

ASSESSMENT REPORT

GUNLAKE QUARRY Quarry Expansion Modification (MP 07 0074 MOD 2)

1 BACKGROUND

Gunlake Quarries Pty Ltd (Gunlake) owns the Gunlake Quarry, located approximately 8 kilometres (km) northwest of Marulan in the Goulburn Mulwaree Shire (see **Figure 1**).

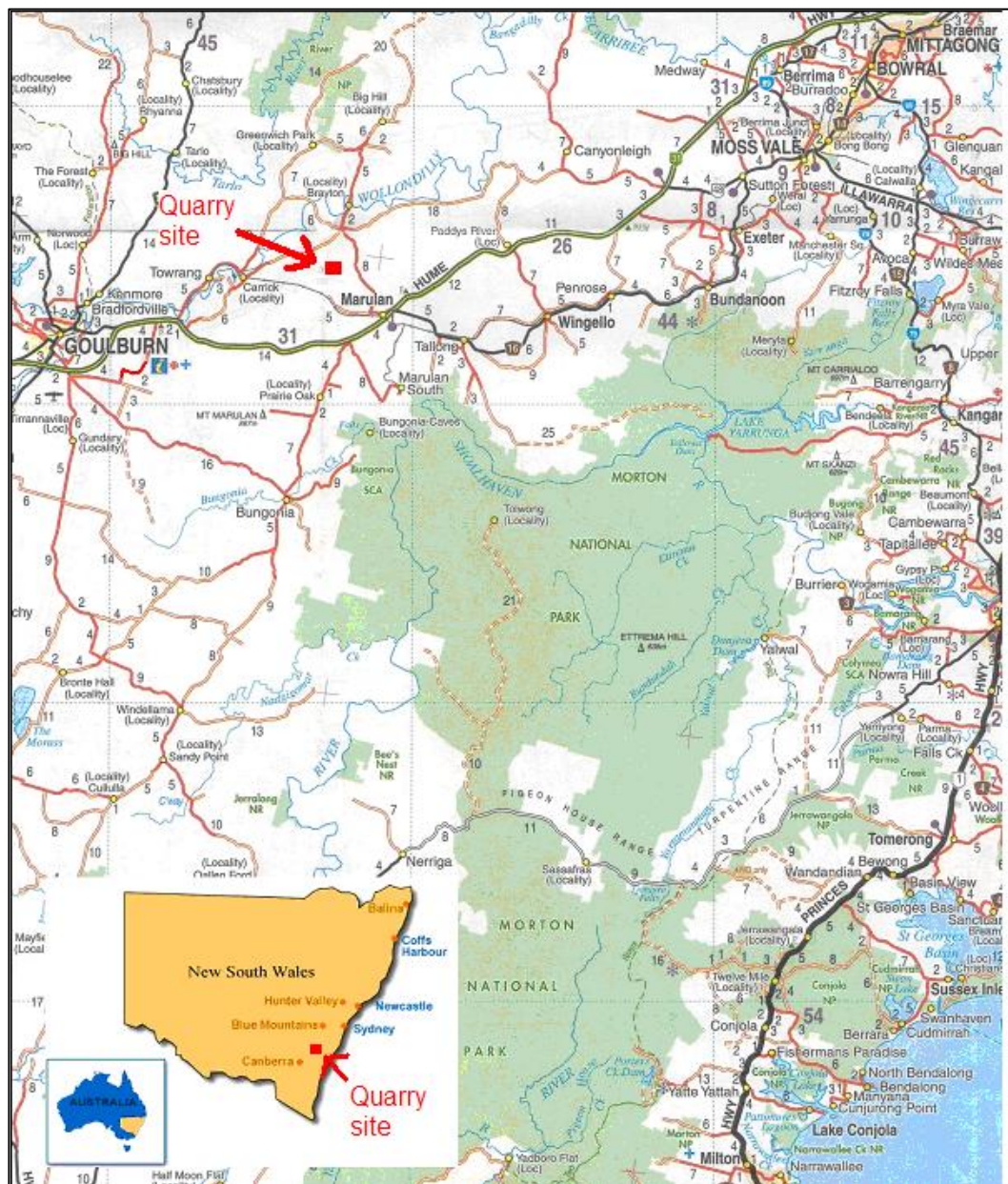


Figure 1: Location Map

A comprehensive geological assessment of the extent and quality of the resource undertaken for the original Gunlake Quarry project indicates the site contains large resources of high quality hard rock (approximately 180 million tonnes [Mt]) suitable for the production of a wide range of quarry products.

The quarry operates under a project approval (MP 07 0074) granted by the then Minister for Planning on 24 September 2008 under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The project approval permits extraction, processing and transport of up to 500,000 tonnes per annum (tpa) of hard rock for 30 years, that is until 2038.

The quarry commenced operations in 2010. The project approval for the quarry has been modified on two previous occasions:

- Mod 1 (approved 5 March 2013) – to allow use of the Lynwood Quarry interchange as part of the quarry's approved transport route; and
- Mod 3 (approved 21 October 2014) – to allow an increase in the maximum number of truck movements to and from the quarry.

