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PROPOSED HARD ROCK QUARRY, MARULAN
Planning Focus Document

May 2007

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1.0 INTRODUCTION

1.1 BACKGROUND

This Planning Focus report has been prepared by Valerie Smith on behalf of Gunlake Quarries to introduce the proposal to establish and operate a hard rock quarry approximately 8km northwest of Marulan NSW.

The report provides an introduction to the proposed operations, the planning framework and the potential environmental issues associated with this development. It will be submitted to the NSW Department of Planning and distributed to all relevant agencies. The Director-General's requirements will be sought following the Planning Focus Meeting for the completion of the Environmental Assessment for the project.

1.2 THE APPLICANT

Gunlake Quarries is a division of Rollers Australia Pty Limited whose present main activity is the hiring of specialised road construction equipment throughout NSW, Northern Victoria and Southern Queensland with regional depots in Tamworth, Orange, Wagga Wagga and Albury. Rollers Australia is owned and managed by the O'Neil family, and is based in Sydney.

For over 60 years, two generations of the O'Neil family have been involved in the quarrying industry and were known and respected throughout Australia. Hymix Australia Pty Limited, which had concrete and quarrying operations in NSW, Victoria and Queensland was founded by members of the second generation in the 1960's and was sold by the family in 1999.

The present generation of the O'Neil family established Gunlake Constructions and Rollers Australia in the 1990's, and is now entering the concrete industry in Sydney with its first plant at Smeaton Grange to be in operation by mid 2007. The Company has land in the Blacktown area for its second plant and will trade as Gunlake Concrete. Four O'Neil brothers are involved on a full time basis in the Rollers Australia/Gunlake Group management.

Thorough market research and previous family experience have provided the base for the Company's planned further expansion.

2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 SITE LOCATION

The proposed quarry site is located approximately 8km northwest of Marulan as shown on ***Figure 1***. Current access to the site is via Brayton Road, a two lane sealed road servicing existing quarry operations and communities of Brayton and beyond.

