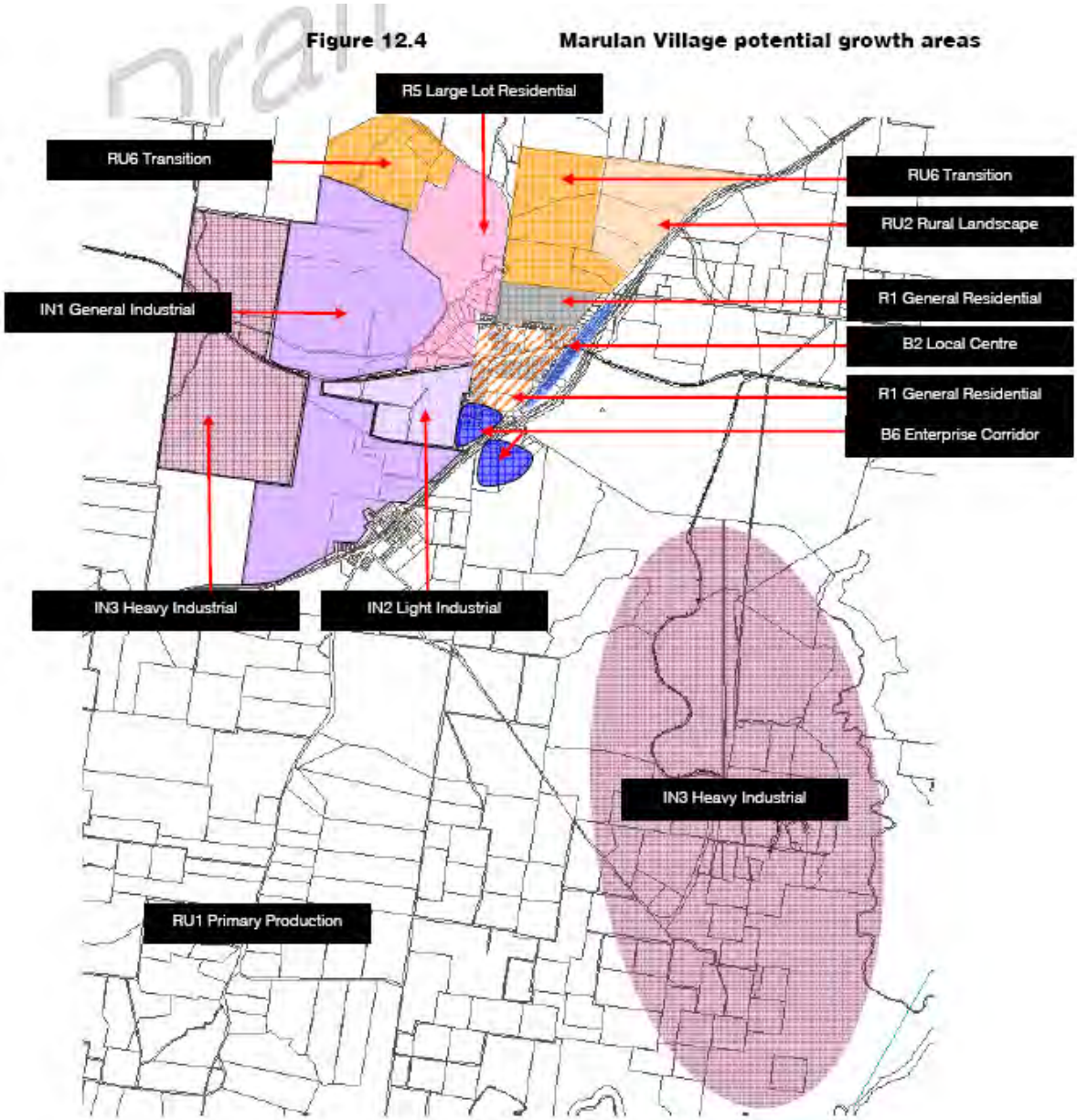
The Strategy also supports the existing Main Street (George Street) and proposes to rezone this area Zone B2 Local Centre to reinforce the importance of the commercial precinct and protect this from alternative land uses. This will enable a variety of land uses including commercial, employment, retail and mixed uses. [15]

Community views about Marulan demonstrated willingness to:

- *locate light industrial uses close to the town*
- *ensure buffers between industrial and commercial development*
- *separate local and through traffic particularly truck movements along George Street*
- *locate low impact industry closest to residential zones*
- *focus commercial development in George Street*
- *avoid severance of the Village by the Hume Highway*
- *protect existing heritage*
- *promote development that is sympathetic to existing built forms*
- *promote good urban design*
- *direct residential areas toward the north of the town*
- *support seniors living accommodation*
- *vary residential lot sizes between 700m² and 1,000m²*
- *increase Council services to Marulan (e.g. garbage collection)*
- *promote use of tank water*
- *improve local public transport*
- *address flood constraints in North Marulan*
- *improve existing Roads and Traffic Authority crossing.*[16]

[15] Ibid. p277
[16] Ibid. p297

Figure 12.4 identifies the key expansion areas for Marulan and aims to retain an appropriate spatial layout to enable industrial and sensitive land uses to coexist. An RU6 Transition Zone is proposed north of Betley Park to provide the necessary buffer from industrial to residential land uses and protect the town from land use conflicts and inappropriate environmental impacts.[17]



The Strategy promotes heavy industrial land uses at west and south Marulan to support existing mining, extractive industries and other forms of offensive and hazardous industries including fireworks manufacturing.

[17] Ibid: p297

The two areas identified are extensive due to the proposed nature of the operations, existing and proposed (Mining and Extractive industries). Additional areas for general and light industrial, ancillary to the major two operations have also been identified to take advantage of the development likely to stem from these primary land uses.

The Strategy also recommends provision of Zone B6 Enterprise Corridor on either side of the Hume Highway to support existing service centres. This also enables ancillary development around these land uses and modest expansion for employment purposes.

Population growth within and around Marulan will result in increasing expectations for more reliable utilities. The provision of additional facilities and services, including recreation and aged care facilities, as well as demand for employment generating activities (eg service and light industries) will attract further growth to Marulan. This growth is influenced by Marulan's proximity to Sydney and relatively less expensive land compared to Wingecarribee and Wollondilly.

Commercial land uses would be focused to George Street. Future development would be required to retain a commercial presence and not replace existing commercial stock with residential uses. This approach will reinforce the function of the Local Centre zone and minimise pressure from alternative land uses from occupying key sites for non-commercial uses. Future development will also be guided by development control principles that would encourage future uses to incorporate sound design and be sensitive to existing uses and heritage items.

While there are a number of large parcels of undeveloped land surrounding the existing Village, any extension of the Village footprint for residential purposes would require a detailed local environmental assessment. The site specific local environmental study would need to identify and assess environmental constraints including bushfire risk, flooding and topographic issues that would affect use of the site.

Areas beyond the existing Village zone to the north are recommended for the future expansion of Marulan and are recommended primarily for 1,000 square metre lot residential development (Zone R2).

Large lot residential to the north-west of Marulan (Zone R5) has been previously identified as Rural Small Holdings. The proposed zone will have a minimum lot size of 2,000 square metres (where serviced) or 10 hectares (where unserviced). Servicing of unserviced areas would be wholly developer funded.

Following further investigations, detailed subdivision layouts and densities may be derived. Sites may also be identified for large scale rural residential estates or subdivided in such a way that they can be further subdivided in the future as required.[18]

Zone R1 General

Residential

This area generally comprises the former Marulan Village footprint and includes a number of residential styles dominated by detached residential dwellings.

This area is relatively flat and unconstrained and is capable of further residential development (infill).

The Strategy recommends minimum allotment sizes of 700 square metres.

Good road access is available including access to the Hume Highway interchange.

Good access to Goulburn and Sydney.

Includes a railway station.

Variety of allotment sizes may yield differing residential products.

Close to educational establishments and employment area.

Opportunity for bike and pedestrian share-way into local centre.

Capable of connection to town utilities including energy, communications, reticulated water and sewer systems.

Some areas vegetated however appropriate buffer required to existing environmentally sensitive areas.

Impacted by bushfire prone areas.

Residential amenity would be high given relative distance to insensitive land uses.

Development controls to guide development design and protect residential amenity and town aesthetics.

A new road pattern would be required as part of any new development. The cost of all internal roads shall be borne by the developer.

Limited identified European and Aboriginal heritage

Industry:

West Marulan

Areas comprise environmental constraints including vegetation,

[18] Ibid. p280

localised flooding, bushfire, topographical and access. Future industrial uses would need to address these environmental constraints as part of the detailed planning for each proposal.

Industrial land uses to reflect existing uses and formalise activities.

Close to Hume Highway and heavy rail.

Good access to employment market – west to Goulburn and east to Sydney.

Variety of allotment sizes may yield differing industrial products.

Considerable buffer from sensitive land uses available including RU6 Transition Zone to protect residential amenity.

No town utilities currently connected to these areas. Utilities and water supply would therefore need to be funded by the developer.

Development controls to guide development design and protect residential amenity and town aesthetics, particularly where visible from Hume Highway.

A new road pattern would be required as part of any new development. The cost of all internal roads shall be borne by the developer.

European and Aboriginal heritage to be identified via independent study.

"Designated development" (eg. Mining and Extractive industries) would be subject to a detailed Local Environmental Study pursuant to the Environmental Planning and Assessment Act 1979.[19]

The Strategy does not propose any change to the existing Village boundary or adjoining land uses to Bungonia. This reflects the community's aspirations to retain the existing rural living lifestyle of this Village. From the visioning process undertaken as part of the Strategy preparation, the Bungonia community sought to retain the character of their village and ensure that any new developments are sympathetic to the heritage character of the village. Among the key characteristics expressed, the Bungonia community sought the following:

retain the rural atmosphere

preserve the natural and built environment

[19] Ibid. p283

create a vibrant village centre with local shops, cafes and small industries to attract visitors

encourage home based industries, particularly IT industries

ability for the district to grow at a controlled rate and to maintain agricultural practices.

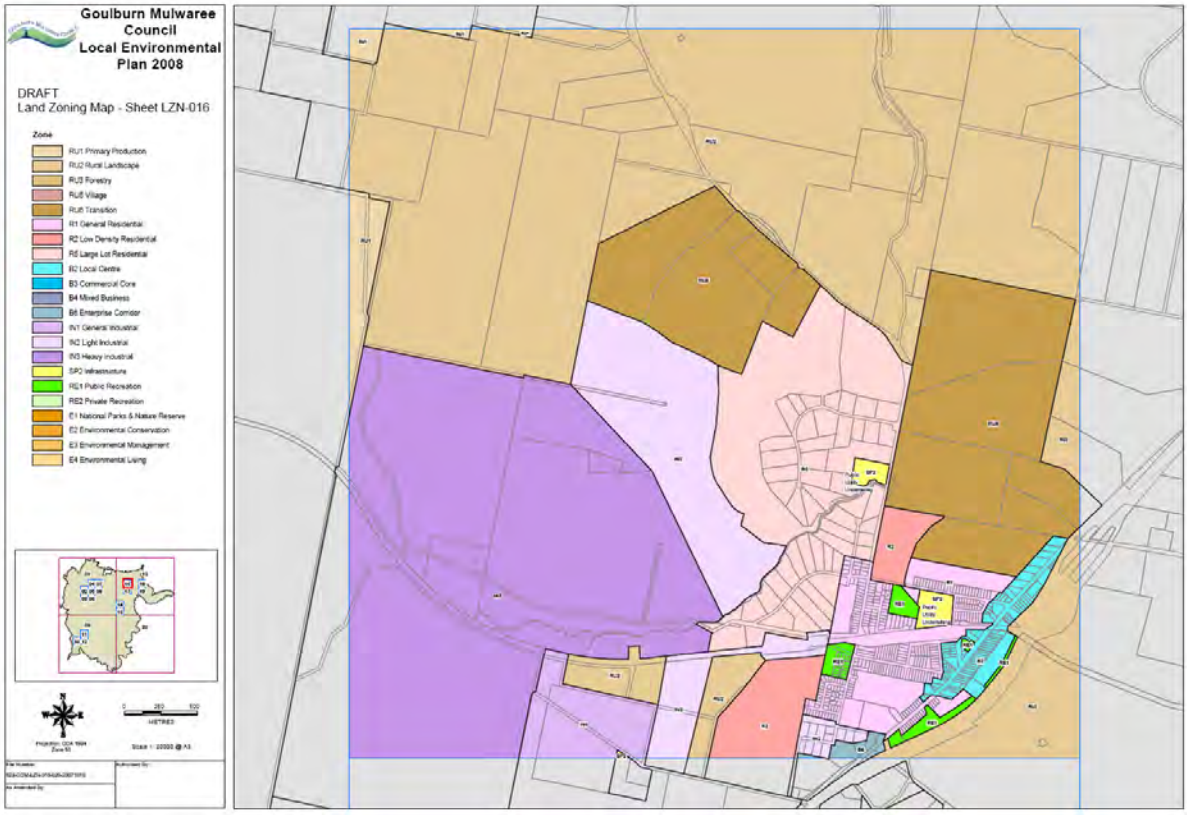
The Strategy retains the existing Village boundary and enables further growth to support some increase in land use activity without adversely affecting the rural atmosphere of the Village. In assessing future development within Bungonia, Council would be cognisant of the community's needs and limit development to ensure the objectives of the Village zone reflect the aspirations and vision of the community.[20]

[20] Ibid. p288

3.4 Draft Goulburn Mulwaree Local Environmental Plan 2007

The draft Goulburn Mulwaree Local Environmental Plan 2007 (dLEP)creates the implementation framework for the matters identified within the 2020 Strategy to be achieved into the future. The dLEP utilises the standard LEP format to interpret this desired future character into the planning instrument that provides a far more detailed zoning framework than that which currently exists within the current LEP 1995.

The dLEP provides for a more complex layering of zones within the urban areas and urban fringes to achieve these goals but remains consistent with the matters identified within the strategy. The extract below illustrates the proposed zoning changes which are then included below.



Zone RU1 Primary Production

1 Objectives of zone

• To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
• To encourage diversity in primary industry enterprises and systems appropriate for the area.
• To minimise the fragmentation and alienation of resource lands.
• To minimise conflict between land uses within the zone and with adjoining zones.
• To promote the use of agricultural land for efficient and effective agricultural production.
• To maintain areas of high conservation value.
• To allow for the development of non-agricultural land uses which are compatible with the character of the zone.
• To allow the development of processing, service and value adding industries related to agriculture and primary industry production.
• To protect and enhance the water quality of receiving watercourses and groundwater systems to reduce land degradation.
• To minimise the visual impact of development on the rural landscape.

Zone RU6 Transition
1 Objectives of zone
• To protect and maintain land that provides a transition between rural and other land uses of varying intensities or environmental sensitivities.
• To minimise conflict between land uses within the zone and adjoining zones.

Zone R1 General Residential
1 Objectives of zone
• To provide for the housing needs of the community.
• To provide for a variety of housing types and densities.
• To enable other land uses that provide facilities or services to meet the day to day needs of residents.
• To maintain the economic strength of commercial centres by limiting the retailing of food and clothing.

Zone R2 Low Density Residential
1 Objectives of zone
• To provide for the housing needs of the community within a low density residential environment.
• To enable other land uses that provide facilities or services to meet the day to day needs of residents.
• To maintain the economic strength of commercial centres by limiting the retailing of food and clothing.

Zone R5 Large Lot Residential

1 Objectives of zone

• To provide residential housing in a rural setting while preserving environmentally sensitive locations and scenic quality.

• To ensure that large residential allotments do not hinder the proper and orderly development of urban areas in the future.

• To ensure that development in the area does not unreasonably increase the demand for public services or public facilities.

• To minimise conflict between land uses within the zone and adjoining zones.

• To facilitate and promote an increased range of living opportunities by providing for low intensity residential development compatible with the rural characteristics of the locality.

• To encourage subdivision of land that is consistent with the constraints and opportunities of the land

Zone B2 Local Centre

1 Objectives of zone

• To provide a range of retail, business, entertainment and community uses which serve the needs of people who live in, work in and visit the local area.

• To encourage employment opportunities in accessible locations.

• To maximise public transport patronage and encourage walking and cycling.

Zone IN2 Light Industrial

1 Objectives of zone

• To provide a wide range of light industrial, warehouse and related land uses.

• To encourage employment opportunities.

• To minimise any adverse effect of industry on other land uses.

• To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area.

Zone IN3 Heavy Industrial

1 Objectives of zone

• To provide suitable areas for those industries that need to be separated from other land uses.

• To encourage employment opportunities.

• To minimise any adverse effect of heavy industry on other land uses.

• To recognise and provide for the diverse demands and implications of industry, warehousing, transport and servicing activities and ancillary land uses.

It is considered that the dLEP reinforces allows for the implementation of the desired future character of the 2020 Strategy.

3.5 Draft Goulburn Mulwaree Development Control Plan 2007

Marulan is located on the Hume Highway, approximately 160 kilometres from Sydney and 31 kilometres east of Goulburn. Although primarily residential in character, Marulan has provided the function of a highway service centre.

Marulan is also located adjacent to the Main Southern Railway, with passenger and freight services operating through between Sydney, Canberra and Melbourne. Marulan provides local community services and utilities, including a primary school, shops, a number of churches, a hotel, a police station, and bushfire and medical services. Key employment activities include several existing and proposed industrial activities, such as the Lynwood Quarry, Marulan South Quarry and the Marulan Waste Management Facility, and a number of industries located within the industrial zone. A substantial residential and industrial development proposal has been identified along Wilson Drive, east of the town.

Marulan is a key town servicing surrounding rural areas and villages in the northern portion of the Goulburn Mulwaree local government area. Marulan provides an important employment base for the local government area and will be important for the future growth of Goulburn Mulwaree. This plan seeks to reinforce the status of Marulan and support the future growth of the locality. This plan also seeks to consolidate existing and future heavy industrial uses west and south of Marulan.

This plan seeks to enable a variety of residential densities to be accommodated in Marulan. Some extension of the existing town to the north is proposed to facilitate continued growth and diversity of housing types. This plan aims to reinforce the existing character of the main street of Marulan (George Street) and the importance of the commercial precinct.

Heavy Vehicle generating developments – Haulage Routes Objectives

Ensure village and rural amenity levels are maintained or improved on current levels along haulage routes to and from the development site.