The existing operations involve extraction from the northern part of the quarry pit, processing of quarry products in the processing area and stockpiling of quarry products prior to dispatch by road. Existing ancillary infrastructure (including administration and workshop facilities, water management infrastructure and an electricity transmission line) is located along the private access road to the north of the processing area. The processing area is located to the west of the existing overburden emplacement, which acts as an acoustic and visual screen to residences located to the east of the quarry. The processing area contains the:

- primary crusher;
- secondary crusher and screens;
- tertiary crusher and screens;
- main screen;
- interconnecting conveyors; and
- product stockpiles.

Access to the nearest public road (Brayton Road) is via a private access road (see **Figure 2**). The majority of product is then transported via a dedicated bypass road to the Hume Highway for delivery to the Sydney market and Gunlake's two concrete plants. A limited amount of product is also trucked south via Brayton Road through Marulan to service markets to the south. Gunlake's transport operations are currently in Stage 2, which allows an average of 100 truck movements per day, including an average of 25 truck movements per day through Marulan.

The Marulan area comprises mainly rural and rural-residential properties, with livestock grazing the predominant land use. There are 4 residences within 1.4 km of the existing quarry processing area, two of which are privately-owned (R2 and R4) (see **Figure 2**). Residences R1 and R3 were recently purchased by Gunlake. The closest privately-owned residence is located approximately 700 metres (m) east of the proposed expanded extraction area.

The topography of the land surrounding the quarry is undulating, with cleared rural land interspersed with areas of vegetation. The majority of the 230 hectare (ha) site is cleared pasture with small areas of remnant native vegetation on steeper slopes and along watercourses. Elevation of the site ranges from approximately 636 m AHD in the north to approximately 680 m AHD in the south.

Views towards the site from Brayton Road and neighbouring residences to the east are largely screened by the undulating topography and intervening vegetation. Chapmans Creek is an ephemeral watercourse located on the northern boundary of the site (see **Figure 2**) that flows into Joarimin Creek, which joins the Wollondilly River approximately 5 km northeast of the site. The Wollondilly River forms part of the Warragamba Dam catchment area administered by the Sydney Catchment Authority (now part of Water NSW).

A number of other quarries operate in the nearby area. Holcim's Johnniefields Quarry and Lynwood Quarry are located 2 km to the east and south, respectively. Holcim has publicly announced its intention to decommission the Johnniefields Quarry when its Lynwood Quarry becomes fully operational, which is anticipated in the first half of 2015. Boral's Peppertree Quarry and Marulan South limestone mine are both located south of the Hume Highway, at Marulan South.