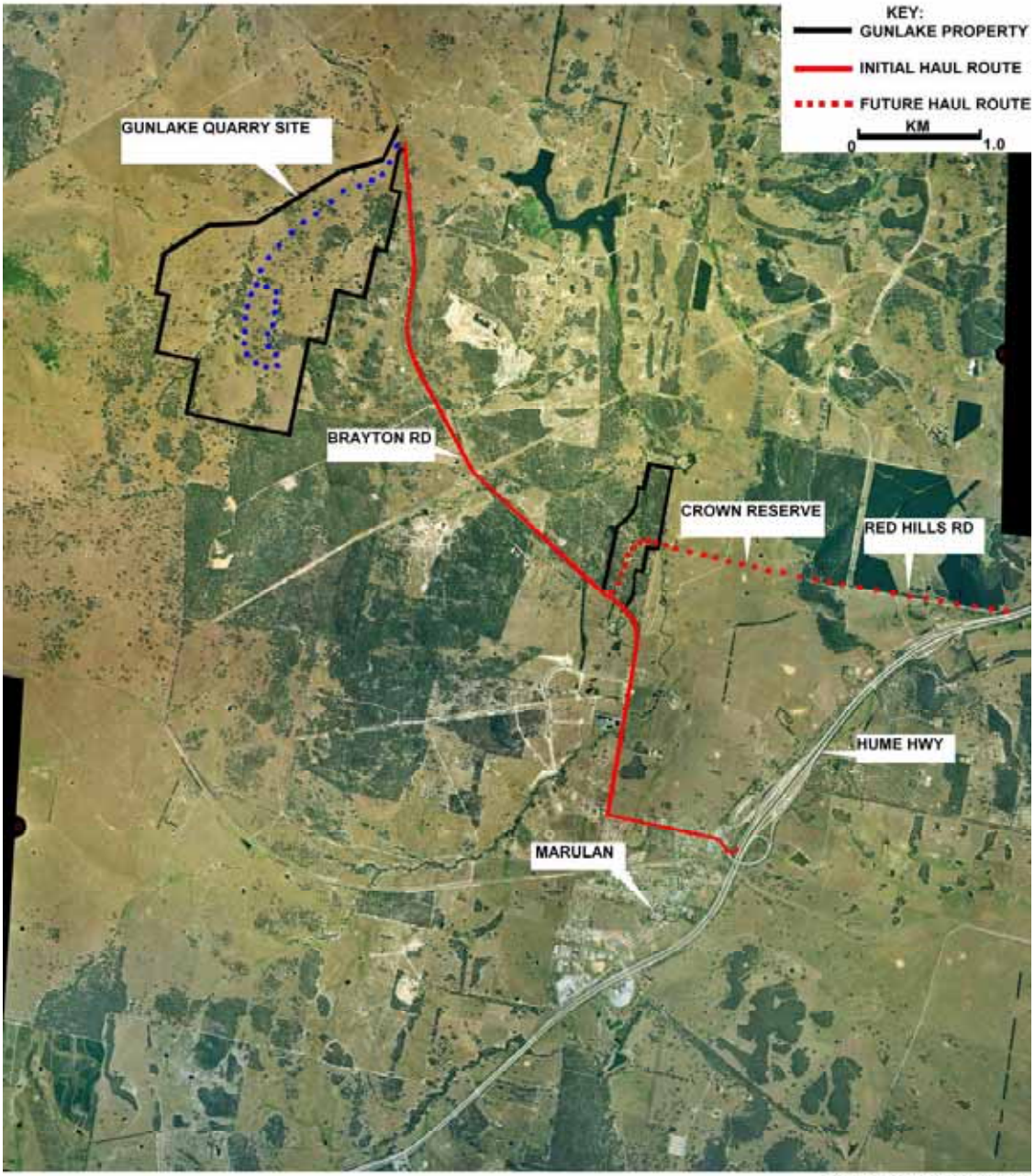

FIGURE 1-LOCALITY PLAN

2.2 RESOURCES

Extensive drilling carried out on the site has demonstrated a resource of approximately 180 million tonnes of tuffaceous rhyodacite to a depth of up to 100m below the surface, within the Bindook Volcanic Complex of Devonian age. Tests have determined that the material is suitable for use in the full range of quarry products, including concrete and sealing aggregates, rail ballast, manufactured sand, and roadbase. The proposed quarry has an expected life of over 100 years. Approval is sought for an initial period of 30 years.

2.3 JUSTIFICATION FOR THE DEVELOPMENT

Studies undertaken by the *Department of Mineral Resources (2000)* (now Department of Primary Industry (DPI)) have demonstrated that the future demands of the Sydney Region for hard rock aggregates cannot be met within a 100km radius of the region due to depletion of sources, such as the Penrith Lakes Scheme (due for depletion around 2012) and land use pressures.

With the eventual closing down of the Penrith Lakes aggregate supply, there is a need for replacement sources of aggregate. While the major international companies, which operate the Penrith Lakes resource, have new quarry developments proposed, there is a need for an independent producer to provide competitive quarry products into the Sydney and local markets.

Gunlake Quarries would be an independent quarry producer and would provide aggregates to its own operations in Sydney as well as other potential markets. As mentioned above, Gunlake is in the process of establishing concrete plants in the Sydney Region with its first plant at Smeaton Grange in the growing southwest area and its next plant positioned to supply the northwest growth area. The proposed quarry at Marulan will provide the Gunlake operations with secure, long-term supplies of aggregate and manufactured sand.

While the possibility of purchasing aggregates from the major suppliers, such as the international companies, may be considered an option, any supplies obtained from these operations would be at a higher cost than from Gunlake's proposed quarry at Marulan, which may affect the longer term viability of Gunlake's planned concrete operations.

The quarry proposals of Boral and Readymix in the Marulan area are also designed to provide these Company's with their own secure sources of hard rock aggregates for their operations. The EIS of Readymix for the Lynwood Quarry *(Umwelt (Australia) Pty Ltd 2005*) found that the purchase of aggregates from non-Readymix quarries was not a viable option for Readymix for the reasons outlined above. It is widely understood in this industry, that each major concrete producer must have its own secure, long-term, hard rock resource and the Gunlake quarry would provide security of supply for Gunlake's concrete operations.

In regard to roadbase 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. The existing roadbase 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.

It is expected that the proposed Gunlake quarry will be able to fill a part of this demand, particularly to the southwest and northwest growth areas of Sydney.

2.4 THE PROPOSED DEVELOPMENT

2.4.1 Quarrying

It is proposed that the quarry will produce 500,000 tonnes per annum of finished product and will be operated as a conventional hard rock, open cut quarry involving the following main processes:

- Overburden removal will be carried out using equipment such as excavators and dump trucks and will be stockpiled initially on the eastern side of the crushing plant area to create a bund wall extending the line of an existing ridge. The bund wall will become an effective noise and visual barrier; virtually eliminating lines of sight from the east.

- Conventional drill and blast techniques will be used to quarry the stone from face heights of approximately 13 metres. It is proposed that the quarrying will commence at the northern end of the 30 year quarry site and proceed in a southerly direction. As required, each new quarry bench will be opened up and developed in the north to south direction.

- Any secondary breaking required will be done by hydraulic rock breaker.

- The quarried stone will be loaded by front end loaders and hauled by dump trucks to the crushing and screening plant.

Figure 2 shows the location of the initial 30 year quarry, processing plant and overburden emplacement.

2.4.2 Processing

The crushing plant will be a three stage plant with crushing followed by the appropriate screening process including recirculation of material, to produce the final products. These will be sized and stockpiled. The three crushing stages will most likely be done with a primary jaw crusher, a secondary gyratory crusher and tertiary cone crushers.

The plant will have a production throughput of up to 300 tonnes per hour.

It is envisaged that a portable crushing plant might be used initially in order to produce road making materials for the on site roadways.

Product from the proposed quarry will comprise a range of high quality concrete and sealing aggregates, manufactured sand, rail ballast and road base.