Controls

A principal haulage route needs to be nominated when submitting a development application for a project such as a quarry, transport terminal, distribution centre or the like, which involves significant heavy vehicle movements. The applicant needs to justify selection of the haulage route based upon

traffic engineering grounds, amenity considerations and availability of alternative options (i.e. rail). If the existing road network is unsatisfactory then upgrades will be required.
The following level of detail is required to be submitted for Council's consideration:

Impact on the road network:

- *Existing traffic movements along the haulage route.*
- *Estimated increase in traffic movements resulting from the proposed development. This includes detail of any staging proposal, truck / car ratio and the life of the project / development.*
- *Foreseeable increases in traffic movements resulting from other known development (i.e. subdivision of land etc).*
- *Heavy vehicle type and volume (i.e. rigid or articulated, covered or uncovered).*
- *Type of material transported.*
- *Hours of operation and frequency of movements.*

Impact on amenity and the environment – Rural and Village Zones:

- *Proximity of haulage route to residence, community land etc. Community expectation including ambience and enjoyment of life.*
- *Community assets including accessibility to parks by residents and visitors.*
- *Noise generation.*
- *Vibration generation.*
- *Visual impact.*
- *Pedestrian safety and safety of other road uses.*
- *Impact on roadside habitat resulting from road upgrade works.*
- *Consistency with the objectives of all zones that the haulage route passes through.*

The Council has advised that these matters included within the dDCP are directly arising from the CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 decision. The preceding investigation and the purpose of this report in general is to understand the decision in CEAL and the proposal and its anticipated impacts in the light of that decision. The CEAL decision requires an understanding of the considerations under S79c(1) which includes the current planning instruments and the future planning framework so as to understand and assess the impacts on amenity in the light of the character and desired future character of the location.

It is considered that the preceding discussion give a solid foundation from which to make that assessment.

4.0 PROJECT DESCRIPTION

4.1 Introduction

Rock Quarrying Using Open Cut Quarrying Methods

The quarry operation would involve the sequential removal of vegetation, soil, overburden and interburden above the hard rock resource. Earthmoving (excavator, truck and grader) equipment would be used to clear the larger vegetation with groundcover removed with the topsoil during soil removal activities. Any topsoil and subsoil would be removed from the areas of the Project Site to be disturbed. This soil would be either transferred directly to completed sections requiring rehabilitation, or stockpiled for future use during rehabilitation. Overburden above the rock resource would generally be loaded to trucks for transfer and placement either out-of-pit, or in-pit within a completed section of the quarry. To remove the rock, benches would be developed along the length of quarry. As sufficient rock is fractured by explosives, it would be loaded onto trucks and transported to the rock processing area.

Rock Processing

The processing of rock would be undertaken within the processing area to be located northeast of the quarry pit. A heavy vehicle haul road will connect the quarry pit and the processing area. The rock processing plant will have a rated capacity of approximately 300tph. This will enable production of up to 500,000tpa of saleable product.

The processing area would contain the following components.

- Primary crusher.
- Secondary crusher and screens.
- Tertiary crusher and screens.
- Main screen.
- Interconnecting conveyors.
- Various product stockpiles.

Rehabilitation

The overburden emplacement would be progressively shaped to create a bund wall that provides acoustic and visual screening of the rock processing area. The stripped and/or stockpiled soil resources would be placed over the shaped landform and the area seeded with pasture species to obtain initial stability and native woodland vegetation to provide long term stable vegetation cover. Vegetation will be established on the remnant benches within the quarry pit and a significant depression will remain in the landscape covering approximately 6ha. The remaining area of the Project Site would be returned to agricultural land with a riparian corridor established along

Chapman's Creek. Some areas will be fenced and managed for conservation and/or re-establishment of Endangered Ecological Communities (EECs).

Transportation

The crushed and screened product would be transported to diversely located markets north and south of Marulan by truck.

The Proposed Transport Route

In Stage 1, trucks using the transport route leave the Gunlake Project Site and travel along Brayton Road towards the Marulan Interchange. At the Interchange they either travel north or south along the Hume Highway. Returning trucks from the north proceed through the Interchange to Brayton Road and back to the Project Site. Trucks returning from the south exit the Highway south of Marulan and proceed along George Street to Brayton Road and then to the Project Site.

A By-pass road will be constructed to enable Stage 2 to proceed. This road will connect Brayton Road to Red Hills Road and enable the Hume Highway to be accessed north of Marulan. Trucks heading north and returning from both the north and the south will use the By-pass road to access the Project Site. Trucks heading south in Stage 2 will continue to use the Marulan Interchange to access the Highway.

The life of the proposed Gunlake Quarry Project is planned for an initial 30 years, with resource available to continue to at least 100 years, subject to additional approval.

Employment

During the construction phase of approximately 3 months, an estimated workforce of up to 10 full-time equivalent persons would be employed. The operation of the proposed quarry would require 20 full-time employees. Approximately 25 truck drivers would be employed to transfer saleable product away from the Project Site. The bulk of the quarry employees will be locally employed people or people prepared to commute to secure employment.

Waste Management

The principal wastes that would be generated by the development can be categorised as production and non-production wastes. Production wastes are primarily overburden, which would be placed in the overburden emplacement site and back into the quarry pit. Nonproduction wastes would include general domestic-type wastes from the on-site buildings and routine maintenance consumables, fencing materials, oils and grease and sewage. Domestic-type wastes would be collected and disposed of by a licensed waste disposal contractor, with recyclable materials separated where possible. Gunlake would install an aerated wastewater treatment system (AWTS) that will provide

secondary treatment effluent suitable for disposal by irrigation and Gunlake would irrigate the effluent within a designated area on the Project Site.

Rehabilitation and Final Land Use

Gunlake would adopt a progressive approach to the rehabilitation of disturbed areas within the Project Site to ensure that, where practicable, completed quarrying or overburden emplacement areas are quickly shaped, soil applied and vegetated to provide a stable landform.

Rehabilitation would include the following activities.

- Overburden placement and shaping.
- Subsoil and topsoil replacement.
- Drainage installation.
- Revegetation.

Rehabilitation success would be monitored with remedial work on revegetated areas and/or water management structures undertaken as required. Noxious weeds would be controlled through targeted campaigns on an as-needed basis.

4.2 Need for the Project

Introduction

In assessing whether the development and operation of the Project is justified, consideration has been given both to the predicted residual impacts on the local and wider environment and the potential benefits the Project would have for the Proponent, Marulan, Goulburn Mulwaree Local Government Area, NSW and Australia. When considering the predicted residual impacts, a review of the proposed controls, safeguards and mitigation measures of the Proponent was also undertaken to determine the emphasis placed on impact minimisation and the incorporation of the principles of ESD.

6.3.2 Biophysical Considerations

Consideration has been given to the range of residual impacts on the biophysical environment predicted should the Project proceed, after the adoption of a number of design and operational procedures, mitigation measures and/or offset strategies. The Project would have a range of impacts on the biophysical environment. The residual impacts considered of greatest significance, and the proposed management of these, are summarised as follows.

Water Resources

A proportion of the surface water currently flowing through the Project Site would be retained on site for use in dust suppression. The “clean” water component captured would be within the maximum harvestable right for the Project Site, with additional clean water diverted to natural watercourses. Sediment-laden or “dirty” water originating from disturbed areas would be collected and preferentially used for dust suppression. Any excess dirty water would be retained to allow sufficient time for suspended solids to settle out and enable it to be discharged within DEC criteria. During the life of the Project, the local groundwater level in the immediate vicinity of the quarry pit will be lowered. However, as the water in these layers is not generally accessed by local groundwater users, a significant impact on non-Project related registered bores in the vicinity of the Project Site is not expected.

Soils and Land Capability

Impacts on the soils of the Project Site would be temporary and manageable given the procedures intended to stockpile and revegetate all soils.

Flora and Fauna

Disturbance to native vegetation and fauna habitats would be limited given the largely cleared nature of the Project Site and avoidance of disturbance to the more sensitive remnant communities. Rehabilitation would include establishment of a riparian habitat corridor along Chapman’s Creek. Some areas will be fenced and managed for conservation and/or re-establishment of Endangered Ecological Communities (EECs).

Aboriginal Heritage

The small scatters of artefacts identified near the Project will be salvaged and relocated prior to any site activity. The Proponent is committed to ensuring that any artefacts or sites of Aboriginal heritage significance that may be identified in the future are appropriately protected and/or managed.

Noise

The Project would generate noise levels over and above those currently experienced throughout the existing environment. These noise levels, assuming the implementation of the operational commitments identified in Section 5, would not exceed the DECC nominated criteria. The Proponent will develop and implement measures to mitigate or minimise noise levels.

Air Quality

Air pollutant levels are predicted to be below DECC criteria for deposited dust, PM10 and PM2.5 at all non-Project related residences, ie. assuming the adoption of a range of standard dust control measures.

Visibility

Activities on the Project Site are not visible from local roads. Limited long views can be had from neighbouring properties. The Project will have minor visual impact and create a very minor change to the existing visual amenity although the construction and vegetation of the overburden emplacement around the Rock Processing area would help to mitigate this change.

Traffic

Traffic would increase along the saleable products transport route between the Project Site and the Hume Highway. Intersection and road upgrades and construction will help to accommodate this increase. The Proponent has proposed a levy for road upgrades and maintenance in accordance with the Council's Section 94 Contribution Plan in order to maintain, repair and where necessary construct new roads.

When considering the implementation of the controls, safeguards and mitigation measures proposed by the Proponent the level of impact on the biophysical environment is relatively minor.

Socio-economic Considerations

The impacts of the Project on the socio-economic environment would be largely positive given the positive increase in employment opportunities, the Proponent's commitment to employing local residents, the diversification of industry within the Marulan area and the flow-on effects to subsidiary and associated industries and businesses of the Project.

Marulan and Goulburn Mulwaree Local Government Area are also considered to have sufficient existing facilities and services to cater for the very minor predicted population growth arising from the development.

The Project would also have significant economic benefits to NSW and Australia through the payment of taxes. The saleable products are an essential resource for future urban, industrial and transport developments.

Consequences of not Proceeding with the Project

The consequences of not proceeding with the Project include the following:

• The hard rock resource would not be quarried by the Proponent. Such an outcome would be contrary to the State's and the Proponent's objective to maximise rock resource utilisation in the Marulan area.

• The opportunity to create up to 20 full-time jobs would be foregone. The additional 25 people employed driving trucks delivering saleable product to diverse market locations would have to find an alternative employment opportunity.

• The quarried rock industry would have reduced competition.

• The disposable wages for the full-time and part-time workforce would be foregone, a substantial proportion of which would be spent in the Marulan area.
• The opportunity to diversify industry within the Marulan area would be foregone along with the training opportunities proposed by the Proponent. This loss of training opportunities would also reduce the ability of the local communities to retain younger people who are generally leaving to pursue greater opportunities elsewhere.
• Foregoing PAYE taxes for the 30 year life of the quarry.
• The minor impacts on the local biophysical environment would not eventuate.

It is considered that the benefits of proceeding with the Project therefore far outweigh the minor impacts on the environment that would result. The consequences of not proceeding with the Project also weigh heavily in favour of proceeding with the Gunlake Quarry Project.

The Gunlake Quarry Project has, to the extent feasible, been designed to address the issues of concern to the community and all levels of government. The Project provides for the quarrying, processing and despatch of a high quality rock product which would be significant in generating employment opportunities and boosting the local economies of Marulan and other surrounding communities. The development and operation of the Project would be a positive change to the local area economic base. The post-quarrying landform would integrate the re-establishment of agricultural land with areas designated for the conservation and extension of native vegetation and fauna habitat.

This document and the range of specialist consultant studies undertaken have identified that the Gunlake Quarry Project should proceed because it would:
(i) contribute towards satisfying the demand for crushed rock products;
(ii) reduce risk levels associated with possible incidents and impacts on the environment to an acceptable level;
(iii) have a minimal and manageable impact on the biophysical environment;
(iv) satisfy sustainable development principles;
(v) provide for continuing and future use of the Project Site for agriculture;
(vi) provide significant training and employment opportunities for residents of Marulan and surrounding communities; and
(vii) contribute to the diversification of industry within the Goulburn Mulwaree Local Government Area and promote a continued growth in economic activity in the LGA.

4.3 Project Plan

It is proposed that the crushed products will be hauled by road from the quarry site direct to the Sydney market, and to other markets to the north and south of Marulan. Initially haulage would be

via existing truck routes through the outskirts of Marulan (Brayton Road) to the Hume Highway interchange near the truck checking station at an average of 25 truck movements per day. Products will be hauled both north and south on the Highway, with approximately 80% or more to the north. As production increases, a bypass route around Marulan will be constructed by the Proponent to allow product destined for northern markets to bypass Marulan.

The bypass route involves the construction of a haul road over land owned by the Proponent to link with a new road to be constructed along a Crown Road Reserve to Red Hills Road. The bypass road will be a public road and not for the exclusive use of the Proponent. The proposed construction of the bypass road will be timed for when quarry sales growth would result in truck movements through Marulan exceeding the average of 25 truck movements per day. It is anticipated that this will occur within 3 to 5 years from commencement of aggregate production on the site.

When constructed, all traffic for northern markets will use this route. Returning trucks from the north will not turn right at the Hume Highway to enter Red Hills Road, but will continue to the Marulan exit near the truck checking station, pass under the Highway, negotiate a new roundabout at the intersection of Brayton Road and George Street and return via the Highway to turn left into Red Hills Road.

Trucks travelling south will continue to use Brayton Road to the Hume Highway interchange but returning trucks will turn left into Red Hills Road. Truck movements using the Brayton Road route will continue to be an average of 25 per day for the life of the quarry.

The Environmental Assessment states that the quarry will operate from 0700 hours to 1800 hours, Monday to Saturday with blasting conducted between 0900 hours and 1700 hours Monday to Friday and material haulage, to the north along the proposed bypass route when constructed, between 2100 hours Sunday and 1800 hours Saturday.

4.3.1 Stage 1 Traffic

Two stages of operation are proposed:

Stage 1: An average of 25 truck movements per day, with a peak no greater than 50% more than that average. Material will be transported by articulated semi-trailer and truck-and-dog rigs, with three or four-axle dogs.

The haulage route for this Stage will utilise existing roads:

• New access from the Site to Brayton Road

• Brayton Road, through northern edge of Marulan, to the Hume Highway interchange near RTA Checking Station, most trucks will use this interchange.

• Trucks arriving from the Highway South will off-load near Highway Service Centre and travel northbound through Marulan town centre, to access Brayton Road.

In the Environmental Assessment the proposed haulage hours for Stage 1 are 9pm Sunday to 6pm Saturday. (After construction of the by-pass route, being Stage 2, there will be no haulage through Marulan outside the hours of 6.00am to 6.00pm Monday to Saturday) Taking the daily average truck movements of 25, there will be an average of 1.04 truck movements each hour on Brayton Road.

The distribution of haulage of material is estimated to be 80% to the Highway North and 20% to the Highway South. For the trucks returning from the Highway South, these will be 25/2 x 20% = 2.5/day, say up to 3 movements each day through the town centre.

The Site access onto Brayton Road will be constructed prior to the haulage of quarry material in Stage 1. This access will be near the current site access. To maximise sight distance, some clearing of roadside vegetation is proposed.

For Stage 1, with an average of 25 truck movements per day, the average hourly truck movement will be one per hour. Clearly with this level of flow overlayed onto the current peak hour flows there will be no traffic capacity issues at the Site access intersection or at the Brayton Road/Stoney Creek Road intersection.

The additional 25 truck movements each day in Stage 1 would increase the total heavy vehicle movements to approximately 125 movements each day, with the articulated truck movements increasing from 53 to 78 movements each day. The total traffic flows would not increase substantially.

Consideration must be given to whether the increased truck traffic in Stage 1 might potentially impact on amenity through traffic noise. The base hourly traffic flows set out in Table 2.6 of the Transport Study undertaken by Chris Hallam and Associates (Refer Environmental Assessment Volume II, Part 1), can be used to assess such impacts, adding an average of one truck movement each hour. In traffic engineering terms, assessment of the potential impacts on amenity through traffic noise can be assessed through reference to environmental capacity criteria. The current maximum hourly flow is 77 veh/hr. Between 6.00am and 6.00pm the Stage 1 hourly flows will increase by about one truck each hour. The highest peak hourly flow will increase from 77 to 82 veh/hr, in the afternoon. The

highest morning flow will be 68 veh/hr. In terms of the environmental capacity thresholds, where the environmental goal for a local residential street is 200 veh/hr, the situation will be very satisfactory.

George Street

The Stage 1 operation will see 2-3 trucks each day travel from the Highway South, left into Portland Avenue, right into George Street and along George Street to Brayton Road. This movement will not occur in Stage 2, when any trucks arriving from the Highway South will continue on the freeway pass the truck checking station and turn left into Red Hills Road.

George Street immediately north of Portland Avenue carries 60-100 vehicles/hour in peak periods, with up to 15 truck movements in an hour. The additional truck movements would have an insignificant impact.

George Street/Brayton Road Intersection

During Stage 1, with an average of 25 truck movements each day, no changes are proposed to the existing Hume Highway interchanges at Marulan.

During Stage 1, there will be an average of 10 truck movements each day travelling eastbound on Brayton Road and turning left onto the northbound onload ramp, an average of 10 truck movements travelling southbound on the Highway, offloading at the Brayton Road interchange and heading westbound along Brayton Road, and 2-3 truck movements each day heading eastbound under the Highway and joining the southbound load ramp to travel to the Highway South. With these movements of less than one per hour added to the current flows, there clearly will not be any road or interchange capacity issues. This interchange has ample spare capacity for these movements.

4.3.2 Stage 2 Traffic

Stage 2: Above the average 25 truck movements, increasing over time to an estimated 100 truck movements per day. In addition to the truck movements, there will be staff commuting movements. With 20 staff on the Site, and conservatively assuming every staff member drives, there will be 40 light vehicle movements each day by staff by Stage 2. There will also be occasional visitor movements plus deliveries.

While the current assessment has been based on the same vehicle types, consideration will be given to the used of B-Doubles. If proposed, a separate application will be made for the haul route to be approved as a B-Double route.