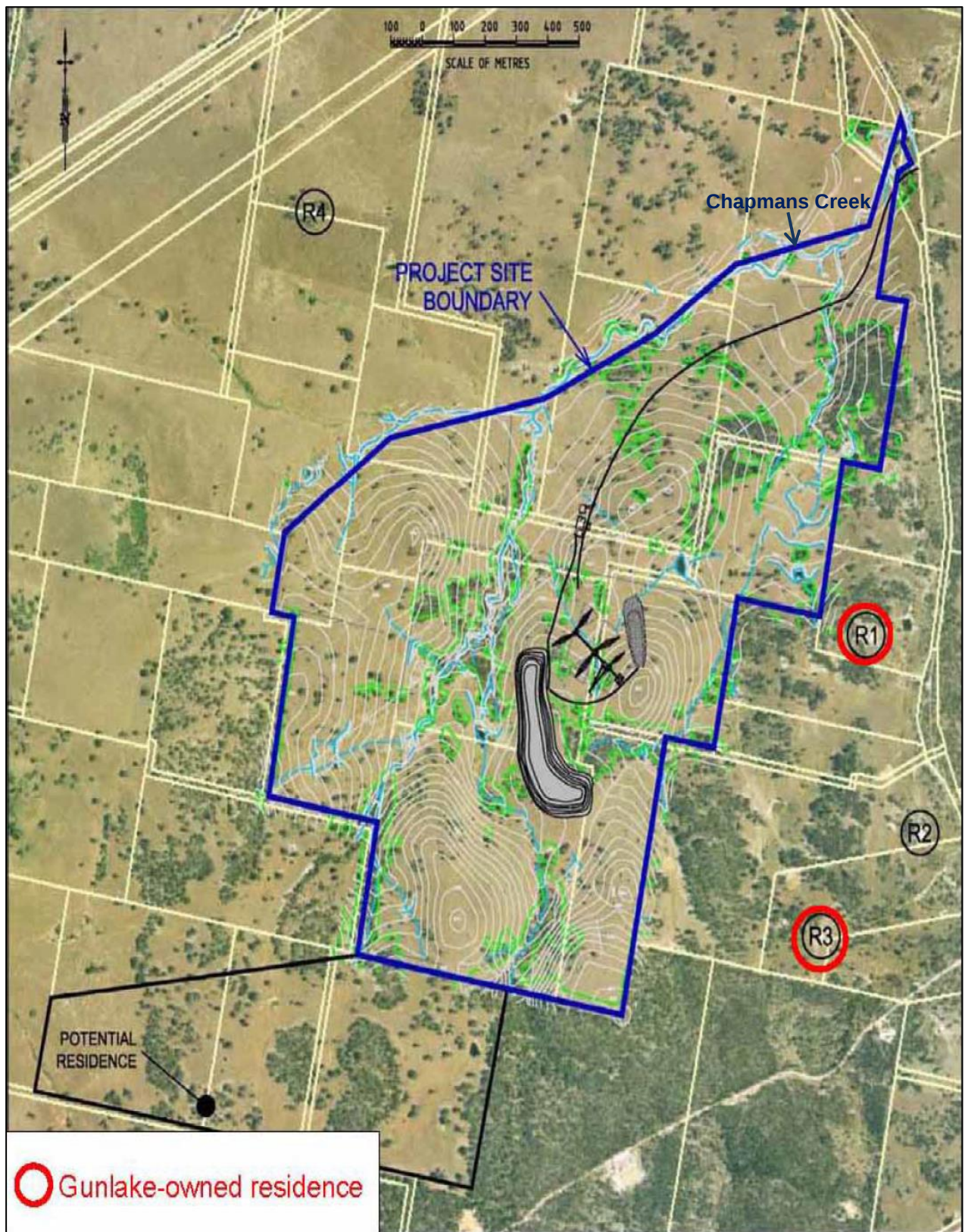


Figure 2: Existing site layout and surrounding residences

2 PROPOSED MODIFICATION

Gunlake has submitted an application seeking to modify its project approval under section 75W of the EP&A Act. Gunlake is seeking to expand its quarrying operations including increasing the quarrying footprint and overburden emplacement area and increasing the annual production rate and transport limits. The proposed modification includes:

- an increase in maximum production from 500,000 to 750,000 tpa;
- expansion of the quarry pit area, with an additional 6 Mt of resource approved for extraction (from 12 Mt to 18 Mt);
- increased truck movements to and from the quarry;
- increased hours for processing (tertiary crushing only) up to 24 hours per day; and
- expansion of the overburden emplacement area.

No changes are proposed to the quarry's approved life, extraction and transport methods or the existing surface infrastructure. The proposed modified quarry layout is shown on **Figure 3** and aspects of the existing and proposed modified quarry operations are compared in **Table 1**.