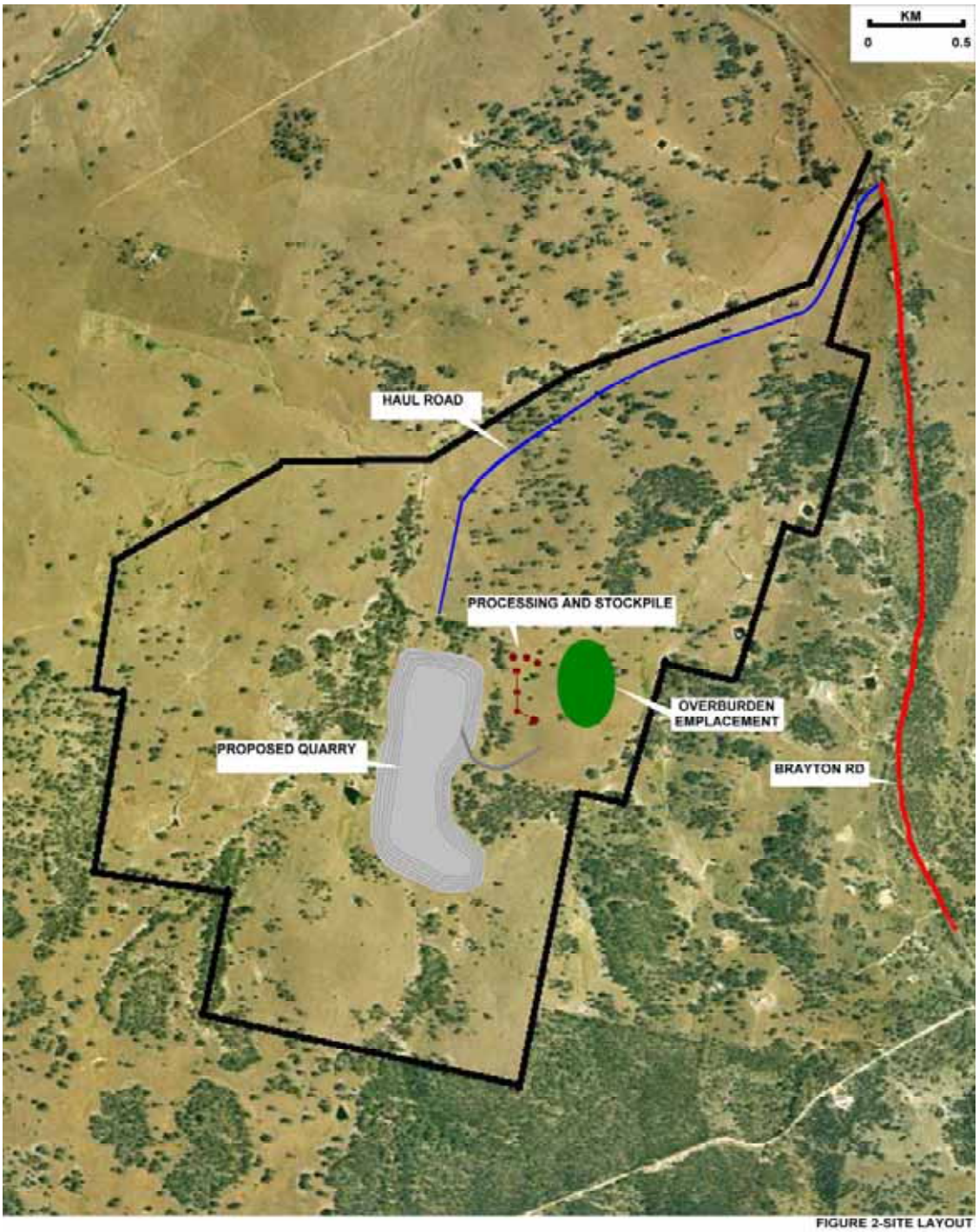

FIGURE 2-SITE LAYOUT

2.4.3 Product Transport

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 to allow product destined for northern markets and all returning trucks to bypass Marulan. This route is shown on ***Figure 1*** together with the quarry and plant site.

The bypass route involves the construction of a haul road over land owned by Gunlake Quarries to link with a new road to be constructed along a Crown Road Reserve to Red Hills Road to meet with the Hume Highway. The proposed construction of the bypass road will be timed for when quarry sales growth would result in truck movements through Marulan exceeding an 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 destined for northern markets and all returning trucks will use this route.

Southbound trucks from the quarry will continue to use Brayton Road to the Hume Highway interchange but returning trucks will continue north on the highway and 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.

Previous experience by the O'Neil family has proven the effective economic viability of road transport from quarry site direct to concrete plant locations. The 24 hour operation of a trucking fleet timed to avoid, as far as possible, peak hour conditions on highway and roads, not only provides economic efficiency, but also reduces traffic congestion in industrial areas where concrete plants are located.

It is not feasible for rail to be utilised for product haulage in the Gunlake proposal. The eventual annual quantity of 500,000 tonnes is to be delivered to widely separated locations, locally and in Sydney, and to be supplied on an on-demand, just-in-time basis for concrete plants, which is standard throughout the industry, means that direct road transport must be used. Rail transport can be considered feasible only where far bigger quantities are required, but road transport still remains an integral part of these operations.

2.4.4 Workforce

The project will provide employment for approximately 45 personnel, comprising 20 quarry personnel and 25 haulage operators.

2.4.5 Hours of Operation

Proposed Hours of operation are shown in ***Table 1.***

TABLE 1
HOURS OF OPERATION

Task	***Proposed Hours***
Overburden removal	6am to 6pm Monday to Saturday
Drilling	6am to 6pm Monday to Saturday
Blasting	8am to 5pm Monday to Friday
Quarrying and Processing	6am to 6pm Monday to Saturday
Maintenance	24 hours 7 days
Truck Loading and Haulage*	9pm Sunday to 6pm Saturday.

*After construction of the bypass route, there will be no haulage through Marulan outside the hours of 6am to 6pm Monday to Saturday.
Note: Truck movements through Marulan will never exceed an average of 25 truck movements per day.