For Stage 2, with truck movements exceeding the average of 25/day, a new By-Pass road is proposed to be constructed, from Brayton Road to Red Hills Road, along an unformed Crown Road. The starting point on Brayton Road will be through land owned by Gunlake Quarries, at a location selected to maximise sight distances to/from Brayton Road. This route will join Red Hills Road at the point where it makes a right-angle turn to the North. Where Red Hills Road joins the Hume Highway, quarry trucks will only make left turns. It is proposed to dedicate this new By-Pass road to Council, as a public road.

For unladen quarry trucks arriving from the Highway North, they will proceed southbound along the Highway and off-load at the Marulan Truck checking station. At this interchange, they will make a U-turn manoeuvre at the proposed roundabout at the intersection of George Street and Brayton Road, to return northbound along the Highway prior to making a left-turn into Red Hills Road.

Stage 2 will have an estimated 100 truck movements each day. The hours of haulage described in the Environmental Assessment will be from 9.00pm Sunday to 6.00pm Saturday. These hours will apply to the main route, via Red Hills Road. For haulage to the Highway South, the hours 6.00am to 6.00pm Monday to Saturday will apply.

It is recommended that all haul roads be signposted with an 80 km/hr speed limit, for trucks and buses. A similar restriction applies on South Marulan Road, at South Marulan. While it is accepted that this recommendation is subject to the consent of the RTA, it is recommended to improve traffic safety. The relative distances of the haul routes are not long, with the distance from the Site to the new By-Pass road being approximately 4.0 km, with a further 1.5 km to the 60 km/hr restriction in Marulan. The total distance along the proposed By-Pass road and Red Hills Road is approximately 3.0 km.

For Stage 2, hourly truck movements between the Site and the new By-Pass road junction will be 2 truck movements per hour in each direction. Again, overlayed on the current "peak" hour flows, there will be no traffic capacity issues. These are average truck flows. A peak hour might see up to a 50% increase, or 3 truck movements per hour, which again will be insignificant in traffic capacity terms. The despatch of laden trucks will be determined by the loading capacity at the quarry.

For Stage 2, when daily truck movements exceed the average of 25 movements per day, the current proposal is to construct a new roundabout at the junction of Brayton Road and George Street, Marulan, just west of the Marulan Highway interchange adjacent to the RTA truck checking stations. This will allow southbound vehicles to offload from the Highway, pass under the Highway towards Brayton Road, make a U-turn at the roundabout and return to the Highway via the left-turn onload ramp. The existing priority controls on the Brayton Road/George Street junction would simply be replaced by a roundabout, requiring all vehicles to slow down. This would provide net safety benefits. The roundabout will be designed to provide for large articulated trucks to turn. It will need to be constructed prior to the introduction of Stage 2 traffic movements. The Stage 2 traffic operations will see an additional 2 trucks per hour making the U-turn. A noise analysis has found that these movements would not have a significant impact on adjoining properties.

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In this Stage there will be up to 40 truck movements each day, or up to 2 trucks/hour making a U-turn at the proposed roundabout at the intersection of Brayton Road and George Street to return to the Highway northbound, to enable them to turn left into Red Hills Road. Up to 1 truck/hour (10 truck movements per day, over 6am-6pm) would travel eastbound along Brayton Road, to turn southbound onto the Highway at this northern interchange adjacent to the RTA truck checking station. The additional traffic at this northern interchange will have minimal effect, with high levels of service remaining.

The construction of the proposed roundabout at Brayton road and George Street will remove the need for any vehicles to make a right turn from the Highway North into Red Hills Road. Hence, with the option to upgrade the Highway/Red Hills Road junction to allow left turn movements by quarry trucks, the low volume of general traffic making this right turn now could simply use these existing roads to return to Red Hills Road or continue along Brayton Rd and use the new By-Pass road to Red Hills Road.

Prior to truck movements exceeding the average of 25 movements each day, the Stage 2 haulage route will be constructed to provide a link between Brayton Road and Red Hills Road, and with the junction of Red Hills Road and the Hume Highway upgraded. This new By-Pass road is proposed to be a public road.

The current traffic flows in Red Hills Road just west of its junction with the Hume Highway are very low, with an average daily traffic flow of 65 veh/day, relatively evenly split per direction.

Construction of the By-pass road to connect Brayton Road and Red Hills Road has historically been recognised by Council and some residents as a worthwhile improvement to the local road network. The Report dated 24th August 2000 by Mulwaree Shire Council Director of Environmental Services favours a connection to Brayton Road from Red Hills Road *as it connects the Uringalla Estate and future 1(b) land north of Marulan to the town and provides better social and commercial connection with the town and can proceed, as the area develops, from Section 94 Contributions*. The Mulwaree Shire Council-Director of Environmental Services Report-on Building, Planning, Health and General dated 17th December 1998 describes this as a suitable option as it:

- *Reduces highway usage,*
- *Reduces the potential for accidents at a further highway access;*
- *Provides easy access to Marulan for Uringalla residents;*
- *Provides a good road along the north and west of the Urban Investigation Zone; and*
- *Supports the further development of Marulan to supply the daily needs of local residents.*

The reports also refers to letters from neighbours supporting this access to Brayton Rd.

The current average daily traffic flows on Red Hills Road are 65 veh/day, including 7 rigid truck and 2 articulated truck movement. Stage 2 would see an estimated 80 truck movements each day, taking the total daily movement to 145 veh/hr, substantially less than 500 veh/day.

4.3.3 Consideration of Alternate Haulage Routes

The primary transport route, as proposed for Stage 1 operations, is via Brayton Road from the Site through to the existing Hume Highway interchange at Marulan. This utilises existing road infrastructure. The Stage 2 operations will generate an estimated 100 truck movements in total each day. The proposed haulage hours described in the Environmental Assessment are 9pm Sunday to 6pm Saturday. For this level of operation, the amenity implications for dwellings fronting Brayton Road within Marulan could be adverse. Consequently, the new By-Pass road to connect Brayton Road with Red Hills Road has been proposed. This Stage 2 proposal will require an intersection upgrade at the Red Hills Road Hume Hwy intersection.

The approved Lynwood Quarry further to the South will provide a new grade-separated interchange at the junction of the Highway with Marulan South Road and with the proposed Lynwood Quarry haul road. The latter will be a private road. The timing of the construction of this interchange is not known.

Trucks from the proposed Gunlake Quarry do not have access to the Lynwood Quarry private haul road and hence to the new interchange.

The Lynwood Quarry includes a provision for a rail loading balloon loop on the southern side of the Main Southern Railway, west of Marulan. This loop and associated infrastructure will not be able to be accessed off the public road network. At present, Stoney Creek Road ends at the railway lines within Marulan. Stoney Creek Road south of Brayton Road is a local residential street, with dwellings on both sides, and is not suitable as a haul road.

Further road access options on the northern outskirts of Marulan were investigated. However, the relevant land was not available for sale, and hence this option is not available.

An option was developed for a U-turn facility at the Highway interchange adjacent to the RTA truck checking station, east of Brayton Road. A design was developed following initial feedback from the Roads & Traffic Authority. However, the Authority did not approve the proposed layout.

Another option was for trucks in Stage 2 to turn right into Portland Avenue off the Hume Highway, make a U-turn at the existing roundabout at Portland Avenue/George Street and then return to the Highway via a left turn, to travel northbound to Red Hills Road, where they would turn left into Red Hills Road and then to the quarry. This movement would average 40/day, or up to 2 trucks/hour.

Approaching Portland Avenue from the Highway North, there is a deceleration lane in the median and a protected right turn bay. There is very good visibility towards approaching northbound vehicles. The driver would take a gap in northbound traffic and cross the two northbound lanes. After making a U-turn, the driver would turn left back onto the Highway and use the existing acceleration lane. The Roads & Traffic Authority (RTA) and Council expressed concern about the safety of the Highway/Portland Avenue intersection, given its accident history, and have not ruled out closing the median at this intersection. The implications of closing this intersection have not been fully investigated by the RTA or Council.

The RTA has provided the accident history at this intersection for the most recent five year period. It showed five accidents. There were no accidents involving vehicles making a right turn from the Highway North into Portland Avenue. If the median was closed, four out of these five accidents would not occur. If the Portland Avenue approach had channelisation to prevent cross and right turn movements, only allowing left turn movements, and if similar channelisation was provided on the service road on the eastern side, the same four accidents would not occur.

In summary, this transport route option is an alternative, or at the least a short term option, with the RTA being able to prevent all of the accidents that have occurred right at the intersection over the last five years.

4.3.4 Acoustics

The predicted existing plus worst case quarry traffic noise levels will satisfactorily comply with the NSW DECC's daytime and night-time traffic noise criteria on Brayton Road, Red Hills Road and at the Interchange Underpass and George Street (adjacent to the new roundabout).

5.0 AMENITY DISCUSSION

Amenity Expectations

CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 noted that:

Similarly, the applicant submitted that the reasonable expectations of residents of Bungonia village are affected by the fact that the village contains a road connecting land within the 1(a) zone to other locations, including the Hume Highway. The actual context of the village, in terms of location, function, zoning, and existing and likely future amenity, is relevant. The applicant submitted further that this necessarily meant that the reasonable expectations of residents of Bungonia village could be no different from those of residents along Jerrara Road in the 1(a) zone. I disagree. Again, this approach involves picking the parts of the LEP that suit the applicant and discarding the parts that do not. The village of Bungonia is zoned 2(v). People living within such a village or having recourse to it for various purposes are entitled to have different expectations about amenity from those living in the 1(a) zone, even if the reasonableness of their expectations is properly affected by the actual context of the village. Different expectations arise because of the different functions of the zones within the planning scheme embodied by the LEP and the different strategies adopted by the scheme to achieve its objectives. In particular, land zoned 2(v) is intended to perform an urban function. Land zoned 1(a) is not. The reasonableness of the expectations of people living within designated urban and rural areas is to be assessed within the context set by the planning scheme.

contribution and it is considered that the proposed by-pass route is easily able to accommodate this traffic with no significant amenity effects on the surrounding lands and residents.

Concept of Amenity

CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 goes on to discuss the concept of amenity in the following terms:

In Milne v Minister for Planning & Anor [No. 2] [2007] NSWLEC 66 I observed that the objects of the EPA Act contemplated that development would stimulate social and economic change. Hence, the mere fact of change could not indicate its appropriateness. The parameters for assessing the propriety or otherwise of change could not be "personal values or idiosyncratic perceptions", which would be the antithesis of environmental planning as contemplated by the EPA Act, specifically "the making of development control decisions in a strategic planning context established by publicly available criteria, determined by planning authorities as part of a process in which the public has had extensive opportunities to participate" (at [26] – [27]). Precisely the same principles apply where the change in question involves amenity rather than social and economic relations. The principle that unfounded fears about impacts on amenity are not material, no matter how widespread, also applies. Hence, concerns absent any rational foundation are not to be given weight, whereas the "objective, specific, concrete, observable" consequences of development are relevant. This latter principle, however, is not a warrant for unjustifiably restricting the concept of "amenity". "Amenity" has consistently been described as a wide and flexible concept, embracing such matters as the character of a place and the attributes of place which a community values as important contributors to its character. (See the discussion and authorities cited in New Century Developments Pty Ltd v Baulkham Hills Shire Council (2003) 127 LGERA 303 at [53] to [64] per Lloyd J and Telstra Corp Ltd v Hornsby Shire Council (2006) 146 LGERA 10 at [190] to [208] per Preston J). The likely impacts of development (s 79C(1)(b)) include impacts on amenity understood in this sense. Once the concept of "amenity" is understood in this manner it is apparent that resolution of the debate about the nature, extent and propriety of the impacts on the village of Bungonia should be answered in the broad strategic planning context discernible from the available material.

In Telstra Corporation Limited v Hornsby Shire Council [2006] NSWLEC 133 the concept of amenity is explored in the following terms:

The concept of the amenity of the locality is wide and flexible. Some aspects of amenity are practical and tangible. Examples are traffic generation, noise, nuisance, appearance and way of life in the neighbourhood. Other aspects of amenity are intangible and subjective. They include the standard or class of the neighbourhood and the reasonable expectations of a neighbourhood: Broad v Brisbane City Council (1986) 59 LGRA 296 at 299. Amenity may embrace the effect of a place on the senses

and the residents' perception of the locality. Knowing the use to which a particular site is, or may be, put may affect a person's perception of amenity: Broad v Brisbane City Council (1986) 59 LGRA 296 at 305. See also Venus Enterprises Pty Ltd v Parramatta City Council (1981) 43 LGRA 67 at 69; Novak v Woodville City Corporation (1990) 70 LGRA 233 at 236-237; and Optus Communications Pty Ltd v Corporation of the City of Kensington and Norwood [1998] SAERDC 480 (29 May 1998) at 6.

Community Experience of Amenity

The discussion in Telstra Corporation Limited v Hornsby Shire Council [2006] NSWLEC 133 continues to suggest how one determines the nature and scope of amenity and the nature of the impact.

In determining the nature and scope of amenity and the impact of a proposed development on it, the consent authority may consider the community responses to the proposed development as set out in the submissions made to the consent authority: s 79C(1)(d) and (e) of the EPA Act. The community responses are aspects of the public interest within the meaning of s 79C(1)(e) in securing the

advancement of one of the express objects of the Act "to provide increased opportunity for public involvement and participation in environmental planning and assessment": s 5(c) of the EPA Act. See also Kulin Holdings Pty Ltd v Penrith City Council (1999) 103 LGERA 402 at 415; and New Century Developments Pty Ltd v Baulkham Hills Shire Council (2003) 127 LGERA 303 at 316[58].

However, in considering the community responses, an evaluation must be made of the reasonableness of the claimed perceptions of adverse effect on the amenity of the locality. An evaluation of reasonableness involves the identification of evidence that can be objectively assessed to ascertain whether it supports a factual finding of an adverse effect on the amenity of the locality.

In New Century Developments Pty Limited v Baulkham Hills Shire Council [2003] NSWLEC 154 revised - 5/09/2003 the concept of amenity is shown to be broad and to encompass the social and economic impacts in the locality. This confirms the notion that the economic and social considerations as identified in the 2020 Strategy and draft instruments must be given suitable weight in the consideration of the amenity assessment.

In the determination of a development application the consent authority must consider the effect of the proposed development or use upon the amenity of the locality. The amenity of the locality is encompassed by the consideration of environmental impacts on both the natural and built environments, and social and economic impacts in the locality required by s 79C(1)(b) of the EP&A Act. The concept of "amenity" is wide and flexible (Broad v Brisbane City Council & Anor (1986) 59 LGRA 296), transcending the merely physical content (Perry Properties Pty Ltd v Ashfield Council (No. 2) (2001) 113 LGERA 301 at 317 per Bignold J). The following passage, contained in the judgment of Thomas J in Broad at 299, attempts to articulate the notion:

> *The wide-ranging concept of amenity contains many aspects that may be very difficult to articulate. Some aspects are practical and tangible such as traffic generation, noise, nuisance, appearance, and even the way of life of the neighbourhood. Other concepts are more elusive such as the standard or class of the neighbourhood, and the reasonable expectations of a neighbourhood.*

Acoustic Impact

Mr Gross, acoustical and mechanical engineer, was the Court appointed expert dealing with noise and vibration issues. Mr Gross prepared two reports and was questioned as part of the hearing. Mr Gross concluded that appropriate vibration limits could be achieved within the village of Bungonia. In his first report, Mr Gross calculated that the heavy vehicle movements would result in the environmental criteria being exceeded within the village, with LAeq (1hr) levels of up 57dBA at a

[21] Hallam op cit. p24

setback of 17m on the existing chip seal and an increase higher than 2dBA. Accordingly, Mr Gross recommended investigation of alternative route or mitigation measures including bypassing the village or, as a minimum, resurfacing the road through the village with lower noise generating surfaces such as a dense grade asphaltic concrete or stone mastic asphalt surface. In his second report, Mr Gross noted that he had received from the applicant's acoustical consultant sound exposure levels for laden and unladen trucks at 17m and 35m from the centreline of King Street with associated predicted façade LAeq levels lower than the 55dBA criterion. Accordingly, Mr Gross revised his earlier report by concluding that "although maximum truck noise levels are at the low end of the range I would expect, I am satisfied noise levels can meet the criteria if the trucks used are all modern, well maintained and are limited to 50/80km/hr and drivers drive responsibly". The sound exposure levels involved a truck with a three-axle dog trailer, generating an LAmax noise level at the 35m offset of 69 to 70dBA. In other words, Mr Gross's original calculations were based on the noise generated by average trucks (showing non-compliance) whereas the later calculations (showing compliance) were based on specific measurements of particular trucks. In consequence, Mr Gross altered his recommendations noting that any bypass of Bungonia may be delayed to avoid an upfront capital cost.

Mr Gross agreed that it was fair to characterise his position as having changed to one where a bypass should be considered in the mid to long term if it could achieve reasonable reductions in noise levels. He acknowledged that noise levels generated by trucks could vary with human input and that the latest measurements were at the low end of the expected range. Hence, his observation that the criteria could be complied with if the trucks were modern, well maintained and responsibly driven. The latest measurements showed levels of 53 and 54bDA (sic) in Bungonia at an offset distance of 17m so there was some scope for a marginal increase without exceeding the criteria. He confirmed that the distance of 17m was measured from the centreline of the road. Trucks returning from the site would be closer than 17m to facades of residential dwellings on King Street. He had not taken into account any proposed widening of King Street. The measurements related to levels at the facades of dwellings, not outdoor areas.

Mr Gross confirmed that he had calculated an increase of 3 to 4 dBA in the village by reason of the development using average noise levels from cars and trucks, whereas the applicant's acoustical consultant had calculated an increase of 1 to 2dBA using the specific truck measurements. He noted that if a stone mastic asphalt surface were applied then it would probably reduce the noise levels by 2dBA. When shown an extract about reducing noise levels from the Road and Traffic Authority's Environmental Noise Management Manual, Mr Gross indicated that he was very familiar with the document, as he had helped to write it. He did not agree that, based on that document, the reduction in noise levels from a stone mastic asphalt surface would be 8dBA, due to the lower truck speeds through Bungonia. A 3dBA reduction between the chip seal surface and a stone mastic asphalt surface could be expected.

The acoustic matters as considered in CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 are considered very significant in the assessment of amenity impacts in the subject application. The preceding paragraphs demonstrate that the acoustic modelling in that matter revealed that the expected acoustic impacts would breach the Road Traffic Noise Criteria and that it was not until the applicant amended the proposal to reseal the road surface and give an undertaking to only use "new and well maintained" vehicles and to manage responsible driving practices that the Road Traffic Noise Criteria could be met. That application was essentially reliant upon Management and Operational Procedures to meet the noise criteria on average. The remained a question in that matter how the vehicles would perform acoustically on the return trip as they were closer to the residences than as modelled for the north bound trip.