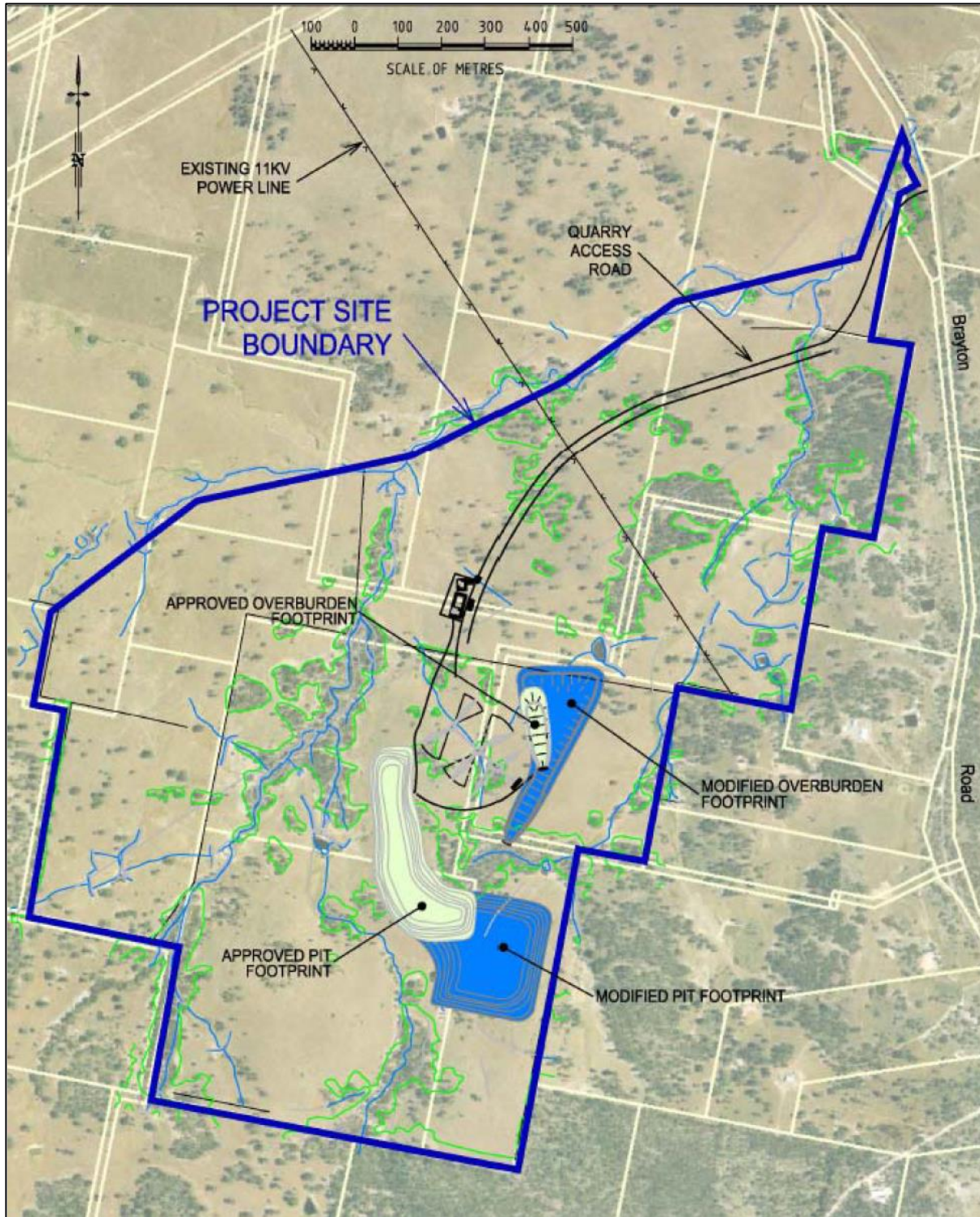


Figure 3: Proposed Modification

Table 1: Key Aspects of the Existing and Proposed Modified Quarry Operations

Aspect	Existing	Proposed
<i>Rate of Production</i>	500,000 tpa	750,000 tpa
<i>Quarry Life</i>	30 years (30 September 2038)	No change
<i>Employees</i>	20 full time on-site personnel 25 truck drivers	25 full-time on-site personnel 38 truck drivers
<i>Hours of Operation</i>	- Overburden removal and drilling 7:00 am – 6:00 pm Monday to Friday. None on Sundays and Public Holidays. - Quarrying and processing 7:00 am – 6:00 pm Monday to Saturday. None on Sundays and Public Holidays.	- No change to overburden and drilling hours. - No change to processing hours except for tertiary crushing. - Tertiary crushing: 24-hours per day, except 7.00 pm Saturday to 6.00 am Monday.
<i>Transport Hours</i>	- Loading and dispatch: (Stage 2) 24-hours per day, except 6.00 pm Saturday to 2.00 am Monday - Product transportation: (Stage 2) Bypass Road: 24-hours per day except 6.00pm Saturday to 2.00am Monday Brayton Road to Marulan: 6.00 am to 7.00 pm Monday to Saturday	No change
<i>Blasting Hours</i>	9:00 am – 5:00 pm Monday to Friday only	No change
<i>Quarrying Methods</i>	- Drill and blast, load and haul - Bench heights of 13 m	No change
<i>Processing Methods</i>	Primary, secondary and tertiary crushing and screening plants	No change ¹
<i>Transport Limits</i>	Stage 2 - 100 truck movements per day (averaged over one month), up to a maximum of 150 truck movements per day. Including 25 truck movements per day (averaged over one month) and a maximum of 38 movements per day travelling south on Brayton Road south of the bypass road.	Stage 2 - 164 truck movements per day (averaged over one month), up to a maximum of 320 truck movements per day. Including 25 truck movements per day (averaged over one month) and a maximum of 38 movements per day travelling south on Brayton Road south of the bypass road.
<i>Infrastructure</i>	- Processing plant - Site office - Toilet and ablution facilities - Weighbridge - Truck wash - Crib hut - Hardstand and truck parking area - Light vehicle parking area - Bunded fuel bay - Maintenance workshop, wash bay - Light vehicle parking facilities	No change
<i>Overburden Emplacement Area</i>	1.0 ha	4.5 ha (ie an additional 3.5 ha)
<i>Quarry Development</i>	- Quarry floor approximately 78 m below ground level (582 m AHD) 6.0 ha quarry area	- No change 11.8 ha quarry area

¹ Extended operating hours and plant efficiencies are proposed to enable an increased processing rate of 750,000 tpa without requiring additional plant.

Gunlake is seeking to expand the quarry's operations to meet current and projected market demands for saleable hard rock products (including providing aggregates for its own concrete plant operations) to ensure a continued supply of material for a range of building and construction uses in NSW. Gunlake has identified that there is both immediate and predicted growth in demand for quarry products, due to the progressive closure of the Penrith Lakes quarries, the proposed construction of the second Sydney Airport at Badgerys Creek and predicted population growth in the Sydney metropolitan region and associated housing demand.

Further details of the proposed modification are included in Gunlake's supporting Environmental Assessment (EA) (see **Appendix A**).

3 STATUTORY CONTEXT

3.1 Section 75W

Although Part 3A of the EP&A Act was repealed on 11 October 2011, the approved operations of the Gunlake Quarry remain a "transitional Part 3A project" under Schedule 6A of the EP&A Act. The proposed modification is therefore being considered under the former section 75W of the EP&A Act, in accordance with the relevant savings provisions.