3.0 PLANNING CONTEXT

3.1 GENERAL

The proposed project has been assessed in relation to the relevant planning instruments that affect the site. Theses include the EP&A Act, the EP&A Act and regulations, a number of State Environmental Planning Policies (SEPPs) and Mulwaree Shire Local Environmental Plan (LEP) 1995 as amended.

3.2 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The proposed development will be assessed in accordance with the Environmental Planning and Assessment Act (EP&A Act) 1979 and Regulations (2000).

Part 3A of the EP&A Act defines the assessment and approval process for development that is defined as a "Major Project", replacing development that was previously defined as "State Significant Development". As shown in ***Section 3.3***, the proposed quarry of Gunlake Quarries at Marulan, meets the definition of a "Major Project" in State Environmental Planning Policy Major Projects 2005 and approval will be sought for the initial 30 year quarry plan.

Environmental Planning Instruments, other than State Environmental Planning Policies (SEPPs), do not apply to a "Major Project" under Part 3A Clause 75(R) of the EP&A Act. The applicable SEPPs to this development are discussed in the following Sections.

3.3 STATE ENVIRONMENTAL PLANNING POLICY (MAJOR PROJECTS) 2005

The Major Projects SEPP 2005 identifies development to which the assessment and approval process of Part 3A of the EP&A Act applies. Under this policy, the Minister for Planning is the consent authority for development classified as a 'Major Project'.

Clause 6(1) of the SEPP identifies projects under Part 3A as development that, in the opinion of the Minister, is development as listed in either Schedule 1, 2 or 3 of the Policy. Schedule 1 includes extractive industries as a 'Major Project' under Part 3A in Clause 7(1) (a) and (b) as follows:

> ***7(1) "Extractive Industries***
>
> *(1) Development for the purposes of extractive industry that:*
>
> *a. extracts more than 200 000 tonnes of extractive materials per year, or*
>
> *b. extracts from a total resource (the subject of the development application) of more than 5 million tonnes"*

The proposed Gunlake Quarry is expected to produce up to 500,000 tpa and has a resource of approximately 180 Mt.

Consequently, subject to the Minister's agreement, the application may be assessed under Part 3A of the EPA Act.

3.4 STATE ENVIRONMENTAL PLANNING POLICY (MINING, PETROLEUM PRODUCTION AND EXTRACTIVE INDUSTRIES)

SEPP (Mining, Petroleum Production and Extractive Industries) 2007 consolidates and updates many existing planning provisions related to mining, petroleum production and extractive industries as well as introducing new provisions to ensure that potential environmental and social impacts are adequately addressed during the assessment and determination of development proposals.

The SEPP aims to provide for the proper management and development of mining, petroleum production and extractive material resources, to facilitate the orderly use and development of areas where the resources are located; and to establish appropriate planning controls to encourage sustainable management of these resources.

State Environmental Planning Policy No 11 – Traffic Generating Developments provisions have been integrated into the nee SEPP. It also combines a number of other existing policies (*SEPP No 37 –Continuing Mining and Extractive Industries, SEPP 45 – Mining Permissibility*) into one consistent set of rules.

The provisions of SEPP (Mining, Petroleum Production and Extractive Industries) 2007 apply to the Gunlake proposal.

3.5 STATE ENVIRONMENTAL PLANNING POLICY NO 33 – HAZARDOUS AND OFFENSIVE DEVELOPMENT

SEPP No 33 – Hazardous and Offensive Development requires the consent authority to consider whether a proposal is a potentially hazardous industry or a potentially offensive industry. The SEPP provides definitions for "*hazardous industry", "hazardous storage establishment", "offensive industry*" and "*offensive storage establishment*".

The consent authority is required to consider the specifics of the proposal, the location and intensity of the proposed activity to determine whether the proposed development may be classified as "potentially hazardous" or "potentially offensive" as defined in the policy.

The objectives of SEPP 33 to the Gunlake proposal will be applied during the Environmental Assessment process.

3.6 DRINKING WATER CATCHMENTS REGIONAL ENVIRONMENTAL PLAN NO 1 2007

Drinking Water Catchments Regional Environmental Plan No 1 applies to the hydrological catchments of Warragamba, Metropolitan, Woronora, Grose River Blue Mountains and Shoalhaven. The proposed development site is located within Mulwaree local government area (LGA) which is within the area covered by the Environmental Plan.

The objectives of the Plan are to ensure that developments within Sydney's water catchment area do not have a detrimental impact on the quality of the drinking water supply.

The proposed quarry development will incorporate appropriate controls to prevent discharges from the proposed site. These will be detailed in the Environmental Assessment report and a comprehensive assessment of the project in accordance with the Environmental Plan will be undertaken and presented in the EA document.

3.7 MULWAREE SHIRE LOCAL ENVIRONMENTAL PLAN (LEP) 1995 –AS AMENDED.

Under Mulwaree Shire Local Environmental Plan (LEP) 1995, the quarry and processing site is zoned 1(a) Rural. 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 these deposits,

v. trees and other vegetation in sensitive areas and in any places 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 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 isolate development of rural land, and

ii. providing, extending and maintaining public amenities and services, and

(c) 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."

Extractive industries are permissible under the 1(a) zoning with development consent. The Crown Road reserve forming part of the proposed Marulan by-pass and Red Hills Road separate land zoned land 1(a) Rural and land zoned 1(b) Urban Investigation.