By contrast, the subject application exhibits noise studies which clearly comply with the relevant Road Traffic Noise Criteria without the reliance upon Management or Operational Procedures. This applies to both the rural and the village components of the Haulage Routes in both Stage1 and Stage 2.

It is also of note that the Court appointed Acoustic Expert in CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 had previously recommended, when the proposal did not satisfy the Road Traffic Noise Criteria, that a by-pass be considered in the *mid to long term.* It was put to the Court by its own expert that it would be reasonable for the Road Traffic Noise Criteria to be breached in the short-term to allow the use to establish and become economic. That clearly is not the case in the subject proposal.

It is considered that the proposal is satisfactory in terms of acoustic impacts relating to the proposed Haulage Routes in both Stage 1 and Stage 2 for the rural portions as well as those portions passing through the town.

Traffic Character

CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 continues and addresses the issue of the change in character of the traffic experienced.

I am satisfied that the grant of consent to the proposed development, and consequential entrenching of King Street as part of a dedicated quarry haul route, would have serious and unacceptable impacts on the amenity of the village as a whole. These impacts are not the subject of the ECRTN or vibration criteria. They are not offset by the available information about the value of the resource or potential benefits of the development. They are not made immaterial by reason of compliance with the

environmental goal of 200 vehicles per hour for local residential streets. The routine passage along King Street of 48 articulated vehicles as proposed throughout the daylight hours is likely to undermine the existing tranquil rural lifestyle in respects that are "objective, specific, concrete, observable" (to adopt the language of Lloyd J in New Century Developments at [61]). The articulated trucks to be used are far larger than the vehicles falling within the class of rigid trucks and are different altogether from car traffic. The articulated trucks will be seen and perceived for what they are – very large vehicles travelling along a dedicated haul route to the Hume Highway. King Street currently experiences very few articulated vehicles (4 per day on average according to Mr Hallam). The development will increase that number many times. The applicant's notion that the number may increase irrespective of the development, as noted, is speculative. The development, demonstrably, will substantially increase the number of articulated trucks passing along King Street when, absent the development, I do not expect that to be likely to occur. Compliance with the LAeq (1hr) and 200 vehicles per hour criteria does not alter the fact that the number and type of vehicle using King Street by reason of this development would dramatically alter the existing ambience of the village.

The traffic study which accompanies the application demonstrates that, quite unlike the experience in Bungonia, the existing traffic environment is one in which heavy truck movements are common place and that while the proposal will increase the number of articulated vehicles this increase will be in the order of 50% during Stage 1 rather than the increase from 4 to 48 experienced in the Bungonia matter.

Social Impacts

The references in the environmental impact statement to increases of 1 to 2dBA not being noticeable were in the context of operational noise. I infer that this relates to a constant noise source. Four articulated trucks traversing King Street each hour would not be a constant noise source. I anticipate that the character of this noise will be different from operational noise. The short period of time during

which each passage would be perceived also does not alter the fact that, with the quarry fully operational, 4 additional articulated vehicles each and every hour of the daytime Mondays to Saturdays (excluding public holidays) will pass along King Street (increasing to six per hour for two operational hours per day). Maintaining the amenity of King Street is important to the immediate and broader functions of the village as a whole. The zoning extracts and subdivision plan of the village disclose the role of King Street connecting the residential development on the eastern side of the road with the public lands on the western side where the park is located and access to the creek is obtained. The quarry vehicles, by reason of their size, frequency and routine presence through the village, would be likely to adversely affect the relationship between the main residential area and the available community facilities. The pleasant ambience of those public places also would be dramatically altered for all but the most fleeting visitor. So too would the pleasant ambience of the outdoor areas of the properties fronting King Street, which I am satisfied makes an important contribution to the enjoyment of life of the people residing there. Becoming part of a dedicated haul route to the Hume Highway would fundamentally alter the character of the village, visually, acoustically and by reference to the less tangible qualities that contribute to that character – the quiet ambience, the pleasant pedestrian environment absent formal and defined pedestrian paths, the easy and free flowing relationship between the main area of residential development and the park, and the capacity to fully use and enjoy outdoor spaces. Compliance with the ECRTN, the 200 vehicles per hour environmental goal referred to by Mr Hallam and vibration criteria does not remove these real and direct impacts of the quarry on the village of Bungonia.

While the Stage 1 Haulage Route requires that a proportion of the traffic pass through George Street. Being, trucks returning from the south, it is noted that there is no weight restriction on George Street currently for the reason that this is the only way in which traffic from the south can leave the Highway and access the town and the lands beyond. During Stage 2 of the proposal it will no longer be necessary for any trucks to traverse George Street and will also allow all heavy traffic arriving from the south to access the town from Red Hills Road and Brayton Road. While we do not have the studies available to determine the volume of existing and future heavy traffic which would use George

Street when arriving from the south we can reasonably assume from the 80/20 split that it is significant.

Haulage Hours

In the Environmental Assessment, the proposed development incorporates 24 hour use of the Haulage Routes in Stage 1 with the exception of Saturday 6:00pm to Sunday 9:00pm. During Stage 2 the proposed use of the Haulage Route is 24 hours each day with the exception of trucks passing through Marulan which would be limited to Monday to Saturday 6:00am to 6:00pm.

This is a matter which received some degree of attention in the submissions received during the exhibition period with a particular focus on the amenity impact of heavy vehicles passing through the town at night. It is noted that the 2020 Strategy and draft instruments put a good deal of focus on improving existing residential amenity within the town areas. It is considered that this is an operational issue which can be managed by stock piling excavated material at the source and destination, and while it is acknowledged that there is an economic cost associated with this, it is considered reasonable to impose this restriction.

It is considered that it is not unreasonable to limit heavy traffic through the town of Marulan to general summer daylight hours namely 6:00am to 7:00pm Monday to Friday and to limit Saturdays to 7:00am to 1:00pm with no traffic through the town on Sundays.

The proponent has advised that they will accept these reduced hours.

Draft DCP

The draft DCP includes considerations which need to be taken into account when assessing heavy vehicle generating development in terms of their Haulage Routes. It is considered that the subject proposal, in conjunction with this report adequately addresses all of the matters raised in the draft DCP as reflected below.

Heavy Vehicle generating developments – Haulage Routes Objectives

Ensure village and rural amenity levels are maintained or improved on current levels along haulage routes to and from the development site.

Controls

A principal haulage route needs to be nominated when submitting a development application for a project such as a quarry, transport terminal, distribution centre or the like, which involves significant heavy vehicle movements. The applicant needs to justify selection of the haulage route based upon traffic engineering grounds, amenity considerations and availability of alternative options (i.e. rail). If the existing road network is unsatisfactory then upgrades will be required.

The following level of detail is required to be submitted for Council's consideration:

Impact on the road network:

- *Existing traffic movements along the haulage route.*
- *Estimated increase in traffic movements resulting from the proposed development. This includes detail of any staging proposal, truck / car ratio and the life of the project / development.*
- *Foreseeable increases in traffic movements resulting from other known development (i.e. subdivision of land etc).*
- *Heavy vehicle type and volume (i.e. rigid or articulated, covered or uncovered).*
- *Type of material transported.*
- *Hours of operation and frequency of movements.*

Impact on amenity and the environment – Rural and Village Zones:

- *Proximity of haulage route to residence, community land etc. Community expectation including ambience and enjoyment of life.*
- *Community assets including accessibility to parks by residents and visitors.*
- *Noise generation.*
- *Vibration generation.*
- *Visual impact.*
- *Pedestrian safety and safety of other road uses.*
- *Impact on roadside habitat resulting from road upgrade works.*
- *Consistency with the objectives of all zones that the haulage route passes through.*

6.0 CONCLUSION

This report provides an Amenity Assessment to accompany the Project Plan and Environmental Assessment prepared by Olsen Environmental Consulting Pty Ltd for approval under Part 3A of the EPA Act for Gunlake Quarries. The report responds to and addresses the matters which arose in CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 which concluded that consideration should be given to the amenity impacts of a proposed haulage route.

The essence of CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 is considered to be that the actual context of the village, in terms of location, function, zoning, and existing and likely future amenity, is relevant. People living within such a village or having recourse to it for various purposes are entitled to have different expectations about amenity from those living in the 1(a) zone, even if the reasonableness of their expectations is properly affected by the actual context of the village. Different expectations arise because of the different functions of the zones within the planning scheme embodied by the LEP and the different strategies adopted by the scheme to achieve its objectives. In particular, land zoned 2(v) is intended to perform an urban function. Land zoned 1(a) is not. The reasonableness of the expectations of people living within designated urban and rural areas is to be assessed within the context set by the planning scheme.

The proposed connection to Red Hills Road provides for a road form and route location which becomes quite similar to that experienced on Brayton Road through the Rural 1(a) zoned land. The provision of this by-pass road route as a public road necessarily means that it is quite likely to be used by other rural and industrial traffic accessing the Highway.

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The Brayton Road portion of the haulage route within Marulan town has historically accommodated rural and industrial traffic between the Rural 1(a) zones and the Hume Highway. This is, and has

been for many years, the route for haulage trucks from the Johnniefelds Quarry and the now abandoned quarries surrounding the town.

Brayton Road and the Hume Highway underpass clearly accommodate most of the heavy traffic accessing the Highway from the surrounding rural and industrial areas. This is borne out in the traffic surveys which establish the traffic environment currently extant. The houses fronting Brayton Road in this location are modest and currently traffic affected. They derive their amenity from being close to the town and its services and facilities and one would expect there land values to reflect this location.

The future housing to the north of Brayton Road proposed by the dLEP accommodates vehicular traffic by requiring larger allotments and setbacks from the route and by having relatively little frontage and exposure to the Brayton Road. The planning instruments note that a new road system will need to be built in each area to provide for housing while meeting acoustic criteria.

The subject application exhibits noise studies which clearly comply with the relevant Road Traffic Noise Criteria without the reliance upon Management or Operational Procedures. This applies to both the rural and the village components of the Haulage Routes in both Stage1 and Stage 2.

It is considered that the proposal is satisfactory in terms of acoustic impacts relating to the proposed Haulage Routes in both Stage 1 and Stage 2 for the rural portions as well as those portions passing through the town.

The traffic study which accompanies the application demonstrates that, quite unlike the experience in Bungonia, the existing traffic environment is one in which heavy truck movements are common place and that while the proposal will increase the number of articulated vehicles this increase will be in the order of 50% during Stage 1 rather than the increase from 4 to 48 experienced in the Bungonia matter.

The Environmental Assessment indicates that the proposed development incorporates 24 hour use of the Haulage Routes in Stage 1 with the exception of Saturday 6:00pm to Sunday 9:00pm. During Stage 2 the proposed use of the Haulage Route is 24 hours each day with the exception of trucks passing through Marulan which would be limited to Monday to Saturday 6:00am to 6:00pm.

This is a matter which received some degree of attention in the submissions received during the exhibition period with a particular focus on the amenity impact of heavy vehicles passing through the town at night. It is noted that the 2020 Strategy and draft instruments put a good deal of focus on improving existing residential amenity within the town areas. It is considered that this is an operational issue which can be managed by stock piling excavated material at the source and destination, and while it is acknowledged that there is an economic cost associated with this, it is considered reasonable to impose this restriction.

It is considered that it is not unreasonable to limit heavy traffic through the town of Marulan to general summer daylight hours namely 6:00am to 7:00pm and to limit Saturdays to 7:00am to 1:00pm with no traffic through the town on Sundays.

The proponent has advised that they will accept these reduced hours

It is considered that the amenity assessment after giving due consideration to the findings in CEAL Limited v Minister for Planning & Ors [2007] NSWLEC 302 and associated caselaw, and to the planning future of the haulage route as set by the 2020 Strategy and the draft planning instruments and draft development control plans is considered acceptable subject to a reduction in the hours of use through the town of Marulan.

Andrew Darroch
Consultant Planner
May 2008

Appendix II.

Gunlake letter to Goulburn Mulwaree Council dated 7th April 2008.

Appendix III.

Gunlake Quarries Report, “Response to DECC Comments” dated 12th March 2008.

GUNLAKE QUARRIES

Gunlake Quarry Project

via Marulan

RESPONSE TO DECC COMMENTS

Dated 3 March 2008

ON DRAFT

ENVIRONMENTAL ASSESSMENT

12th March 2008

TABLE OF CONTENTS

1. Introduction

This document addresses issues raised in a letter sent to the Department of Planning (DoP) dated 3rd March 2008 by the Department of Environment and Climate Change (DECC) in response to the Gunlake Quarry Project Environmental Assessment.

A copy of the letter is included as Appendix I of this document. The DoP forwarded the DECC letter to Gunlake and requested that Gunlake address the DECC comments to enable that Department to make an assessment of the project during the exhibition period.

DECC raised issues that are broadly divided into two categories, being Noise Impact Assessment and Threatened Species.

Gunlake commissioned Heggies Pty Ltd (Heggies) to address the noise impact assessment matters and also commissioned Ecotone Ecological Consultants Pty Ltd (Ecotone) to address the threatened species matters. Heggies and Ecotone undertook the major studies in these two areas for the overall Gunlake Quarry Project Environmental Assessment.

A copy of the Heggies response is included as Appendix II and the Ecotone Report as Appendix III.

This document places the Specialist Consultant responses in context of the Project planning and management commitments made by Gunlake.

The noise impact assessment responses were typically of a clarification nature and did not require any changes or further description to the proposal as described in the Environmental Assessment dated February 2008.

In addressing the threatened species matters, Gunlake reviewed their proposals for irrigation of surface runoff water in order to avoid unnecessary clearing or disturbance of areas of Endangered Ecological Community (EEC). In addition, Gunlake provided a clearer description of the proposals for provided vegetation offsets in relation to clearing and potential disturbance of fauna habitat. This enabled a more detailed assessment of the likely impact and mitigation measures.

2. Noise Impact Assessment

Appendix II contains the full Heggies response to the DECC comments that are included in Appendix I. This section addresses each issue raised by DECC in their letter and uses the headings from that letter. Each DECC issue is followed by the Gunlake response, which draws on the material supplied by Heggies (Appendix II).

Issue 2.6. *DECC questions the likelihood of any jaw crushing unit being capable of achieving such a low noise emission level. DECC recommend that the unit be independently verified as satisfying a sound power level of LW94dB(A) prior to the commencement of operations.*

Heggies reconfirm that the sound power level used in the assessment was based on the measurement of an operating crusher at the Mount Boppy Mine. To place the matter in perspective, Heggies noted that the jaw crusher is ranked 15th in the contributed noise levels and even if the noise level of the jaw crusher was increased by 15dB(A) the overall noise level at the nearest residence (R1) would increase from 37.9dB(A) to 38.7dB(A). That is, it is not a significant determinant of noise at the nearest residence and should not be identified in isolation for independent verification as recommended by DECC.

Gunlake will give appropriate attention to the noise contribution by each piece of equipment. However its overall focus will be the total outcome. In relation to this, Gunlake is committed to meeting the Project Specific Noise Levels presented in the EA at the nominated receivers. This will be the focus in noise control management.

Issue 2.7. *An existing noise level of 39dB(A) if occurring during night time hours could have had a significant implication on the project specific noise level for the period 6am to 7am. DECC notes that the information required (and agreed by the proponent) for the DoP's issue 4 will enable the amenity criteria to be calculated with more certainty. DECC assumes that the exhibited EA will contain this information.*

The proponent should note that loading and dispatch operations constitute site activities which should be considered in the context of operational noise criteria for the development.

The 39dB(A) noise level of distant quarry trucks was recorded by Heggies at the nearest residence (R1) and was the maximum in a range from 29dB(A) to 39dB(A). It was also recorded during daylight hours within the period 2.15pm to 2.30pm.

The general hours of operation have been modified to occur between 7am to 6pm and only product truck loading and transportation is proposed during the evening and night-time hours. This information is contained in the Environmental Assessment.

Loading and dispatch operations have been considered in the context of operational noise criteria for the development. These are included in both the Environmental Assessment and the Noise Impact Assessment.

Issue 2.8. *There is likely to be insufficient information in the exhibited EA for DECC to form an opinion on whether night time product loading and dispatch can satisfy the screening level sleep disturbance noise assessment criteria.*

The Lamax noise level of product being dropped into an empty trailer or an empty trailer hitting a deformity in the road surface (and other loading dispatch operations likely to result in short duration high level noise events) should be quantified and reported in the EA for the nearest sensitive receivers.

Heggies have previously predicted that the Lamax criterion for the potentially most affected residence (R1) will be met. The criterion is based on the DECC's screening criteria of RBL + 15dB(A) for sleep disturbance. For the potentially most affected residence, this criterion would be 46dB(A). The worst case predicted noise level from the evening/night-time truck loading and product transportation is 35 dB(A). Given

that the Lamax quarry noise levels are less than 10 dB(A) above the LA_{eq} levels, Heggies predicted that compliance with the 46dB(A) Lamax criterion will be met.

In addition to this , Gunlake will implement a number of activities to reduce likely high level noise events during truck loading and product transport. Aluminium truck bodies with low sides will be used in order to minimise the drop height and impact noise. This will be supported by appropriate education and training of equipment operators. Management commitments will be incorporated into the quarry's Noise and Blast Management Plan.

Gunlake will be upgrading existing transport route roads, building new ones, improving existing intersections and generally providing a high class transport route. They have also commenced discussions with Council in relation to a road maintenance agreement. The standard of the road surface should help to reduce product transport noise.

Issue 2.9. *The night-time and evening dispatches will be assessed against the PSNL presented in the EA for those respective periods.*

This is standard practice and Heggies note that their noise impact assessment has assessed the night-time and evening dispatches against the Project Specific Noise Levels (PSNL). This is fully discussed in their report and is included in the EA.

Issue 2.10. *The DECC has not been provided with the Heggies Report of 13 December 2007. This information will be assessed when supplied as part of the exhibited EA.*

This report was included in Gunlake's formal response to the adequacy assessment of the Draft EA. The subject matter addressed in this report has been incorporated into Heggies noise impact assessment and does form part of the Environmental Assessment.