The Department has considered the nature of the modification and is satisfied that it is within the scope of section 75W. Although the proposed modification would involve substantial increases in the annual rate of extraction and the total resource to be extracted over the quarry's approved life, it would not significantly change the overall nature of the development or the associated environmental impacts assessed as part of the original project application. The quarry would continue to extract and process hard rock resources and transport these products to markets via the approved transport routes.

Given these considerations, the Department is satisfied that the proposed modification is within the scope of section 75W, and may be determined accordingly.

3.2 Approval Authority

The Minister for Planning is the approval authority for the proposed modification. However, under the Minister's delegation dated 16 February 2015, the Executive Director Resource Assessments and Compliance can determine the application as:

- Goulburn Mulwaree Shire Council (Council) did not object to the proposed modification;
- there were less than 25 public submissions in the nature of objections; and
- Gunlake has not declared any reportable political donations.

3.3 Environmental Planning Instruments

A number of environmental planning instruments (EPIs) apply to the modification, including:

- SEPP (*Mining, Petroleum and Extractive Industries*) 2007 (the Mining SEPP);
- SEPP (*Infrastructure*) 2007 (the Infrastructure SEPP);
- SEPP (*State and Regional Development*) 2011;
- SEPP (*Sydney Drinking Water Catchment*) 2011;
- SEPP No. 33 – *Hazardous and Offensive Development*;
- SEPP No. 44 – *Koala Habitat Protection*;
- SEPP No. 55 – *Remediation of Land*;
- *Sydney Regional Environmental Plan No. 9 Extractive Industries*; and
- *Goulburn Mulwaree Local Environmental Plan 2009*.

The Department has assessed the modification against the relevant provisions of these instruments as well as Gunlake's consideration of these matters in the EA. Based on this assessment, the Department is satisfied that the proposed modification can be carried out in a manner that is consistent with the aims, objectives and provisions of these instruments.

4 CONSULTATION

After accepting the EA for the proposed modification, the Department:

- publicly exhibited the EA from Thursday 23 October 2014 until Friday 21 November 2014 on the Department's website and at the:
 - o Department's Information Centre;
 - o Council's office; and
 - o Nature Conservation Council's office;
- advertised the exhibition of the EA in the Goulburn Post;
- notified relevant State government agencies and Council; and
- notified the relevant road agencies (ie RMS and Council) in accordance with the Mining SEPP and the Infrastructure SEPP.

In undertaking this process, the Department is satisfied that the notification process met the requirements of the EP&A Act and the relevant EPIs.

5 SUBMISSIONS

The Department received a total of 15 submissions on the proposal (see **Appendix B**) comprising:

- 7 from government agencies, including:
 - o Office of Environment and Heritage (OEH);
 - o Environment Protection Authority (EPA);
 - o Division of Resources and Energy (DRE) within NSW Trade and Investment, Regional Infrastructure & Services;
 - o Department of Primary Industries (DPI) including NSW Office of Water (NOW), NSW Agriculture and Crown Lands;
 - o Roads and Maritime Services (RMS);
 - o Sydney Catchment Authority (part of Water NSW); and
 - o Council;
- 6 individual submitters; and
- 2 from special interest groups –Cookbundoon Heritage Preservation Committee and Towrang Community Progress Association.

Of the individual submitters, five objected to the modification. Three of these objections were received from landowners near the quarry site or along the approved product transport route. The two special interest groups also objected to the modification. The issues raised in these five submissions included:

- traffic – increase in trucks, condition of the roads, road safety and road transport instead of rail transport;
- amenity impacts – operational and traffic noise, dust, health and lighting impacts; particularly associated with night-time processing and cumulative impacts with other quarries in the area;
- impacts on surface water quality;
- flora and fauna, including native vegetation clearance;
- justification for the proposed modification; and
- land impacts.

In addition to the above, the special interest groups raised concerns regarding the adequacy of Gunlake's community contributions and the consultation undertaken for the proposed modification.

5.1 Government Agencies

While none of the government agencies objected to the proposed modification, they sought additional information from Gunlake during the assessment process. The final recommendations made by each of the agencies have been incorporated into the Department's recommended conditions of approval, unless otherwise specifically discussed in this report.

In its original submission, **OEH** did not support Gunlake's offset proposal on the basis that it relied on the existing offset commitments for the original project. In regards to Aboriginal cultural heritage, OEH requested further consideration of recent assessments undertaken for Lynwood Quarry. OEH also recommended that the project's Aboriginal Heritage Management Plan should be updated to reflect the modification footprint and known Aboriginal heritage sites.

EPA raised issues relating to proposed dust and noise monitoring and recommended a number of approval conditions relating to noise and blasting, air quality, water use and waste acceptance.

Water NSW requested further investigations into the performance of the on-site effluent management area. Water NSW also raised issues about the accuracy of plans showing proposed erosion and sediment control structures and recommended that the plans are reviewed by a suitably qualified expert in consultation with Water NSW.

DPI (Crown Lands) identified that there remained Crown roads within the quarry site requiring closure.

Council confirmed that it had reached a separate agreement with Gunlake regarding proposed upgrades to Brayton Road and advised that it would not be seeking any additional road maintenance or upgrade contributions for the proposed modification. Council raised no issues with the proposed modification.