The former Mulwaree Council adopted a settlement strategy for the entire LGA including the Marulan area. This Strategy has been adopted by the now Goulburn-Mulwaree Council and planning and environmental studies are currently being undertaken to refine the strategy. A new LEP for the LGA is planned to be exhibited soon. Under the new draft LEP, extractive industries remain a permitted use in the rural zone.

3.8 OTHER POLICIES, STATEGIES AND PLANS

Other SEPPs that will be reviewed during the Environmental Assessment for their relevance to the development include

- SEPP No 44 – Koala Habitat Protection.
- SEPP No 55 – Remediation of Land.
- Sydney to Canberra Strategy (Department of Planning 1995).

4.0 OTHER APPROVALS

Under Part 3A of the EP&A Act, a development proposal does not require referral and approval from other relevant agencies prior to the planning approval determination in accordance with Clause 75 (U) of the EP&A Act. A licence in accordance with the *Protection of the Environment Operations Act 1997* will be required for the operation of the quarry.

5.0 AUTHORITY AND COMMUNITY CONSULTATION

5.1 GOVERNMENT AND REGULATORY AGENCIES

The principal agencies identified as having an interest in the proposed development are:

- The Department of Planning
- Department of Environment and Climate Change
- The Roads and Traffic Authority
- Sydney Catchment Authority
- Department of Primary Industry
- Department of Water and Energy
- Goulburn Mulwaree Council
- Department of Lands

Preliminary discussions have been held with these and a Planning Focus meeting has been held to brief them on aspects of the quarry project.

On-going discussions with these agencies are proposed, as required, during preparation of the EA report.

5.2 NEARBY RESIDENTS AND LANDOWNERS

Discussions with residents and landowners living near the proposed quarry and by-pass road has commenced and will be continued during the EA process.

5.3 COMMUNITY CONSULTATION

Gunlake Quarries is aware of the need to undertake adequate community consultation to provide residents near the quarry and proposed haul roads, other Marulan residents and businesses, and aboriginal groups, of the proposed project and to incorporate the community's views into the project design.

A comprehensive community consultation programme has been developed and will continue throughout the EA process.

6.0 KEY ENVIRONMENTAL CONSIDERATIONS

6.1 REGIONAL CONTEXT

The Marulan quarry site of Gunlake was chosen for its resource and its natural characteristics, which assist in minimising environmental impacts.

The proposed quarry, plant site and parts of the proposed bypass route will be owned by Gunlake Quarries. It comprises an area of 230 hectares of undulating stony countryside primarily used for sheep and cattle grazing. Elevations range from approximately 690m AHD on the southern boundary to 620 m AHD on the eastern boundary at Brayton Road. The natural undulating nature of the land allows use of the ridgelines as effective visual barriers to the proposed development.

The development site is wholly within the upper catchment of Chapmans Creek, a prescribed stream under the *Rivers and Foreshores Improvement Act 1948*. Chapmans Creek flows east to join Joarimin Creek approximately 1km downstream of the site, which in turn flows north to join the Wollondilly River 4km to the north. Drainage lines form first and second order intermittent streams at intervals of 200 to 500m across the site.

Chapmans Creek and its tributaries are intemittent streams which flow only following significant rainfall events. A number of farm dams occur on the site on tributary steams to provide for stock watering. The location of the quarry and plant site in the upper catchment of Chapmans Creek minimising the need for extensive water diversion strategies for runon water during storm events. The Company is also conscious of the need to minimise activities within 40m of the bank of Chapmans Creek and to seek a Part 3A Permit for any disturbances within this area.

The proposed bypass route will cross Jaoramin Creek in an area of medium vegetation cover. As with Chapmans Creek, a Part 3A Permit will need to be sought for the proposed creek crossing.

The site is primarily cleared grassland with scattered pockets of woodland provided as shade for grazing stock. These mainly occur on hilltops and along creek lines. The scant native vegetation cover means that clearing can be minimised assisting in reducing ecological impacts from the development.

Nearest residences, not associated with the project are located approximately 750m to 1km east and southeast of the site. The land acquired by Gunlake provides a buffer of undeveloped land around the quarry development to these properties minimising noise, blasting and dust impacts.

Brayton Road is a sealed two lane road already utilised by trucks servicing the Johnniefelds quarry of Readymix located approximately 1km to the south (shown on ***Figure 3***). The presence of truck movements from the Gunlake quarry will not be a new or unfamiliar type of traffic on this road.

While environmental studies associated with the development have commenced, these studies are in an early stage and it is not possible to predict the environmental impacts associated with the quarry development. These environmental studies will be detailed, and will thoroughly address all environmental impacts associated with this development. A number of key environmental considerations have been identified and these are summarised below.