Issue 2.11. *DECC notes that the number of receivers potentially affected, offset distances of residences and predicted noise levels from the road traffic (existing and proposed) is to be provided in the exhibited EA.*

This is a comment only and does not require a response.

Issue 2.1. *DECC notes that the quarry operations (ie. Quarrying, fixed plant, crushing screening and conveyors) are not proposed to be undertaken outside of day time hours.*

This is a comment only and does not require a response.

3. Threatened Species Assessment

The Ecotone Report included as Part 7 in Volume IV of the Gunlake Quarry Project Environmental Impact Assessment dated February 2008 fully describes the location and extent of the vegetation communities affected by the Project.

Gunlake has been able to significantly reduce the areas of vegetation required to be cleared or disturbed. In particular, significant areas of Communities 1 and 2, which are identified as Endangered Ecological Communities (EEC) have been protected from clearing or disturbance.

Significant areas of existing EEC have been set aside for management for conservation purposes. Some currently cleared areas will be separated from agricultural and quarrying activities in order to encourage the re-establishment of EEC and fauna habitat. These areas will also be managed for conservation purposes.

This section more fully describes these commitments and subsequent conservation outcomes.

In order to minimise discharge of water from the site, Gunlake will establish an irrigation area of 10ha of improved pasture. Excess runoff water with a small amount of pit inflow water will be collected and used to irrigate this area.

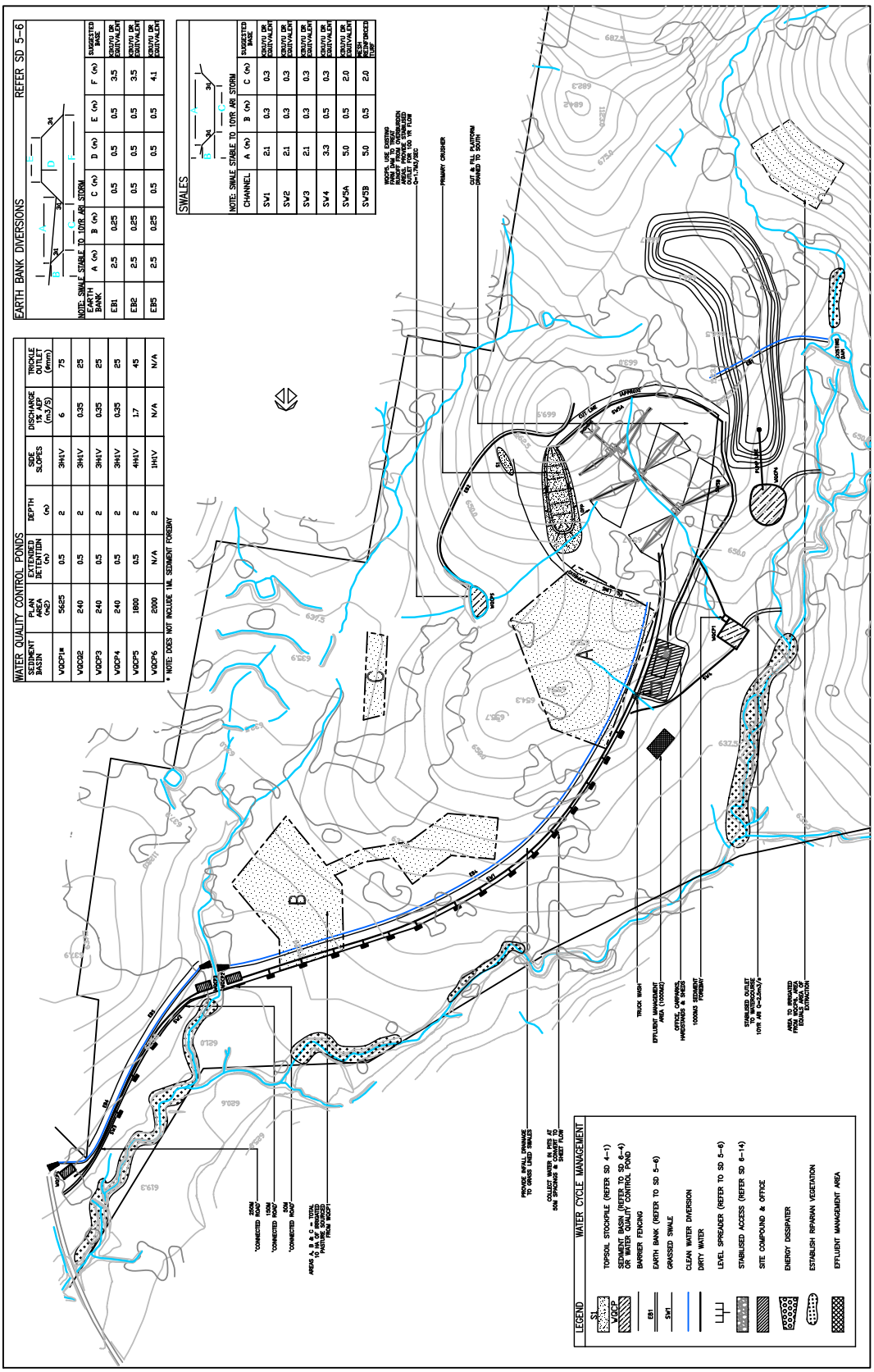
This aspect is fully discussed in the SEEC Morse McVey Report which is included as Part 2 in Volume II of the Environmental Assessment dated February 2008. It is also discussed in Section 4B.2.5 and **Figure 4B.11** in Volume I of the Environmental Assessment.

Gunlake has modified the original location of this irrigation area in order to minimise the areas of EEC that would have been disturbed or cleared when establishing improved pasture irrigation areas.

Figure 1 of this report shows the new location of the three proposed areas for improved pasture irrigation. These areas are identified as A, B and C and total slightly above 10ha. These three areas will be fenced to enable appropriate irrigation and stock management. The irrigation areas will be established to maintain a minimum 20m buffer from EEC and areas to be managed for conservation/habitat. In addition a minimum 40m buffer will be retained from major drainage lines.

Figure 2 of this report shows the location of the irrigation areas in relation to the various Vegetation Communities on the Project Site. It also shows the proposed location of fencing that will enable the retained EEC areas and the areas set aside for conservation/habitat management to be isolated from the agricultural and quarrying activities.

The fencing will be incorporated into the overall property management fencing system and the areas shown will be the minimum available for conservation/habitat management.



WATER QUALITY CONTROL PONDS						
SEDIMENT BASIN	PLAN AREA (m2)	EXTENDED DETENTION (m)	DEPTH (m)	SIDE SLOPES	DISCHARGE 1% AEP (m3/S)	TRICKLE OUTLET (mm)
WQCP1#	5625	0.5	2	3H:1V	6	75
WQCP2	240	0.5	2	3H:1V	0.35	25
WQCP3	240	0.5	2	3H:1V	0.35	25
WQCP4	240	0.5	2	3H:1V	0.35	25
WQCP5	1800	0.5	2	4H:1V	1.7	45
WQCP6	2800	N/A	2	1H:1V	N/A	N/A

NOTE: DOES NOT INCLUDE 1ML SEDIMENT FOREBAY

EARTH BANK DIVERSIONS — REFER SD 5-6

NOTE: SWALE STABLE TO 10YR ARI STORM

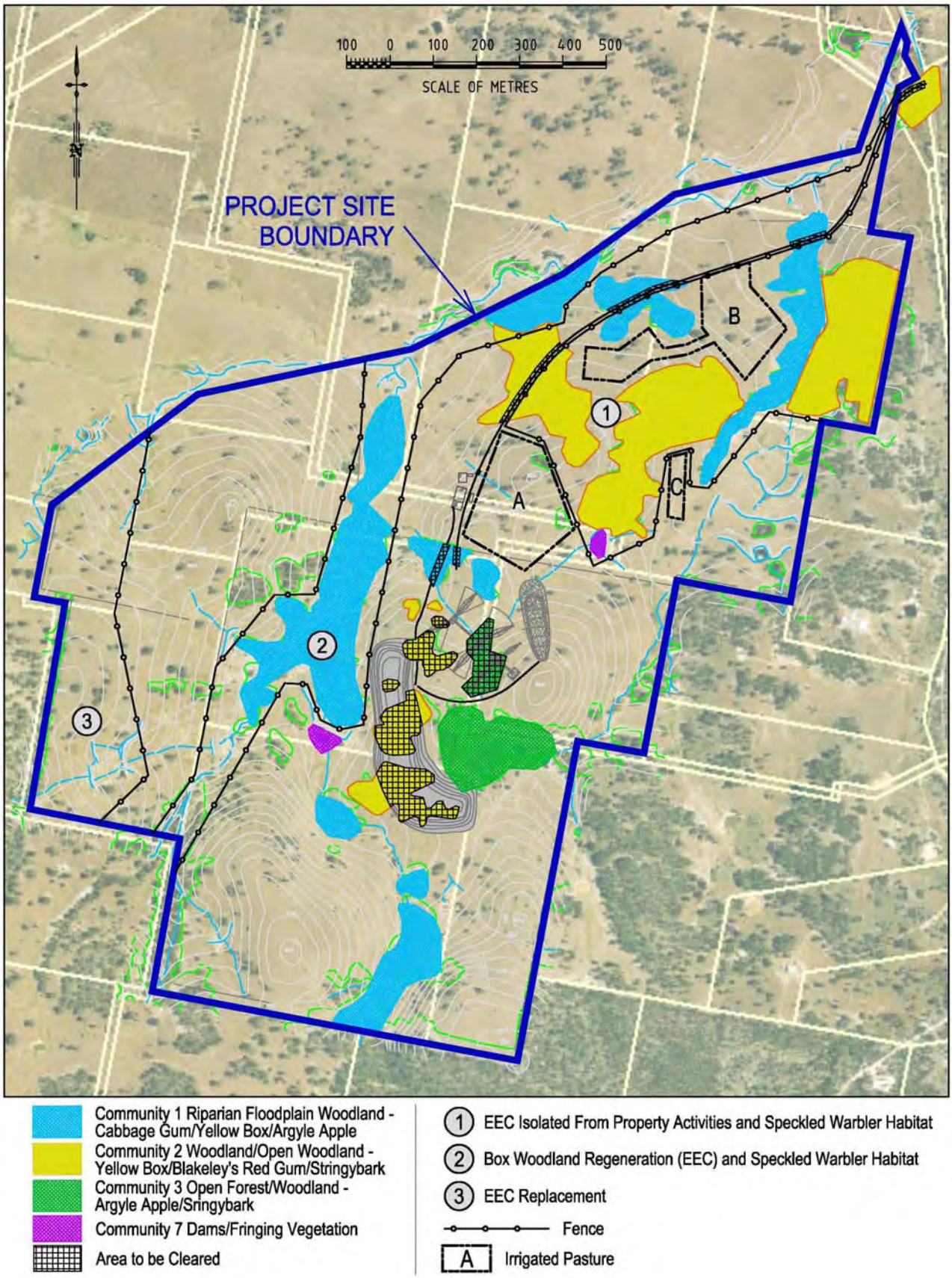
EARTH BANK	A (m)	B (m)	C (m)	D (m)	E (m)	F (m)	SUGGESTED BASE
EB1	2.5	0.25	0.5	0.5	0.5	3.5	KERUTU OR EQUIVALENT
EB2	2.5	0.25	0.5	0.5	0.5	3.5	KERUTU OR EQUIVALENT
EB5	2.5	0.25	0.5	0.5	0.5	4.1	KERUTU OR EQUIVALENT

SWALES

NOTE: SWALE STABLE TO 10YR ARI STORM

CHANNEL	A (m)	B (m)	C (m)	SUGGESTED BASE
SV1	2.1	0.3	0.3	KERUTU OR EQUIVALENT
SV2	2.1	0.3	0.3	KERUTU OR EQUIVALENT
SV3	2.1	0.3	0.3	KERUTU OR EQUIVALENT
SV4	3.3	0.5	0.3	KERUTU OR EQUIVALENT
SV5A	5.0	0.5	2.0	KERUTU OR EQUIVALENT
SV5B	5.0	0.5	2.0	NILSEN FLUME OR EQUIV

Gunlake Quarry Project
Figure 1. Location of Irrigated Pasture Areas



Gunlake Quarry Project
Figure 2. EEC, Conservation/Habitat Areas and Management

Table 1 shows the areas of each Community occurring on the Project Site and the Area that will be cleared as a result of the Project.

Table 1
Areas of Existing, Cleared and Retained Vegetation Communities on Project Site

COMMUNITY	Existing Area (ha)	Cleared Area (ha)	Retained Areas (ha)
Community 1 (EEC)	21.71	0.56	21.15
Community 2 (EEC)	21.72	3.63	18.09
Community 3	4.52	1.03	3.49
TOTAL	**47.95**	**5.22**	**42.73**

Table 1 shows that of the 47.95ha of vegetation communities identified as currently remaining on the 231ha of the Project Site, there will be 5.22ha cleared to accommodate the Project. There are 43.43ha of EEC (Community 1 and Community 2) within the 47.95ha of existing vegetation and 4.19ha of this EEC will be cleared, leaving 39.24ha of uncleared EEC.

Gunlake will isolate the three areas on the property identified as 1, 2 and 3 on **Figure 2**. The fencing locations shown on Figure 2 will vary as the Project develops and fencing is rationalised. For example, Area 2 will not require fencing out at the start of the Project as the fence proposed for the quarry site and access road can be utilised to eliminate stock from this area. The fence in the location shown on **Figure 2** will not be required until later in the Project life when a more detailed stocking management regime is introduced on the Project Site.

Stock will be removed from these three areas and weed control programmes implemented. Vegetation will be allowed to regenerate and this will be augmented by planting of EEC varieties as required.

The following Sections provide a summary of the vegetation conserved in each of the three areas identified on **Figure 2**.

Area 1

Area 1 will contain EEC in Communities 1 and 2 that will be isolated from the normal agricultural and quarrying activities. Area 1 will preserve existing EEC and allow currently cleared areas to regenerate and possibly be planted to establish new EEC. Irrigation Area B will be fenced out of Area 1.

It will provide habitat suitable for the speckled warbler.

Area 1 contains 4.71ha of Community 1 and 14.80ha of Community 2. An additional area of 13.58ha (currently cleared for agriculture) will be included into Area 1 and will regenerate and possibly be planted with EEC community vegetation.

Area 2

Area 2 will also contain EEC in Communities 1 and 2 that will be isolated from the normal agricultural and quarrying activities. Area 2 will preserve existing EEC and allow currently cleared areas to regenerate and possibly planted to establish new EEC.

It will provide habitat suitable for the speckled warbler.

Area 2 contains 10.73ha of Community 1 and 0.14ha of Community 2. An additional area of 17.08ha (currently cleared for agriculture) will be included into Area 2 and will regenerate and possibly be planted with EEC community vegetation.

Area 3

Area 3 is 15.5ha of land currently cleared for agriculture. It will be isolated from quarrying and agricultural activities on the property and will regenerate or be planted to provide replacement areas for land currently supporting EEC that will be cleared as a result of the Project.

The following lists the matters raised by the DECC in relation to threatened species. Ecotone Ecological Consultants provided a very detailed response to these matters and their material is included in Appendix III of this report. The following list includes a reference to the Ecotone response, identifying where each matter is addressed

Micro bats. *The DECC requested stag watching and ANABAT recording to identify potential roost/maternity sites in a letter to the consultant on 31 January 2008. These surveys have not been undertaken. This information needs to be suppled for DECC to assess the impacts of this development on the threatened bats which occur on site.*

Refer first page of Ecotone letter in Appendix III.

Speckled warbler. *The proponent has chosen to use the "Assessment of Significance" to assess the impacts on threatened species; however, they have not applied this assessment correctly. In order to adequately assess the impacts of the development on the local population of speckled warblers, the local population needs to be defined. The proponent has not indicated the size of the speckled warbler population, more information on the size of the population affected by the proposal needs to be supplied.*

Refer second page of Ecotone letter in Appendix III.

Hollow bearing trees. *Then proponent has provided conflicting information regarding hollow bearing trees. One section indicates 23 hollow bearing trees will be removed and another section indicates 31 hollow bearing trees. The amount of hollow bearing trees to be removed is still unclear and needs to be clarified.*

All hollow bearing trees to be removed need to be surveyed to determine if they are being utilised for breeding or roosting by threatened fauna. These surveys need to be undertaken during breeding season.

Refer page 3 of Ecotone letter in Appendix III.

Endangered Ecological Communities. *The Environment Assessment indicates that 7.8ha of the Endangered Ecological Community Yellow Box, white box, red gum woodland will be removed as a result of this proposal. The proponent has not provided specific information about the amount of EEC located within the area.*

DECC consider the removal of this amount of EEC within the local area to be highly significant. The proponent has not supplied mitigation to offset this level of clearing.

Refer page 3 of Ecotone letter in Appendix III.

Addressing Guidelines. *The DECC letter contained a detailed explanation of the guidelines referred to in previous correspondence and this has clarified matters raised by Gunlake and Ecotone.*

Refer page 5 of Ecotone letter in Appendix III.

Appendix I.

Letter from DECC to DoP dated 3rd March 2008.

Our reference : DOC07/48205

Mr Michael Young
Environmental Planning Officer
Major Development Assessment
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Dear Mr Young

RE: Gunlake Quarry Project – Major Project Application 07-0074

I refer to the additional information provided for the Gunlake Quarry project Major project Application 07-0074 received by the Department of Environment and Climate Change (DECC) on 11 February 2008. I refer also to phone conversations between DECC's David Winfield and Department of Planning's Michael Young on 21 February 2008 and 25 February 2008 regarding this matter.

During phone conversations on 21 and 25 February DECC advised DoP that DECC's formal response would be provided by 5 March 2008; but that DECC was likely to recommend the Environmental Assessment be considered inadequate.

DECC has now completed a review of the information provided against its DGEAR's (9 March 2007) and previous comments on adequacy (7 December 2007). DECC considers the revised Environmental Assessment Report does not satisfactorily address the issues raised in the initial Adequacy Assessment.

The DECC considers the revised Environmental Assessment to be inadequate in the following areas;

1. Noise
2. Threatened Species

DECC has provided further specific comments and requirements based on a review by the DECC of the revised Environmental Assessment Report in Attachment 1.

If you have any questions, or wish to discuss this matter further please contact Dave Winfield on 6122 3100.