RMS raised issues relating to the traffic surveys, peak truck movements and the left-turn entry of quarry trucks from Red Hills Road onto the Hume Highway.

DRE advised that it was satisfied with the geological assessment indicating that the site contains large resources of high quality hard rock suitable for a wide range of quarry products. DRE advised the proposed modification would ensure the quarry continues to 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.

5.2 Response to Submissions (RTS)

In January 2015, Gunlake submitted a detailed response to the issues raised in submissions (see **Appendix C**), which was made publicly available on the Department's website and provided to the relevant government agencies for review.

Following receipt of the RTS, the Department received further comments from 5 government agencies - OEH, EPA, RMS, Water NSW and DPI (Crown Lands).

Following its review of the RTS, OEH reiterated its request for the provision of an additional biodiversity offset to account for clearing under the proposed modification. In response to OEH's concerns, Gunlake proposed an additional offset. OEH has indicated that it now accepts the revised offset package, subject to Gunlake being required to secure the entire offset (ie the original project offset together with the additional offset for the proposed modification) using a suitable mechanism such as a Biobanking Agreement. The Department's assessment of biodiversity-related matters is discussed in Section 6.4.

EPA indicated that it had no further comments in relation to the proposed air quality monitoring sites; however provided recommendations regarding the use of regional dust monitoring data to investigate any local air quality issues.

RMS reiterated its request for additional traffic observations to be undertaken to verify the current performance (specifically, delays) at the intersection of Red Hills Road and the Hume Highway. The Department has considered RMS's concerns further in Section 6.1.

Following further consultation, Water NSW is satisfied that the issues relating to effluent management have been rectified, but recommended implementation of further management measures, which Gunlake has accepted. These measures are discussed further in Section 6.5.

Based on Crown Lands' advice, Gunlake has lodged an application seeking closure of the Crown roads within the quarry site. DPI (Crown Lands) provided landowners consent for the proposed modification on 27 March 2015.

6 ASSESSMENT

In assessing the merits of the proposed modification, the Department has considered the:

- quarry's existing project approval conditions;
- EA for the proposed modification (see **Appendix A**);
- submissions received (**Appendix B**) and Gunlake's RTS (**Appendix C**);
- relevant content of previous EAs, current environmental management plans and monitoring data;
- provisions of relevant EPIs, policies and guidelines; and
- relevant provisions of the EP&A Act, including the objects of the Act.

The Department considers the key assessment issues relating to the proposed modification are traffic, noise and blasting, air quality, biodiversity and surface water impacts. These key issues are discussed in sections 6.1 to 6.5 below.

6.1 Traffic

The key traffic related issues relevant to the proposed modification are:

- the capacity of the road network to cater for the increase in truck movements; and
- road maintenance contributions to Council.

These issues are addressed below.

Existing Environment

Loaded vehicles destined for markets south of the quarry travel along Brayton Road to the Hume Highway Interchange at South Marulan (the “South Marulan Interchange”). They then access the south-bound lanes of the Hume Highway through the interchange. When these vehicles are returning to the quarry, they proceed through the interchange and make a left hand turn onto Red Hills Road and access the quarry via the bypass road and Brayton Road (see **Figure 4**).

After construction of the bypass road, south-bound truck movements along the Brayton Road route were planned to continue at an average of 25 per day for the life of the quarry. Gunlake considered this to be necessary because south-bound trucks would still need to use Brayton Road to access the South Marulan Interchange.

Loaded vehicles travelling to markets north of the quarry travel along the bypass road and access the Hume Highway's north-bound lanes. Trucks returning from the north pass through the Interchange and proceed to the overpass at South Marulan Road. They then use the overpass to access the north-bound lanes of the Hume Highway. They then proceed north and make a left hand turn into Red Hills Road and travel along the bypass road and Brayton Road to access the quarry.

Currently, on an average weekday, the quarry generates an average of 100 heavy vehicle truck trips per day (as averaged over one month) based on 50 inbound trips and 50 outbound trips. The majority of truck movements to and from the quarry are north-bound via the bypass road.

Road Capacity

The EA includes a traffic assessment prepared by Transport and Urban Planning Pty Ltd. The traffic assessment concluded that the impacts of a maximum dispatch of 160 trucks per day (or 320 truck movements per day) could be accommodated without any significant impact on any part of the road network. This conclusion is supported by the traffic survey data in the traffic assessment, which indicates that current traffic volumes on the approved transport routes (including existing quarry traffic) are generally low to very low.

Given that there is considerable spare capacity on the road network to absorb any future growth in background traffic for the foreseeable future, the proposed variation in truck movements is unlikely to have a significant impact on the capacity of the road network. The Department also notes that no additional south-bound trucks are proposed to travel on Brayton Road south of the bypass road.

In regards to potential cumulative traffic impacts, the Department notes that the nearby Johnniefelds quarry is expected to be decommissioned in the near future and therefore is not expected to contribute to cumulative traffic impacts on the local road network.