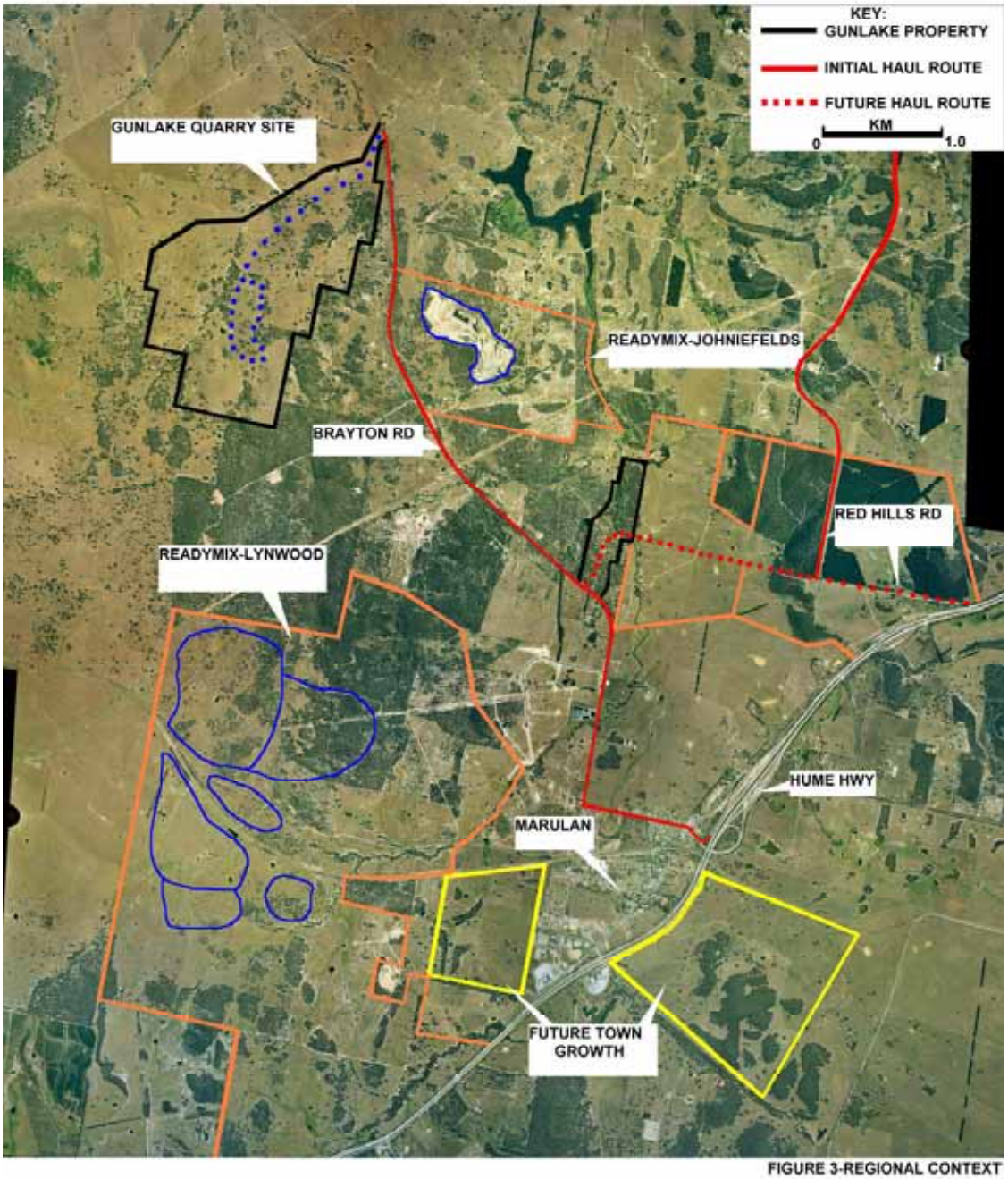

FIGURE 3-REGIONAL CONTEXT

6.2 TRANSPORT AND TRAFFIC

Road haulage has been identified as a key environmental issue for this project.

As outlined in ***Section 2.4.3***, rail haulage is not feasible for this project. The provision of a bypass route around the town of Marulan has been proposed to take most of the traffic from the proposed development. It is acknowledged that there will be some truck traffic (an average of 25 truck movements per day) utilising Brayton Road over the life of the quarry development. The impacts of this continued use on residents will be thoroughly investigated by the traffic consultants.

Detailed studies are being undertaken to:

1. *Assess the existing road networks, and traffic flows in the area.*

2. *Assess the capacity and safety of the proposed transport routes, in particular the intersection of Red Hills Road and the Hume Highway and the intersections of Brayton Road and the truck haul routes.*

3. *Assess potential traffic impacts from the operating quarry for both night-time and day-time operations with the inclusion of recommended traffic controls, eg, intersections and access.*

4. *Assess the traffic implications of the development, with reference to the capacity, safety and design of key haulage routes to and from the quarry, the types and volumes of vehicles and the direction of travel of all vehicles entering and exiting the site.*

5. *Assess potential construction traffic impacts.*

6. *Assess potential cumulative traffic impacts.*

7. *Identify measures to minimise traffic impacts.*

8. *An assessment of impacts on traffic including computer modelling techniques.*

6.3 NOISE AND BLASTING

Detailed noise and blasting impact assessments for the proposed development are being undertaken to assess the extent of potential impacts from this development. Noise studies will be undertaken in accordance with the former DEC's NSW Industrial Noise Policy (2000) and blasting impacts will be assessed in accordance with the criteria recommended by ANZEC. These criteria are used to assess human annoyance, human discomfort and structural damage.

Studies involve the assessment of background noise levels at surrounding residences using attended and unattended noise loggers. The location of these loggers will be chosen by the noise consultants as appropriate for the noise assessment. The results of these surveys will be used to derive the project specific limits in accordance with the Industrial Noise Policy and the EPA's Environmental Noise Control Manual.