Yours sincerely

03/03/08

DAVID WINFIELD
Head of Operations Unit
South East Region

Attachment 1 – Specific comments and requirements of Gunlake Quarry Environmental Assessment

The following issues need to be addressed prior to the Environmental Assessment (EA) report being put out for public exhibition;

Noise Impact Assessment

Issue 2.6
DECC questions the likelihood of any jaw crushing unit being capable of achieving such a low noise emission level. DECC recommends that the unit be independently verified as satisfying a sound power levels of LW94dB(A) prior to the commencement of operations.

Issue 2.7
An existing industrial noise level of 39dB(A) (as noted in Table 9) if occurring during night time hours could have had significant implications on the project specific noise level for the period 6am to 7am. DECC notes that the information required (and agreed by the proponent) for DoP's issue 4 will enable the amenity criteria to be calculated with more certainty. DECC assumes that the exhibited EA will contain this information.

The proponent should note that loading and dispatch operations constitute site activities which should be considered in the context of operational noise criteria for the development.

Issue 2.8
There is likely to be insufficient information in the exhibited EA for DECC to form an opinion on whether night time product loading and dispatch can satisfy the screening level sleep disturbance noise assessment criteria.

The LAmax noise level of product being dropped into an empty trailer or an empty trailer hitting a deformity in the road surface (and other loading dispatch operations likely to result in short duration high level noise events) should be quantified and reported in the EA for the nearest sensitive receivers.

Issue 2.9
The night time and evening dispatches will be assessed against the PSNL presented in the EA for those respective periods.

Issue 2.10
DECC has not been provided with the Heggies Report of 13 December 2007. This information will be assessed when supplied as part of the exhibited EA.

Issue 2.11
DECC notes that the number of receivers potentially affected, offset distances of residences and predicted noise levels from the road traffic (existing and proposed) is to be provided in the exhibited EA.

Issue 2.13
DECC notes that quarry operations (i.e. quarrying, fixed plant, crushing screening and conveyors) are not proposed to be undertaken outside of day time hours.

Threatened species

Micro bats
The DECC requested stag watching and ANABAT recording to identify potential roost/ maternity sites in a letter to the consultant on 31 January 2008. These surveys have not been undertaken. This information needs to be supplied for DECC to assess the impacts of this development on the threatened bats which occur on site.

Speckled warbler
The proponent has chosen to use the "Assessment of Significance" to assess the impacts on threatened species; however they have not applied this assessment correctly. In order to adequately assess the impacts of the development on the local population of speckled warblers, the local population needs to be defined. The proponent has not indicated the size of the speckled warbler population, more information on the size of the population affected by the proposal needs to be supplied.

Hollow bearing trees
The proponent has provided conflicting information regarding hollow bearing trees. One section indicates 23 hollow bearing trees will be removed and another section indicates 31 hollow bearing trees. The amount of hollow bearing trees to be removed is still unclear and needs to be clarified.

All hollow bearing trees to be removed need to be surveyed to determine if they are being utilised for breeding or roosting by threatened fauna. These surveys need to be undertaken during the breeding season.

Endangered Ecological Communities
The Environmental Assessment indicates that 7.8 hectares of the Endangered Ecological Community *Yellow box, white box, red gum woodland* will be removed as a result of this proposal. The proponent has not provided specific information about the amount of EEC located within the area.

DECC consider the removal of this amount of EEC within the local area to be highly significant. The proponent has not supplied mitigation to offset this level of clearing.

Addressing Guidelines
DECC understands there may have been some confusion regarding the correct set of guidelines referred to and would like to clarify the issue.

DECC has referred to 3 separate sets of guidelines in 2 different letters which are listed below.

In the letter dated 7/12/07, DECC requested that Steps 4 and 5 of the Threatened Species Assessment Guidelines be used. DECC was referring to the Part 3A Guidelines for Threatened Species Assessment. This was the only set of guidelines referred to in this letter.

Step 4 of the Part 3A Guidelines refer to Avoid, Mitigate and then Offset. The additional information in the EA provides no mitigation or offsets to mitigate the clearing of EEC, or threatened species habitat.

Step 5 of the Part 3A guidelines refer to key thresholds indicating the development needs to provide justification for the preferred option. This information has not been provided.

DECC referred to 2 other sets of guidelines in correspondence dated the 31/01/08. These guidelines were suggested for the consultant to clarify some issues raised.

The *Threatened Biodiversity Survey and Assessment: Guidelines for Development and Activities* were also suggested. These guidelines were suggested to provide techniques for microbats surveys, in particular stag watching of hollow bearing trees.

DECC suggested the document *Threatened Species Assessment guidelines: The Assessment of Significance* to provide appropriate definitions of impacts to the local populations and how these definitions should be applied.

The EA has stated clearly that the development will have an impact on threatened species and EEC's, but has provided no information on how these impacts will be offset or mitigated. The DECC does not consider this adequate when considered against the Part 3A Guidelines and DGEAR's.

Appendix II.

Letter from Heggies Pty Ltd dated 11th March 2008 detailing responses to Noise Impact Assessment comments in DECC letter contained in Appendix I.

HEGGIES

11 March 2008

10-5106 Response to Issues 20080311

Olsen Environmental Consulting Pty Ltd
Unit 6
25 Victoria Street
WOLLONGONG NSW 2500

Attention: Mr David Olsen

Dear David

Response to Issues - Gunlake Quarry, Marulan

1 Department of Environment and Climate Change

Issue 2.6

DECC questions the likelihood of any jaw crushing unit being capable of achieving such a low noise emission level. DECC recommends that the unit be independently verified as satisfying a sound power levels of LW94dB(A) prior to the commencement of operations.

Response

As stated in our submission of 1 February 2008, in response to Issue 2.6.

> *"In relation to the sound power level of 94 dBA for the primary jaw crusher, this was based on a measured L_{Aeq} noise level (from Mt Boppy Mine) of 86 dBA at 1 m."*

Further, for the worst case operational scenario at Residence R1, the jaw crusher is ranked 15th in the contributed noise levels (with an overall combined noise level of 37.9 dBA at Residence R1).

Even, for example, if the noise level of the jaw crusher was increased by 15 dBA, the overall combined noise level would only increase by 0.8 dBA, to 38.7 dBA.

Notwithstanding, the proponent is committed to meeting the Project Specific Noise Levels presented in the Environment Assessment at the nominated residential receivers (under the respective prevailing meteorological conditions used in the noise modeling).

HEGGIES PTY LTD
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2 Lincoln Street Lane Cove NSW 2066 Australia
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Telephone 61 2 9427 8100 Facsimile 61 2 9427 8200
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Incorporating New Environment Graeme E. Harding & Associates Eric Taylor Acoustics

Issue 2.7

An existing Industrial noise level of 39dB(A) (as noted in Table 9) if occurring during night time hours could have had significant implications on the project specific noise level for the period 6am to 7am. DECC notes that the information required (and agreed by the proponent) for DoP's issue 4 will enable the amenity criteria to be calculated with more certainty. DECC assumes that the exhibited EA will contain this information.

The proponent should note that loading and dispatch operations constitute site activities which should be considered in the context of operational noise criteria for the development.

Response

The reported noise level range of distant quarry trucks (measured at Residence R1) of 29 dBA to 39 dBA was measured during daytime (within the period 2.15 pm to 2.30 pm).

Notwithstanding, as stated in our submission of 1 February 2008, response to Issue 2.8:

> "*The revised general hours of operation are 7am to 6pm Monday to Saturday. Only the product truck loading and product transportation is proposed during the evening/night-time hours."*

Also, as stated in the response to Issue 4:

> "*The revised EA must assess the cumulative total noise impacts of the proposed quarry together with existing and approved quarries in the area (Johnniefelds Quarry Lynwood Quarry)."*

In relation to the "loading and dispatch operations", these have been "considered in the context of operational noise criteria for the development" in the EA.

Issue 2.8

There is likely to be insufficient information in the exhibited EA for DECC to form an opinion on whether night time product loading and dispatch can satisfy the screening level sleep disturbance noise assessment criteria.

The LAmax noise level of product being dropped into an empty trailer or an empty trailer hitting a deformity in the road surface (and other loading dispatch operations likely to result in short duration high level noise events) should be quantified and reported in the EA for the nearest sensitive receivers.

Response

As stated in our submission of 1 February 2008, in response to Issue 2.8:

> "*Based on the DECC's "screening" criteria of RBL + 15 dBA for sleep disturbance, the criteria of the potentially most affected residence (Residence R1) is 46 dBA.*
>
> *The worst case predicted noise level from the evening/night-time truck loading and product transportation is 35 dBA.*
>
> *Given that the L_{Amax} quarry noise levels are less than 10 dBA above the L_{Aeq} levels, compliance with the 46 dBA L_{Amax} criterion will be met."*

Also, Gunlake will be upgrading the existing access roads, building new roads where required and they have also commenced discussions with Council in relation to a road maintenance agreement.

Further, the truck bodies will be of aluminum construction with low sides in order to minimise the drop height. In this regard, mobile equipment operators/drivers will attend an operators education/training programme in relation to the minimisation of noise generation. This commitment will form a part of the Noise and Blasting Management Plan for the proposal.

Issue 2.9

The night time and evening dispatches will be assessed against the PSNL presented in the EA for those respective periods.

Response

The night-time and evening dispatches have been assessed against the PSNL (Project Specific Noise Levels) presented in the EA for the respective periods.

Issue 2.10

DECC has not been provided with the Heggies Report of 13 December 2007. This information will be assessed when supplied as part of the exhibited EA.

Response

This is noted.

Issue 2.11

DECC notes that the number of receivers potentially affected offset distances of residences and predicted noise levels from the road traffic (existing and proposed) is to be provided in the exhibited EA.

Response

As stated in our submission of 1 February 2008, in response to Issue 2.11:

> "*The road traffic noise assessment has been conducted for the minimum offset distance of residences from the respective roads. More distant receivers would inevitably experience lower traffic noise levels.*
>
> *However, the revised EA will contain a traffic noise impact assessment for all residential receivers adjacent to the respective quarry access roads."*

Issue 2.13

DECC notes that quarry operations (i.e. quarrying, fixed plant, crushing screening and conveyors) are not proposed to be undertaken outside of day time hours.

Response

This issue has been correctly noted.

I assume the responses to the subject issues raised are sufficient for your current requirements. However, should you have any queries or require further information please call me on (02) 9427 8100.

Regards

DICK GODSON

Appendix III.

Letter from Ecotone Ecological Consultants Pty Ltd dated 11th March 2008 detailing responses to Threatened Species Impact Assessment comments in DECC letter contained in Appendix I.

ECOTONE ECOLOGICAL CONSULTANTS Pty Ltd

- Ecological Research
- Flora, Fauna & Biodiversity Surveys
- Specialised Bat Studies
- Bushland/Vegetation Management Plans
- Wetland Studies
- 7-part Test Reports
- Species Impact Statements
- Nest Box Installation & Monitoring
- Wildlife Monitoring & Management
- Wildlife Photography

11 March 2008

Mr David Olsen
Olsen Environmental Consulting Pty Limited
P.O. Box 101
FIGTREE NSW 2525

Dear Mr Olsen,

Re: Gunlake Quarry Project – Major Project Application 07-0074

I refer to the letter from David Winfield of DECC to Michael Young of DoP dated 3 March 2008 regarding, among other things, the assessment of the impact of the project on threatened species and biodiversity.

Our responses to the issues raised follow.

Micro Bats

Two threatened microbat species are considered to have some potential to occur within the study area, the eastern false pipistrelle and east-coast freetail-bat. Individual records of both species occur within five kilometres of the subject site, however only probable calls of the eastern false pipistrelle were recorded during field survey work.

During the survey period, stag watching was undertaken at two locations within the main project site and at one location within the Joarimin Road site. Ultrasonic call detection was undertaken at all three locations using a hand-held CFZCAIM recorder. Calls were later analysed by experienced personnel using Anabat 6. No bats were observed leaving or entering any hollows, though observations of the time and general size of any bats observed flying through the area during the stag watch were recorded.

Ultrasonic call detection was also undertaken at eight static locations and by hand during nocturnal call playback and spotlighting surveys. A total of approximately 58 hours of ultrasonic bat call detection was undertaken during the survey period.

The DECC requested that additional survey work be undertaken in order to assess the impacts of the proposed development on threatened bat species with potential to occur within the subject site. No

calls of the east-coast freetail-bat and only a few probable calls of the eastern false pipistrelle were recorded during the 58 hours of field survey, therefore it is considered highly unlikely that a substantial population of either species occurs within the subject site. Given that these species occupy and move between a number of different roosts within a wide area, even if further survey work was undertaken and no roost site for either species was discovered, this would not rule out the potential for a roost to occur on the site at some time. While all hollow-bearing trees provide potential roost sites for these species short-term stag watching and ultrasonic recording would not provide information of sufficient detail to be able to determine the location of all roost sites used by the species and how regularly these are used.

The level of survey work undertaken thus far indicates that only small numbers of the eastern false pipistrelle are likely to occur within the study area. This is based on the low number of probable calls recorded over the 58 hour Anabat recording period. In the unlikely event that a maternity roost does occur, potential impacts could be mitigated by timing clearing operations so as to avoid the main spring/summer breeding period. Avoiding winter, when bats enter torpor, would also assist in minimising the risk of bats being killed during felling operations.

Speckled Warbler

The speckled warbler was only recorded at the Joarimin Rd old tip site where two individuals were observed foraging in introduced shrubs. The speckled warbler is known to be susceptible to local extinction in vegetation remnants of less than 100 hectares. Based on aerial photography of the region, the vegetation remnant that includes the Joarimin Road site covers a minimum of 170 hectares (excluding vegetation south of Brayton Road).

The local population of the speckled warbler is considered to be the population inhabiting this contiguous area of remnant vegetation. According to studies by Bell (1983) and Gardner *et al* (2004), each breeding pair or trio of speckled warblers occupies a home range of 6-12 hectares. Based on this information, the vegetation remnant could be expected to contain between 14-28 breeding pairs or trios (or between about 30-65 individuals). Even following the construction of the proposed road, the area of remnant vegetation would remain well above the 100 hectare threshold level for the speckled warbler. In addition, connectivity exists with large areas of remnant vegetation south-east of Brayton Road and in the nearby Johniefelds quarry site. The speckled warbler was recorded in this area within the Lynwood quarry site by Umwelt Environmental Consultants (2005).

Given the extent of habitat that would remain it is considered highly unlikely that the local population of the speckled warbler would be significantly affected as a result of the proposal. Given the worst case scenario, even if one or two individuals were to be killed as a result of vehicle movements along the proposed road, this is highly unlikely to result in the local extinction of the species. In addition, the proposed offset and rehabilitation areas within the main project site would increase the extent of habitat available to the speckled warbler within the general area, potentially allowing for an increase in numbers of this species.

References:

Bell, H., 1983. Polygamy in the Speckled Warbler *Sericornis sagittatus*. *Emu* 84(3) 183-184

Gardner, J., Magrath, R. & Olsen, P., 2004. Speckled warblers break cooperative rules: absence of helping in a group-living member of the Pardalotidae. *Animal Behaviour* 67 719-728

Umwelt., 2005. *Ecological Assessment – Proposed Lynwood Quarry, Marulan*. Prepared for Readymix Holdings Pty Limited.

Hollow bearing trees

A total of 23 hollow-bearing trees are likely to be removed from within the main project site. A further eight hollow-bearing trees may require removal, though this is uncertain as the locations of hollow-bearing trees were recorded with a hand-held GPS and are only accurate to 5-10 metres. The total of those 23 trees likely to be removed and those 8 that may require removal (but could possibly be avoided) is 31.

With regard to hollow-reliant fauna, those species of most concern to DECC are the eastern false pipistrelle and gang-gang cockatoo. The eastern false pipistrelle has been addressed under the heading "Microbats". The gang-gang cockatoo was not recorded during the survey period and only one record occurs within five kilometres of the subject site. Based on the habitat tree survey within the main project site, two dead stags containing large hollows are likely to be removed as a result of the proposal, and an additional one may require removal. The two dead stags likely to be removed were stag watched during the survey period. No evidence of gang-gang cockatoo nesting was observed and given the vocal nature of the gang-gang cockatoo and its distinctive call, it is considered unlikely that this species was resident within the study area during the survey period.

Field survey work was undertaken in January, towards the end of the breeding season for the gang-gang cockatoo. The fact that this species was not recorded during the survey period indicates that no regularly utilised nesting hollow occurs within the subject site. In the unlikely event that the gang-gang cockatoo establishes a nest in one of the trees to be removed, it is considered that potential impacts could be mitigated by timing clearing operations so as to avoid the main spring/summer breeding period.

If clearing operations are unable to be timed so as to avoid the main spring/summer breeding period and winter months when bats enter torpor, then a number of mitigative measures could assist in reducing impacts on hollow-reliant fauna. These include pre-clearing surveys of those hollow-bearing trees likely to be removed and the presence of an experienced fauna handler during clearing operations. In addition, felling trees in sections or laying them down gently would minimise the risk fauna being injured. If a nest or maternity roost is discovered during clearing operations, this tree should be left standing until an ecologist has reviewed the situation.

Endangered Ecological Communities

DECC expressed concern over the loss of 7.8 ha of the EEC as a result of the proposal and suggested that without adequate mitigation, this is likely to represent a significant impact.

I note that in the revised plans for the proposal, the area of vegetation that would be cleared or impacted, particularly the area involving the EEC *White Box Yellow Box Blakely's Red Gum Woodland*, has now been substantially reduced. This has largely been achieved by shifting the large irrigation areas from areas which impacted the EEC to areas of open pasture which are not considered to support the EEC.

The areas of vegetation that would have been impacted under the original proposal compared to the reduced areas that will now be impacted under the revised proposal are shown in the table below.

Vegetation Community	Existing Area (ha)	Area Impacted - original proposal (ha)	Area Impacted – revised (current) proposal (ha)	EEC?
1 – Riparian Floodplain Woodland	21.71	1.6	0.56	Yes
2 – Yellow Box / Red Gum Open Woodland / Woodland	21.72	6.2	3.63	Yes
3 – Argyle Apple / Stringybark Open Forest / Woodland	4.52	1.0	1.03	No
Total	**47.95**	**8.8**	**5.22**	**-**
Total EEC Area	**43.43**	**7.8**	**4.19**	

As is evident from the above table, the revised proposal has resulted in a 46% reduction in the area of EEC that would be affected, compared with the original proposal.