Intersection Performance

The following intersections would be potentially affected by the proposed increased number of truck movements:

- Brayton Road and the bypass road; and
- Red Hills Road and the Hume Highway.

The traffic assessment found both intersections to be performing at a good Level of Service (LoS A) and concluded that the proposed increase in peak truck movements (ie an increase from a maximum of 150 to 320 truck movements/day, equivalent to an additional 2-3 truck movements/hour over a full day) would not affect intersection capacity or safety and would not result in a significant change to the LoS and/or vehicle delays at these intersections.

However, RMS considered that the proposed increase in the peak number of truck movements along the bypass road (ie an increase from a maximum of 150 to 320 truck movements/day) could potentially result in increased delays and safety issues with trucks entering the Hume Highway from the bypass road. RMS requested that additional observations should be undertaken to verify the current performance (specifically, delays) at the intersection of Red Hills Road and the Hume Highway.

Gunlake did not consider the additional intersection observations to be warranted given that the maximum number of trucks using the intersection in the busiest hour would not change as a result of the proposed modification and therefore the expected LoS would remain unchanged. Gunlake also argued

that there would be few quarry trucks using the intersection during the time when the north-bound lanes of the Hume Highway are busiest (ie 3:45 pm to 4:45 pm), as the quarry does not generally dispatch trucks late in the afternoon.

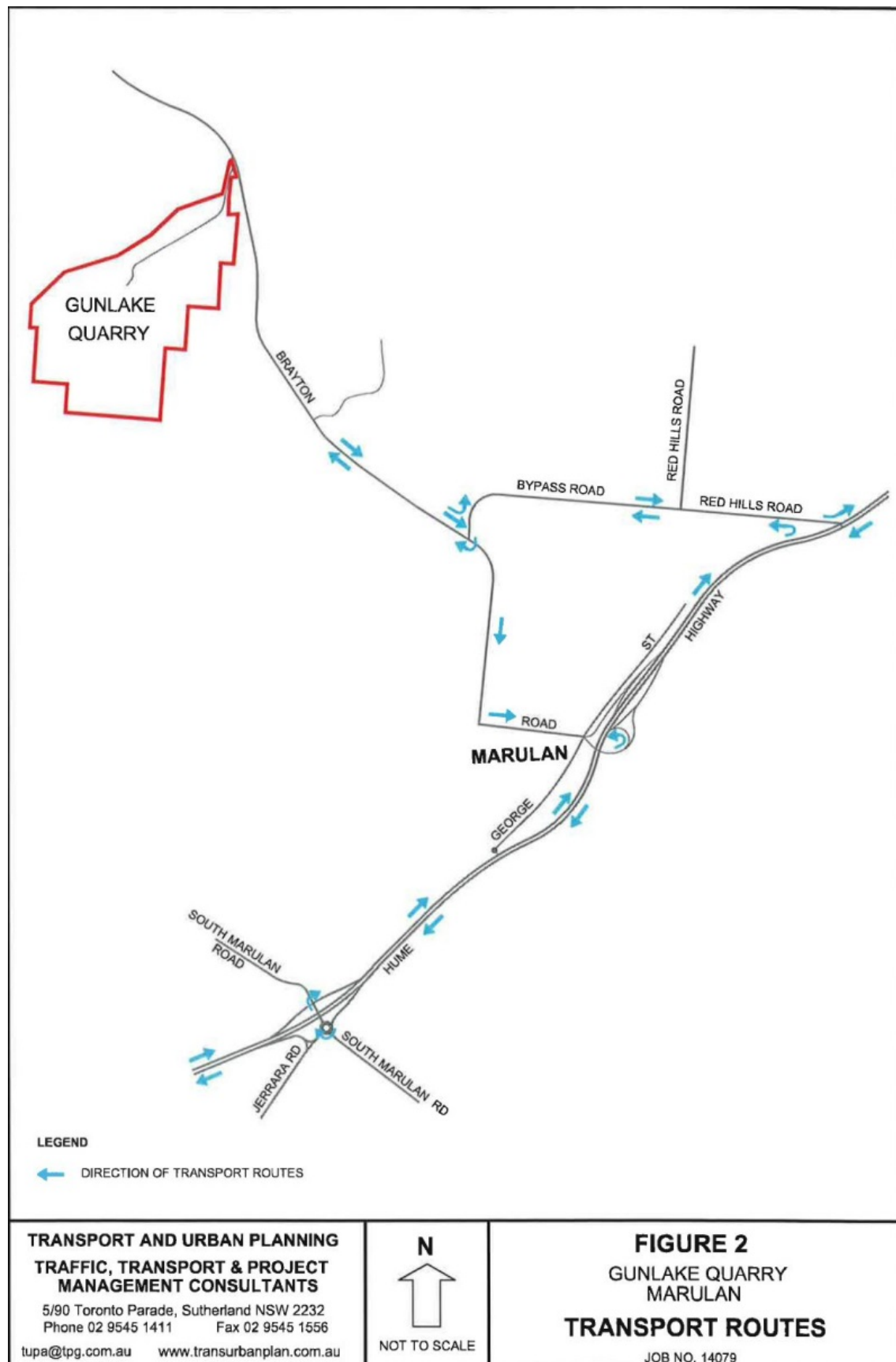


Figure 4: Approved Transport Routes

The Department also notes that a considerable buffer exists with respect to the performance of this intersection, as the sensitivity testing documented in the RTS indicates that average vehicle delays would be in the order of 15 seconds per vehicle, which still represents a very good operation and relatively low vehicle delays. By way of comparison, LOS C is still a good level of service (vehicle delays up to 42 seconds).