Detailed studies are being undertaken to:

1. *Assess the existing background (L_{A90}) and ambient (L_{eq}) noise levels.*

2. *Assess potential noise impacts for each potentially affected receiver for day, evening and night site operations.*

3. *Assess potential noise from site and road construction operations.*

4. *Assess potential impacts from blasting operations and nearest affected residences.*

5. *Assess potential noise impacts from the haulage of trucks on Brayton Road and the proposed bypass route.*

6. *Assess potential vibration impacts from truck haulage.*

7. *Assess noise impacts on any nearby noise sensitive livestock.*

8. *Identify required noise and vibration controls to minimise impacts on any affected residence.*

9. *Assess potential cumulative noise impacts.*

6.4 AIR QUALITY

The assessment of air quality impacts is being undertaken using the results from background monitoring, information on emission levels from site activities, and predictive computer modelling. Air samplers will be installed near nearest potential affected residents in accordance with the recommendations of the Company's consultants. As with noise, dust impacts will be modelled upon the worst case scenario.

Detailed studies are being undertaken to:

1. *Assess the existing air quality in the area.*

2. *Assess all activities and identify all activities likely to generate air impacts or have the potential to cause harmful effects on the environment including health and amenity, and all related environmental issues.*

3. *Identify air pollution controls or mitigation measures for the operations to minimise air quality impacts.*

4. *Assess air quality impacts from the haulage of product between the site and the Hume Highway.*

5. *Identify all air pollutants likely to be generated, including but not necessarily restricted to odour, dust, TSP and PM10, provide emission rates for those pollutants for the different activities, and determine the resultant ground level concentration of pollutants.*

6. *Assess the effects of pollutant concentrations on the environment including human health, livestock and amenity.*

7. *Assess potential construction air quality impacts.*

8. *Assess potential cumulative air quality impacts.*

9. *Conduct computer dispersion modelling to predict air quality impacts.*

6.5 WATER RESOURCES

Due to continuing drought conditions throughout NSW, the issue of an adequate supply of water to the proposed development, without detrimentally impacting any nearby water users, is expected to be a key environmental issue for the project.

The existing Chapmans Creek and its tributaries are intermittent streams and significant water flows are rare. Only the adjacent flats of Chapmans Creek are susceptible to temporary inundation after prolonged storms. Widespread minor to severe gully erosion occurs over the site.

It appears that at least one of the existing dams on the site may be fed by a natural spring, as it maintains a relatively stable water level even in dry condition. Previous studies undertaken for a proposed subdivision on this land *(Ecowest Consulting Pty Ltd (2005*)) noted that soils, groundwater and surface waters were of low salinity.

A search of registered bores by *Ecowest Consulting Pty Ltd (2005*) indicated that there was two registered bores within a 3km radius of the site. The standing water level in the bores ranged from a depth of 9 to 12m when constructed in 1982 and 1953. The water bearing zones ranged between 13 and 93m and were located in fractured rock zones.

Proposed studies are being undertaken to source all water requirements for the operations from on-site surface water and groundwater sources. This will involved the construction of dams in sites designed to maximise water catchment. The potential to utilise groundwater sources is also being investigated.

Detailed studies are being undertaken to:

Surface Water

1. *Identify the characteristics of the existing catchments, drainage, rainfall and other climatic features that impact on surface water supplies, and surface water quality.*

2. *Determine site water demands and potential water storages.*

3. *Provide a water balance for the development.*

4. *Identify sources of water for dust suppression, potable water supplies, and the potential for reuse of waste water.*

5. *Identify mitigation measures for minimising erosion from the development, including undisturbed areas and disturbed areas during construction and operational phases.*

6. *Assess potential impacts from the quarry operations on water supplies, catchments, and yields, water courses, erosion, water quality or environmental flows.*

Groundwater

1. *Monitor existing background groundwater levels and to assess groundwater quality.*

2. *Identify existing bores within proximity of the proposed development that may have the potential to be impacted by the proposed development.*

3. *Assess the characteristics of the groundwater table in terms of flows, quality, use, recharge and yields.*

4. *Assess potential impacts from the quarry operations on groundwater levels and groundwater quality, and the potential to impact on existing groundwater supplies or groundwater dependent ecosystems. Computer modelling techniques will be used to assist in these determinations.*

6.6 ECOLOGY

The quarry site is predominantly cleared of native vegetation, with scattered woodlots occurring along creek lines and some hill tops, while parts of the bypass route are also vegetated. At least 8 flora species and 26 State and Commonwealth threatened species have been identified within 10 km of the project area. In particular, the endangered Ecological Community *White Box-Yellow Box-Blakely's Red Gum Woodland*, has been previously identified within the immediate vicinity of the proposed development.

Detailed studies are being undertaken to assess the impacts of the proposal on the ecology of these sites. These studies include:

1. *Conducting and documenting field surveys in accordance with the draft "Guideline for Threatened Species Assessment" (DEC).*

2. *Mapping existing vegetation communities and habitats.*

3. *Identifying mitigation measures to minimise impacts on threatened species and their habitat, including an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.*

4. *Identifying vegetation offsets to ensure that there is no net loss to the flora and fauna values of the area in the medium to long term.*

5. *Providing an assessment of the impacts of the development including quarry site and proposed haul road on threatened species and endangered ecological communities. The assessment will specifically report on the*

considerations listed in Step 3 of the draft guideline, and identify if the key thresholds set out in Step 5 of the draft guidelines will be met.