In addition, the proponent has substantially increased the areas of vegetation within the property to be fenced and managed as offsets or compensatory habitat, including key areas of the EEC which would also provide suitable habitat for threatened fauna. Grazing and any other activities will be excluded from these areas.

Specifically, the revised proposal involves fencing off three areas identified as 1, 2 and 3 on **Figure 1**.

AREA 1

Area 1 will contain EEC in Communities 1 and 2 that will be isolated from the normal agricultural and quarrying activities. Area 1 will preserve existing EEC and allow currently cleared areas to regenerate and possibly be planted to establish new EEC. Irrigation Area B will be fenced out of Area 1.

It will provide habitat suitable for the speckled warbler.

Area 1 contains 4.71 ha of Community 1 and 14.80 ha of Community 2. An additional area of 13.58 ha (currently cleared for agriculture) will be included into Area 1 and will regenerate and possibly be planted with species appropriate to the EEC.

AREA 2

Area 2 will also contain EEC in Communities 1 and 2 that will be isolated from the normal agricultural and quarrying activities. Area 2 will preserve the existing EEC and allow currently cleared areas to regenerate and possibly be planted to establish compensatory EEC habitat.

It will provide habitat suitable for the speckled warbler.

Area 2 contains 10.73 ha of Community 1 and 0.14 ha of Community 2. An additional area of 17.08 ha (currently cleared for agriculture) will be included into Area 2 and will regenerate and possibly be planted with EEC community vegetation.

AREA 3

Area 3 is 15.5ha of land currently cleared for agriculture. It will be isolated from quarrying and agricultural activities on the property and will regenerate or be planted to provide replacement areas for land currently supporting the EEC that will be cleared as a result of the Project.

Therefore Areas 1, 2 and 3 overall will protect a total of 30.38 ha of existing EEC vegetation from which stock will be excluded and which will be managed including weed control and periodic monitoring. In addition, a total area of 46.16 ha that is currently cleared for agriculture in all three areas is available for passive regeneration with possible supplementary replanting if appropriate.

These areas provide the opportunity to enhance the area of offset EEC habitat to a potential total of 76.54 ha within the property. This represents offset areas of over 7 times the area of EEC to be cleared (when the existing vegetation alone in the property is considered), and up to 18 times the area of EEC to be cleared (when the currently cleared areas that could be regenerated are included).

On the basis of these statistics that illustrate the reduction of impact area and extent of managed offsets now proposed, I am confident that the proposal will not represent a significant impact on the EEC in either the local or the regional context. The percentage loss of the EEC in the local area is minor compared to the areas to be protected and managed. In fact, the net effect of the proposal over time could be to increase the total area of EEC in the local area from the current 43 ha that occurs within the property to up to 76 ha or more.

Addressing Guidelines

I thank DECC for clarifying the set of guidelines to which it was referring when suggesting that Steps 4 and 5 of the Threatened Species Assessment Guidelines were not adequately addressed, and that it was the Part 3A Assessment Guidelines that were relevant in this instance. I was aware of the other sets of guidelines referred to. Those in the DECC document *Threatened Species Assessment Guidelines: The Assessment of Significance* providing definitions of local and regional, together with verbal advice from DECC, were used in estimating the local and regional context of the loss of the EEC in my previous letter dated 31 January 2008.

The relevant steps in the Part 3A Guidelines referred to are explicitly addressed below (as far as they are relevant to flora and fauna):

Step 4: A combination of "avoid, mitigate and then offset" strategies have been incorporated within this proposal.

The revised proposal has directly avoided impact on substantial areas of the EEC by shifting the irrigation areas into areas of cleared pasture that do not contain the EEC. This has effectively almost halved the area of EEC that would have been impacted under the original proposal.

There will also be adequate buffers (at least 20 m) between any quarrying or associated activities and areas of protected vegetation, plus fences that will enclose all protected areas. The road alignment has also been specifically selected to minimise the number of mature trees, including hollow-bearing trees that will be removed.

Mitigation will be provided in the form of management of runoff from the quarry that will control water quality and protect adjacent significant habitat (**Figure 2**).

Finally, in recognition of the fact that a small amount of EEC loss will be unavoidable in the proposed pit, road and other small areas, offset areas will be provided. These will protect and enhance existing patches of the EEC and allow it to regenerate (with possible assistance in the form of replanting if and when appropriate). The areas will be managed including control of weeds. The success of regeneration and condition of vegetation within the offset areas will be monitored periodically, and any adjustments to the management regime considered necessary will be undertaken. These offset areas would also provide additional potential habitat for the speckled warbler.

I have a high level of confidence in the effectiveness of the measures proposed provided they are professionally and adequately implemented. I am of the opinion that the priorities relating to "avoid, mitigate then offset" constitute appropriate management of threatened species and ecological communities, and represent the best outcome for flora and fauna in relation to the quarry proposal under the circumstances.

Step 5: The preferred option is considered to be the most desirable in terms of key thresholds and impacts on flora and fauna. The proposal will maintain and even improve biodiversity values by avoiding direct impacts on the EEC and fauna habitat wherever possible, mitigating indirect impacts on site vegetation from the quarry and associated activities, and providing substantial protected and managed offset areas that will provide between 7 and 18 times the area of EEC and fauna habitat compared to the area of habitat that would be lost due to the quarry pit and road. The area of EEC within the site has a good potential to increase compared to its current extent, and will provide suitable offset habitat in the long term for threatened fauna.

In consideration of these measures, together with the responses given under the matters relating to potential fauna impacts, I am of the opinion that the long-term viability of local populations of fauna and the EEC is assured. The proposal as it currently stands is unlikely to place any species, population or ecological community at risk of extinction. No critical habitat will be affected by the proposal.

I trust that these responses adequately address the issues raised. Please contact me if you require further information or clarification.

Yours faithfully,

Stefan Rose
Senior Flora Ecologist

Figure 1

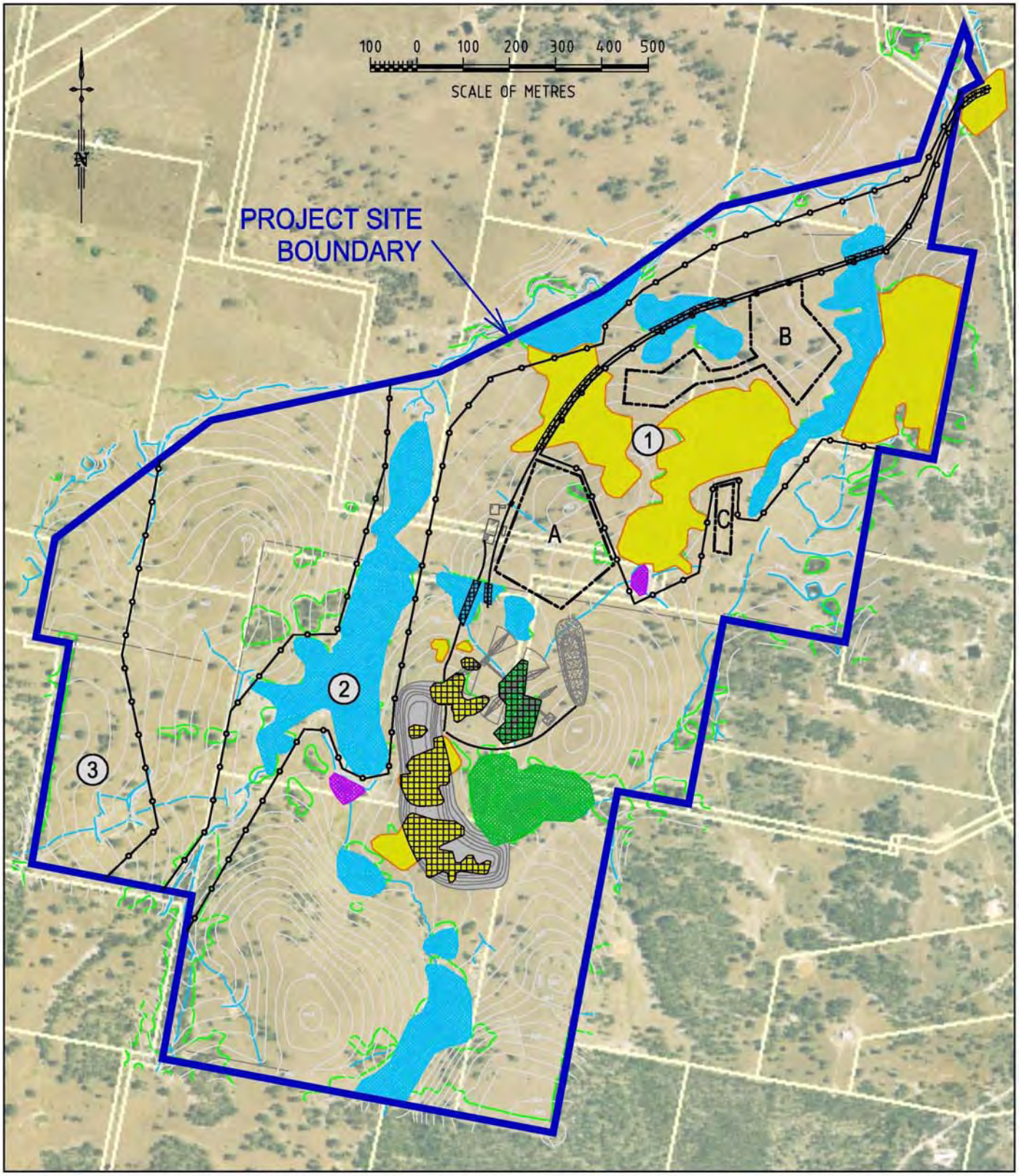
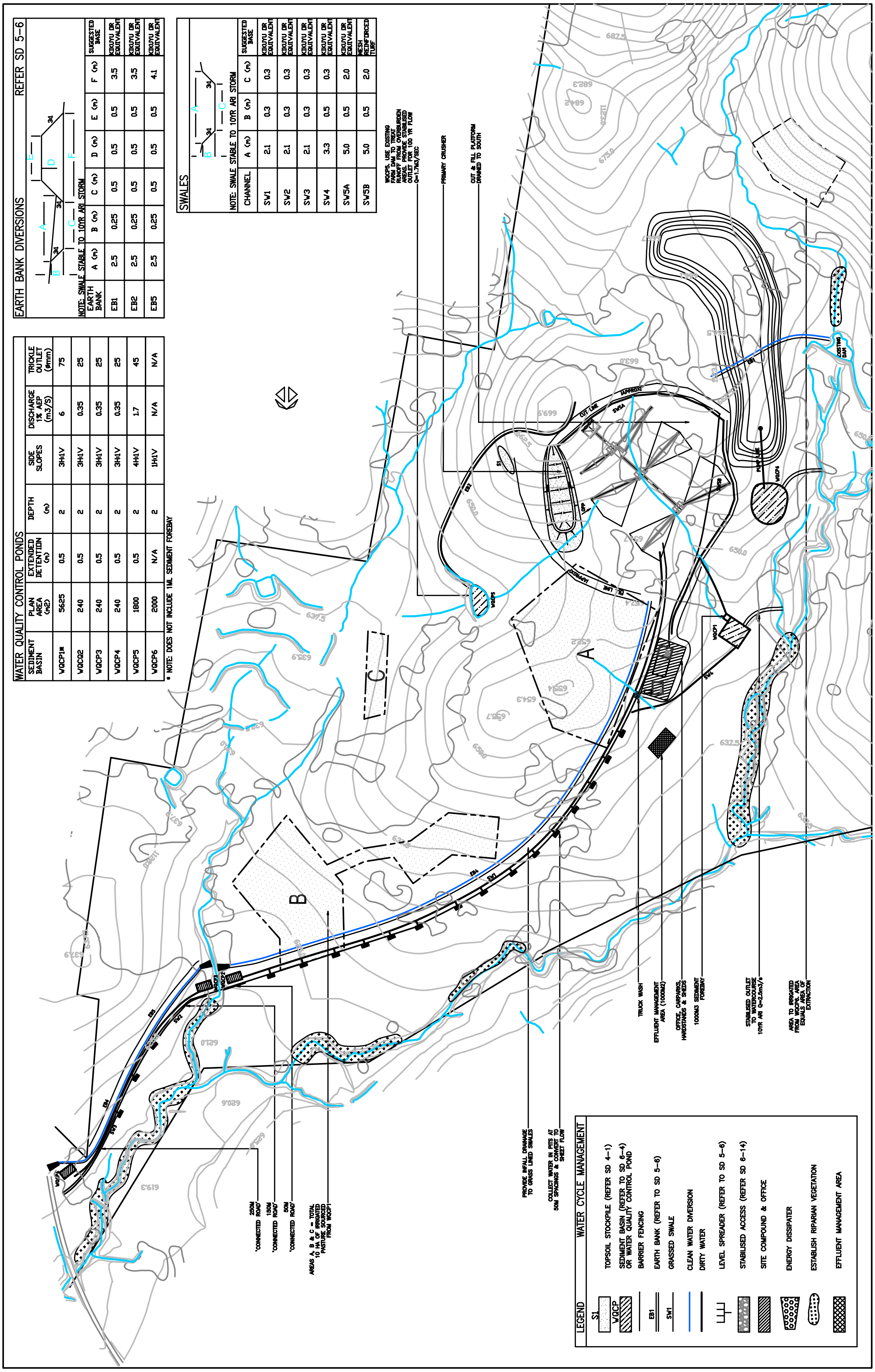

100 0 100 200 300 400 500
SCALE OF METRES
N
PROJECT SITE BOUNDARY
A
B
C
1
2
3
Community 1 Riparian Floodplain Woodland - Cabbage Gum/Yellow Box/Argyle Apple
Community 2 Woodland/Open Woodland - Yellow Box/Blakeley's Red Gum/Stringybark
Community 3 Open Forest/Woodland - Argyle Apple/Sringybark
Community 7 Dams/Fringing Vegetation
Area to be Cleared
1 EEC Isolated From Property Activities and Speckled Warbler Habitat
2 Box Woodland Regeneration (EEC) and Speckled Warbler Habitat
3 EEC Replacement
Fence
A Irrigated Pasture

Figure 2



WATER QUALITY CONTROL PONDS

SEDIMENT BASIN	PLAN AREA (m2)	EXTENDED DETENTION (m)	DEPTH (m)	SIDE SLOPES	DISCHARGE 1% AEP (m3/S)	TRICKLE OUTLET (ømm)
WQCP1*	5625	0.5	2	3H:1V	6	75
WQCQ2	240	0.5	2	3H:1V	0.35	25
WQCP3	240	0.5	2	3H:1V	0.35	25
WQCP4	240	0.5	2	3H:1V	0.35	25
WQCP5	1800	0.5	2	4H:1V	1.7	45
WQCP6	2000	N/A	2	1H:1V	N/A	N/A

* NOTE: DOES NOT INCLUDE 1ML SEDIMENT FOREBAY

EARTH BANK DIVERSIONS — REFER SD 5-6

NOTE: SWALE STABLE TO 10YR ARI STORM

EARTH BANK	A (m)	B (m)	C (m)	D (m)	E (m)	F (m)	SUGGESTED BASE
EB1	2.5	0.25	0.5	0.5	0.5	3.5	KIKUYU OR EQUIVALENT
EB2	2.5	0.25	0.5	0.5	0.5	3.5	KIKUYU OR EQUIVALENT
EB5	2.5	0.25	0.5	0.5	0.5	4.1	KIKUYU OR EQUIVALENT

SWALES

NOTE: SWALE STABLE TO 10YR ARI STORM

CHANNEL	A (m)	B (m)	C (m)	SUGGESTED BASE
SW1	2.1	0.3	0.3	KIKUYU OR EQUIVALENT
SW2	2.1	0.3	0.3	KIKUYU OR EQUIVALENT
SW3	2.1	0.3	0.3	KIKUYU OR EQUIVALENT
SW4	3.3	0.5	0.3	KIKUYU OR EQUIVALENT
SW5A	5.0	0.5	2.0	KIKUYU OR EQUIVALENT
SW5B	5.0	0.5	2.0	MESH REINFORCED TURF

Appendix IV.

Latest Statement of Commitments. Gunlake Quarry Project Environmental Assessment.

Section 5
Draft Statement of Commitments

This section has been prepared in accordance with the requirements of Part 3A of the Environmental Planning and Assessment Act 1979, and presents a compilation of the actions and initiatives that Gunlake Quarries commits to implement if the Gunlake Quarry Project is approved. These commitments are designed to effectively manage, mitigate, guide and monitor the Project from initial construction through to full production and eventually rehabilitation of the Project Site.

The Environmental Assessment of the Project has identified a range of environmental, social and management outcomes and measures, all required to avoid or reduce the environmental and social impacts of the Project.

All parties involved in the design, establishment and operational phases of the Project will be required to undertake their work in accordance with these commitments.

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5.1 GENERAL PROJECT COMMITMENTS

- Gunlake will develop an Environmental Management Plan (EMP) for the Gunlake Quarry. The EMP will also detail the monitoring regime that will provide the data necessary to determine compliance with environmental performance criteria.

- All available reclaimable topsoil will be used for preparing disturbed surface areas for revegetation.

- The proposed hard rock quarry would be operated with comprehensive systems to manage and monitor groundwater, surface water, noise, blasting, air quality, Aboriginal heritage, flora, fauna, traffic, visual and socio-economic aspects.

- Gunlake would seek approval from the Council for the installation on the Project Site of an aerated wastewater treatment system (AWTS) that will provide secondary treatment effluent suitable for disposal by irrigation. All domestic waste water will be collected and treated in the waste water management system.

- Clearing of the vegetation within the quarry area would be undertaken using a progressive campaign basis with the extent of clearing undertaken in each campaign being just sufficient for the subsequent year of quarry development.

- The size and location of water and soil erosion control structures would vary depending on the surface area and location of disturbance but would be based on the structure designs and construction notes identified in the Landcom publication, "Soils and Construction Volume 1" 4th Edition March 2004.

- Wherever practicable, stripped topsoil and subsoil would be directly replaced on completed sections of the final landform.

- Explosives and detonators would not be stored on site.

- The rock processing plant will feature atomised water dust suppression systems at all discharge points. There will also be atomised water sprays for dust control at the tipping point into the apron feeder and at the primary crusher input and discharge. The product conveyors will be covered. All screens will be enclosed to provide dust and noise attenuation.

- Potable water, ie. water for drinking purposes, and water for toilets and showering would be transported from Marulan to supplement rainwater collected off buildings and stored in tanks.