6. *Assessing potential impacts on aquatic and riparian habitats, threatened aquatic species, aquatic biodiversity and fish passage.*

7. *Assessing the impacts of clearing native vegetation on a regional context, especially pertaining to potential impacts on wildlife corridors; given the cumulative clearing in the regional area associated with a large proposed quarry to the southwest and the number of large proposed residential developments in the Marulan area.*

6.7 VISUAL AMENITY

The proposed quarry and plant site are set back some distances from Brayton Road. The natural undulating nature of the intervening land allows existing hills and ridgelines to be effective visual barriers to the proposed development. Any potential views of the site from residents will be further screened by a proposed bund wall extending an existing ridgeline. Parts of the proposed bypass route will be visible to traffic on the Hume Highway and nearby residents.

Visual impacts are not expected to be significant.

6.8 CULTURAL AND HISTORIC HERITAGE

Studies are being undertaken to identify any sites or relics of aboriginal or non-indigenous significance that may be affected by the proposed development. To date, no non-indigenous heritage sites have been identified. Investigations are on-going.

A number of aboriginal sites, identified as “open camp sites” or “isolated finds” are known to occur in the vicinity of the site, and a number of similar types of studies were identified during preparation of the Environmental Impact Statement for the Readymix quarry proposal (*Umwelt, 2005*). It is expected that similar sites will occur in the project area.

Detailed studies currently being undertaken include:

1. *A review of relevant environmental information, past Aboriginal cultural heritage investigations and relevant statutory registers and inventories in order to identify areas of archaeological potential and known sites.*

2. *Conducting and documenting aboriginal cultural issues as set out in the draft “Guidelines for Aboriginal Heritage Impact Assessment and Community Consultation” (DEC) including surveys and the Aboriginal community.*

3. *Identifying the nature and extent of impacts on Aboriginal cultural heritage values across the project area.*

4. *Identifying mitigation measures to minimise impacts on Aboriginal cultural values. This includes an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.*

5. *Undertaking effective community consultation with Aboriginal communities in determining and assessing impacts, developing options and making recommendations.*

6. *Consulting the "State Heritage Inventory" of the Heritage Council, and lists maintained by the NSW National Parks and Wildlife Service, the National Trust, the Australian Heritage Council to identify any items of heritage significance in the area affected by the development.*

7. *Identifying any non-aboriginal heritage items within the proposed development area during the field surveys. Providing a statement of significance and an assessment of the impact of the proposal on the heritage significance of these items, if relevant. The assessment will be undertaken in accordance with the guidelines in the NSW heritage manual.*

6.9 PLANNING AND SOCIO-ECONOMICS

The proposed development has the potential to provide significant economic benefits to the local area and region. A detailed socio-economic study will be undertaken as part of the Environmental Assessment for this project. The EA will identify any social impacts of the project utilising the results of other technical studies, such as noise and air quality, as well as the economic benefits expected to be generated by the development.

Marulan is experiencing urban growth pressures with plans for the establishment of new subdivisions, particularly south of the Hume Highway. ***Figure 3*** shows the location of two of these proposals. The future growth pattern of Marulan is currently the subject of a number of studies, strategies and plans. These will be continuously monitored over the course of preparation of the EA to ensure that the Gunlake proposal does not significantly impact on the future growth of Marulan.

6.10 CUMULATIVE IMPACTS

The proposed Gunlake quarry is one of a number of existing and proposed quarry developments in the region. The existing Johnniefelds quarry of Readymix is located 1km to the southwest of the Gunlake quarry project. Readymix has also received approval to develop the Lynwood quarry to the southwest of the Gunlake proposal.

Further more distant quarry proposals are located to the south of the Hume Highway in the Bungonia and South Marulan area.

While some of these developments propose rail haulage for their product, truck haulage will remain the principal means of product haulage for these quarries.

The assessment of the cumulative impacts of those quarry developments, and any other existing development, with the potential to interact with the Gunlake project will be assessed during preparation of the EA. Cumulative impacts from noise, dust, and material haulage, in particular will be considered.

7.0 CONCLUSION

This document has been prepared to provide an overview of the potential environmental issues associated with the proposed Gunlake quarry and bypass route. It will form part of the project application to the NSW Department of Planning under part 3A of the EP&A Act. It will be provided to other Government agencies prior to attendance at a Planning Focus meeting.

The document and the outcomes of the Planning Focus meeting will assist the Director-General in formulating the requirements for the completion of an Environmental Assessment (EA) for the project.

A detailed EA will be prepared in accordance with these requirements and the outcomes of consultation with other Government agencies and the community. The EA will be presented to the Department of Planning together with a draft statement of commitments (SOC) for the operation of the quarry. The Draft EA and SOC will be reviewed by the Department and relevant agencies prior to a formal exhibition, assessment and determination of the proposal by the Minister.

8.0 REFERENCES

Department of Mineral Resources, 2000. Supply and Demand for Coarse Aggregate in the Sydney Planning Region. NSW Department of Mineral Resources, Geological Survey Branch.

Ecowest Consulting Pty Ltd ,2005. Groundwater and Salinity Study at “Longreach”, Brayton Road, Brayton NSW. 2005.

(Umwelt (Australia) Pty Ltd 2005. Environmental Impact Statement. Proposed Lynwood Quarry, marulan. Readymix Holdings Pty Ltd. May 2005.