- Water required for operational purposes would be obtained from the various sedimentation and fresh water dams that form part of the site surface water and quarry pit management system.

- The Project will be powered by electricity from the State Supply Grid. Mobile plant will be powered by diesel fuel.

- A dedicated 1000m^2 irrigation field will be established to accommodate the predicted wastewater generated on site. This field will be located in the area identified by Sydney Catchment Authority as appropriate.

- Fuel storage and refuelling facilities for the mobile quarry fleet, comprising storage for 50kL diesel in a WorkCover-approved self-bunded fuel tank and a refuelling bay would be located adjacent to the Maintenance Workshop.

- The bulk of transport activities associated with the Project would revolve around the road transportation of saleable products from the Project Site to widely distributed markets.

- Gunlake will develop a mechanism to record and resolve complaints. This will support the Company's ongoing Community Liaison Programme.

- A Road Construction Management Plan would be prepared to ensure appropriate procedures are in place for the management of both quarry-related and public traffic during road construction activities.

- Gunlake has commenced consultation with Goulburn Mulwaree Council to develop a road maintenance and capital improvement agreement to cover transport route impacts associated with the movement of finished product.

- An Occupational Health and Safety Management System and a Major Hazard Management System would be developed.

- On cessation of quarrying and processing activities, a number of structures and facilities would be decommissioned and removed as part of the rehabilitation of the Project Site.

- At the completion of the Project a thorough inspection of the soil directly below and surrounding fuel storage and refuelling areas would be conducted to ensure any contaminated soil is identified. Gunlake will conduct a Phase 1 Hydrocarbon Contamination assessment and undertake appropriate action as determined by that review.

- All demountable buildings and structures erected on the Project Site would be transported off site at the completion of the Project.

- Gunlake would undertake an ongoing rehabilitation program. Gunlake would take the necessary precautions to prevent excessive development of weeds within the rehabilitated areas. They would implement a monitoring and maintenance program throughout and beyond the operation of the proposed Gunlake Quarry.

- Gunlake propose to undertake some replanting of riparian corridor habitat in the major creek lines on the Project Site. There will also be an area of Endangered Ecological Community (EEC) established on the western edge of the Gunlake property. Significant sections of existing EEC areas on the Project Site have been identified for fencing and management for conservation purposes.

- It is planned to produce further Community Newsletters as required throughout the approval process and during the operation of the Quarry.

- A meteorological station will be installed on the Project Site in early 2008.

5.2 TRAFFIC

- New road intersections will be constructed at the intersection of Brayton Road with the mine access road, Brayton Road and the By-pass road connecting to Red Hills Road, at the Brayton Road and George Street intersection (new roundabout) and the Red Hills Road intersection with the Hume Highway.

- Brayton Road between the Quarry Access road and the entry to Johnniefelds will be upgraded to a 7m wide total seal.

- Gunlake will construct a new By-pass road to connect Brayton Road to Red Hills Road.

- During Stage 2 of the Project Gunlake will improve the section of Red Hills Road to the Hume Highway including a total 7m seal.

- During Stage 1, product will only be transported from the site from 6am to 7pm Mondays to Fridays, and from 7am to 1pm on Saturdays. During Stage 2, trucks going south (ie. Along Brayton Road and through the edge of Marulan) will continue to operate during these hours. Trucks using the By-pass Road would operate from 2am Monday morning till 6pm Saturday afternoon.

5.3 WATER, SOIL AND AGRICULTURE

- Topsoil will be stripped and stockpiled from areas to be developed, including the quarry access road and By-pass road.

- Topsoils and subsoils will be stockpiled separately.

- A Conceptual Soil and Water Management Plan (SWMP) has been prepared. This Plan describes how soil and water will be managed during the establishment stage to the requirements of the Landcom Blue Book 2004. Following Project Approval a detailed version will be prepared which will consider any conditions imposed by the approval and contain detailed drawings of any engineering structures. Gunlake commits to implementing the finally agreed SWMP. Maintenance and monitoring programmes are included in the SWMP.

- A Conceptual Water Management Plan (WMP) has been proposed. This Plan flows logically from the SWMP and describes how stormwater will be managed during the operational stage and how a neutral or beneficial effect on water quality will be obtained. Following Project Approval a detailed version will be prepared which will consider any conditions imposed by the approval and contain detailed drawings of any engineering structures. Gunlake commits to implementing the finally agreed WMP. Maintenance and monitoring programmes are included in the WMP.

- Except as may be expressly provided by an Environment Protection Licence, the proponent would not discharge any dirty water from the quarry or ancillary operations.

5.4 GROUNDWATER

- Measurements of water level will be continued in the monitoring network prior to the commencement of any quarry operations in order to build on the existing baseline database.

- An ongoing long-term program of regular water level and water quality monitoring will be carried out following commencement of mining operations. Measurements of water level will be collected using the existing installed automated water level data loggers and recorders in the representative monitoring bores.

- Sampling and testing of groundwater in the representative monitoring bores will be carried out on a three (3) monthly basis for 12 months following the commencement of mining operations then on a six (6) monthly basis. In this way, analysis of the results will establish any trends in water quality. Careful analysis and progressive assessment of the results may lead to the reduction of the number of analytes determined and the frequency of sampling.

- A representative network of monitoring bores will be maintained. Three new monitoring bores are proposed.

- If there is a scientifically demonstrated significant impact on any of the springs or registered bores surrounding the Project Site, a set of mitigation options has been developed for each.

5.5 NOISE AND VIBRATION

- All blasts will be monitored at the closest/potentially most affected residence (subject to the owners approval) in order to establish compliance with the nominated criteria and to progressively update the blast emissions site laws (ground vibration and airblast) in order to optimise future blast designs, based on actual site conditions.

-

- In accordance with the INP, Gunlake will implement the following management procedures where required:

    - Noise monitoring on site and within the community.

    - Prompt response to any community issues of concern.

- Refinement of on site noise mitigation measures and quarry operating procedures, where practical.
- Discussions with relevant property holders to assess concerns.
- Consideration of acoustical mitigation at the receivers.
- Consideration of negotiated agreements with property holders.
- Blasthole drilling operations being restricted to daytime only.
- All fixed and mobile plant being selected to have a sound power level (SWL) not exceeding those outlined in **Table 4B.51** of Section 4B.4.

5.6 AIR QUALITY

- Specific design and operational safeguards have been planned for implementation at the Project Site, including the following:
  - Water spraying in excess of 2L/m^2/application applied to internal haul roads;
  - Temporary partial enclosure of stockpiles and processing area through installation of wind breaks (Hessian screen) along the western side of the processing area (subject to monitoring results);
  - Stabilisation and/or revegetation of the overburden emplacement;
  - Installation of water sprays at the tipping point to the apron feeder and at the primary crusher input;
  - Instigation of water spraying at discharge points to stockpiles when winds in excess of 8m/s are recorded on the on-site weather station; and
  - Minimising of exposed surfaces where possible.
- The dust deposition monitoring currently undertaken at the site will be continued.
- Monitoring of 24-hour concentrations of PM_{10} will be undertaken at one location for an appropriate period, as agreed with the DECC. Monitoring will be conducted on a one-day-in-six cycle using a High Volume Air Sampler (HVAS). A suitable location would be at resident R1, the closest resident to the Site. The actual site chosen will depend on agreement with the land owner and site conditions. Monitoring for PM_{10} will be conducted for a period of at least one year and at maximum quarry throughput. Should no exceedance of the 24-Hour PM_{10} criteria (directly attributable to the Gunlake Quarry) occur during this period, monitoring will be reviewed and discontinued as appropriate.
- An on-site Weather Station will be established to monitor wind speed and wind direction.

The weather station will be fitted with an alarm / automatic notification system for when wind speeds exceed 8m/s.

- Monitoring will be undertaken according to the DECC document *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* 2005.

5.7 CULTURAL HERITAGE

- Salvage and relocation of all sites (GL1–5) will be completed prior to the commencement of works. The salvage will be completed in accordance with the NPWS Act 1974 (NSW).

- There are commitments detailed in Section 4B.6.3 about discovery of cultural heritage items not identified prior to works commencing. These will be implemented by Gunlake.

- There are commitments detailed in Section 4B.6.3 about discovery of skeletal remains not identified prior to works commencing. These will be implemented by Gunlake.

5.8 FLORA AND FAUNA

- Gunlake will implement weed control in accordance with the Goulburn Mulwaree Council policy publications *"Management Plan for the Enforcement of Class 4 Noxious Weeds" and "Noxious Weed Management Program Guidelines"*.

- As wide a buffer as possible will be maintained between the top of the creek bank and the edge of the proposed quarry pit, haul road or By-pass roads (except where creek crossings are required).

- Habitat trees will be retained if possible. As some habitat trees are likely to require removal, this should be timed so as to avoid the breeding season of hollow-reliant threatened fauna.

- For any habitat trees being removed during tree-felling operations, an experienced wildlife handler will be in attendance in order to rescue injured or displaced wildlife.

- The introduced shrubs and small trees near the By-pass road route will be retained to maintain Speckled Warbler habitat.

- Appropriate sediment and erosion control measures will be implemented for the duration of construction and quarrying operations in all affected parts of the study area. In particular, steps will be taken (silt fences, cut-off drains, detention basins etc.) to prevent silt and sediment from the quarry or roads from entering the watercourses.

- At the old tip site near the proposed Jaoramin Creek crossing, a number of 'junk' piles of concrete, tin, etc. provide excellent habitat for a range of reptile species and these will be retained.

- Livestock proof fencing will prevent grazing of areas undergoing regeneration.

- Offset areas will be set aside for regeneration of riparian corridors and establishment of new and protection of existing Endangered Ecological Communities on the Project Site.

- A vegetation and weed management strategy will be prepared. Wherever possible, all shrubs, including dead plants, will be left in situ until suitable replacement native shrubs are able to provide important shelter for the Speckled Warbler and other small birds.

- Rehabilitation efforts will incorporate areas identified as forming part of the Endangered Ecological Community (EEC) in the study area. Assisted natural regeneration of the vegetation is the preferred approach wherever practical. However, if artificial plantings are to be used, only native species currently occurring on the subject site or local species listed as occurring within the EEC according to the Final Determination (NSW Scientific Committee 2002a) will be used.

- Prior to clearing for construction of the By-pass road between Brayton Road and Jaoramin Creek, targeted seasonal flora surveys will be carried out to determine whether the Endangered species *Genoplesium plumosum* and *Leucochrysum albicans* var. *tricolor* occur within or immediately adjacent to the proposed road alignment. The likelihood of either species occurring in the alignment is considered to be very low (particularly for *Genoplesium plumosum*) but a targeted seasonal survey will allow for a more informed conclusion.

5.9 BUSHFIRE

- **Table 4B.59** identifies the series of commitments Gunlake has made to reduce likelihood of bushfire.

5.10 SOCIO-ECONOMIC

- Gunlake will return a proportion of the Project Site to agricultural land.

- Gunlake will implement a policy that encourages employment of local district personnel, with arrangements for training and certification put in place to ensure suitable applicants can acquire the necessary skills.

- During the operational stage the Quarry will require the services of maintenance workers and truck drivers. It is anticipated that the bulk of these requirements can be serviced by locally or regionally based companies and individuals.

5.11 ROAD UPGRADING

- The Laterals Review of Environmental Factors of the road upgrading component of the Gunlake Quarry Project made a number of recommendations that have been accepted by Gunlake and will form the basis of environmental management of the road upgrade activities.

- Vacant land is most likely to be used for the works compound and stockpile sites. Suitable sites will be selected by the preferred contractor at the time of construction. Site selection criteria are included in the Laterals REF and these will be applied at the appropriate time.

- The working hours for road modifications will be 7am to 6pm Monday to Friday (excluding Public holidays) and 8am to 1pm Saturdays. No work is proposed to be carried out on a Sunday or on Public holidays. Any extension of these working hours for extenuating circumstances may only be approved by the Quarry Manager and potentially affected landowners and residents will be advised by a letter box drop or site visit at least 2 days prior to the work occurring.

- Contractors will employ their specific construction techniques but will comply with the design requirements for the road and the need to employ environmental mitigation measures as identified in the REF and other laws normally applying within the state.

- To minimise or eliminate potential adverse impacts on air quality, the following controls and measures will be implemented:

    - Areas of exposed soil will be limited to those areas being worked at any one time.

    - All areas of exposed soil will be stabilised as soon as possible, and progressively stabilised as work areas are completed.

    - All loads of soil or other potential dust generating materials transported by vehicles will be covered during transportation.

    - The tailgates of all vehicles will be kept securely closed during transportation.

    - Dust will be suppressed as necessary during construction by spraying exposed soil with water from a water cart which would be maintained on-site.

    - Specific dust suppression measures will be implemented around the works compound site as necessary if it is located close to any residence.

    - Dust producing activities will be avoided on high wind days.

    - Soil stockpiles will be kept covered or planted with cover crops until used.

- Haul roads and site compounds will be topped with gravel or kept moist.
- Cleared timber or other materials will not be burned.
- Mud spilt or tracked by construction equipment onto the sealed section of road or other sealed roads will be cleaned up regularly.
- All plant and equipment will be maintained in accordance with the manufacturers' specifications to ensure they operate efficiently and do not produce excessive exhaust emissions.

- In order to minimise potential impacts on water, the following controls and measures will be implemented:
  - The erosion and sediment control measures adopted in the Environmental Management Plan be implemented to ensure a neutral impact on surface and ground water quality.
  - Where stream bed scour is currently occurring at culvert outlets, the need for scour protection will be investigated and installed if required.
  - Plant and equipment will be inspected regularly to ensure there are no leakages of fuel, oil or hydraulic fluid.
  - An environmental emergency plan for pollutant spillages will form part of the erosion and sediment controls in the Environmental Management Plan.
  - An appropriate spill containment kit will be kept on site at all times.

- The following controls and measures will be implemented to ensure that construction noise and vibration are kept to the minimum:
  - Work compounds, parking areas, equipment and material stockpiles will be located as far away from dwellings as possible.
  - If the works compound is located near a residence, strategies will be implemented in consultation with the residents to minimise construction noise and vibration.
  - The residents of the nearby dwellings will be advised of any potential high noise or vibration producing activities at least one week prior to that activity occurring, and a noise and vibration management plan should be devised in consultation with them if they are concerned.
  - The residents will be notified in advance of any proposed work outside of normal working hours that is likely to be noisy or to produce high vibration levels.
  - A procedure for dealing with complaints will be developed and specified in the Environmental Management Plan for the road upgrade works.

- Vibration from construction will be kept to the minimum practically achievable.

- If a complaint is received, adjustments to work practices will be undertaken as required to try to eliminate the source of the excessive noise or vibration.

- To minimise or eliminate potential adverse impacts on flora and fauna and to ensure that the road upgrading project does not have a negative impact on biodiversity the following controls and measures will be implemented:

    - Soil disturbance shall not be more than is required to undertake the work. Vehicle, plant and stockpile impacts will be restricted to areas already devoid of vegetation.

    - An Environmental Management Plan (EMP) that incorporates erosion and sediment control measures for the site will be prepared prior to soil being disturbed.

    - Disturbed banks and batters will be rehabilitated by the addition of topsoil and sowing and maintenance of suitable species as soon as is practical to avoid the establishment of weed species in accordance with an Erosion and Sediment Control Plan.

    - Vegetation removal will be undertaken in a way that minimises impact to retained vegetation.

    - Where possible dead hollow wood will be retained or added as terrestrial habitat to the road reserve at a density no greater than one to two logs per ten metres.

    - Works and stockpile compounds will be in areas already cleared of native vegetation, such as the construction zone or agricultural paddocks. They will be established where native vegetation disturbance is minimal or weeds dominate, and requiring no clearing of native vegetation. No trees or large shrubs will be removed for the establishment of the works compound or stockpile sites if they are located outside the construction zone.

    - Topsoil that is stripped from the construction areas will be stockpiled and spread over disturbed areas prior to seeding or planting of rehabilitation grasses and trees.

    - Weeds will be removed and taken to an approved waste management facility.

    - The area to be disturbed for construction will be kept to the minimum required for safe and efficient activity.

    - Tree felling will be undertaken so that minimal damage occurs to trees intended for retention.

    - Excess timber logs may be made available to local residents for fire wood, while the rest of the vegetation (including stumps) will either be chipped on site using a mobile chipper or fractured and left for fauna use.

- Chipped native vegetation will be used where available to protect exposed areas and excess sold as landscape supplies.

- Cleared vegetation or other materials will not be burned on site.

- Areas of the road reserve disturbed by works will be rehabilitated using locally occurring native plants.

- A Waste Management Plan will be incorporated into the road upgrading Environmental Management Plan. The Waste Management Plan will, if necessary, address transportation and disposal arrangements for waste produced from the site.

- The following waste controls and measures will be implemented:

  - A Resource and Waste Management Plan (RWMP) would be prepared in accordance with the Resource Management Hierarchy established under the *Waste Avoidance & Resource Recovery Act 2001*.

  - Waste produced on the road upgrade works will be minimised, reused or recycled wherever possible.

  - Unavoidable wastes would be disposed of in an appropriate manner at a licensed waste disposal facility, as addressed in the Waste Management Plan.

  - Waste material would be classified in accordance with the Department of Conservation and Climate Change's Environmental Guidelines: *"Assessment. Classification and Management of Liquid and Non-Liquid Wastes"*.

  - Waste oil will be sent to approved recyclers.

  - Topsoil will be stockpiled and used in the stabilisation and rehabilitation of the works site.

  - Removed vegetation (including stumps) will be either chipped on site using a mobile chipper or left for fauna use. Any chipped material will be used on site for stabilisation and rehabilitation works, or if too great a volume is produced, sold to landscape suppliers or made available to local residents for garden use.

  - Portable, self-contained toilet and washroom facilities will be provided at the work site and should be regularly emptied and serviced by the contractor providing them.

  - Putrescible and other waste not able to be recycled will be collected regularly and disposed of at a licensed landfill or other disposal site in the area.

  - Cleared vegetation or other materials will not be burned on site.

- Secure rubbish bins with heavy lids will be provided within the site compound. These will be regularly emptied.

- The work site will be left in a tidy and rubbish free state at the end of each working shift and upon completion of the works.

- Contaminated materials will be disposed of at a licensed disposal site in accordance with the appropriate DECC licences and approvals.