The Department is therefore satisfied that the traffic assessment (which includes detailed SIDRA modelling) is adequate and the proposed modification is unlikely to result in significant delays and/or cause safety issues for quarry trucks entering the Hume Highway from Red Hills Road. Notwithstanding, the Department notes that the quarry would be required to update its Traffic Management Plan to reflect the proposed modification in consultation with RMS. The Department expects that this plan would describe measures to be implemented by Gunlake to avoid dispatching large groups or convoys of trucks via Red Hills Road onto the Hume Highway during peak periods.

Road Safety

Safety concerns about quarry truck movements and observed driver behaviour have been raised by some local residents. Given that the proposed modification would not change the number of trucks travelling along Brayton Road south of the bypass road and that the majority of Gunlake's quarry trucks would continue to travel via the designated bypass road, the Department is satisfied that the modification is unlikely to result in any significant road safety impacts. However, to ensure ongoing compliance, the Department has recommended that the revised Traffic Management Plan should formalise Gunlake's existing drivers' code of conduct, and be required to address travelling speeds and procedures to ensure that drivers adhere to the designated transport routes and implement safe driving practices, particularly when entering the Hume Highway from Red Hills Road.

Road Maintenance and Upgrade Contributions

Gunlake currently pays road maintenance contributions to Council for every tonne of product transported from the quarry in accordance with Council's *Section 94 Contributions Plan 2009*. The total amount paid to Council by Gunlake for road maintenance would therefore increase commensurate to the proposed level of increased production (and increased transport movements) over the life of the quarry.

Although several submissions raised concerns about the current state and capacity of the section of Brayton Road south of the bypass road, the Department notes that the proposed modification would not change Gunlake's approved transport limits along this part of the road network.

Council has indicated that it has reached a separate agreement with Gunlake regarding proposed upgrades to Brayton Road and is not seeking any additional road maintenance or upgrade contributions as a result of the proposed modification.

Accordingly, the Department is satisfied that Gunlake's existing road maintenance and upgrade contributions to Council are commensurate with the impacts of the development on the local road network and that no additional contributions (ie over and above the existing contribution requirements) are required as a result of the proposed modification.

6.2 Noise

Operational Noise

The quarry is located within a rural area on Brayton Road. As shown on **Figure 2**, there are 2 privately-owned residences (R2 and R4) located within 1.4 km of the quarry's operational areas. The closest privately-owned residence to the modified operations is R2, located approximately 700 m from the proposed overburden emplacement area.

The EA includes a noise assessment by Pacific Environment Limited (PEL). The assessment established the rating background noise levels and the project specific noise levels and modelled the operational noise impacts of the proposed modification. The elements of the proposed modification with the potential to generate additional noise are the:

- extended operating hours for operation of the tertiary crusher (ie continuous 24-hour operation from 6.00 am Monday to 7.00 pm Saturday);
- expansion of the overburden emplacement and quarrying area; and
- increased frequency of product loading and dispatch.

The noise assessment modelled the noise impacts for two operational scenarios:

- Years 1-7 – stripping overburden and quarrying of the first bench; and
- Year 10 – quarrying of the second bench.

The noise assessment predicted that the modified quarry operations would continue to comply with the applicable noise assessment criteria (including sleep disturbance criteria) at R2 and R4. The noise assessment predicted a worst-case night-time noise level of 31 dB(A) at the closest receiver R2 during noise enhancing (ie inversion) conditions, which is 4 dB(A) below the lowest (ie most stringent) noise criteria that are set in NSW. Consequently, the Department is satisfied that the proposed modification would not result in any exceedances of the established noise criteria.

However, the Department is aware of community concerns about night-time noise impacts associated with the proposed night-time operation of the tertiary crusher. It also acknowledges that, despite expected compliance with criteria, the tertiary crusher would be audible at night and may be heard from residences located some distance from the quarry because of the very low ambient noise levels in the area.

Therefore, whilst noise is not considered to be an impediment to Gunlake undertaking processing at night, the Department is of the view that Gunlake should be required to ensure all reasonable and feasible measures are employed to reduce noise from the tertiary crusher at night. In addition, the quarry operations should be subject to a number of contemporary, best practice operating conditions, including:

- minimising the noise impacts of the quarry operations during certain meteorological conditions;
- carrying out regular monitoring to determine whether the quarry is complying with its noise criteria; and
- regularly assessing noise monitoring data and (if necessary) modifying and/or stopping operations on site to ensure compliance with the noise criteria.

To ensure the amenity of surrounding residents continues to be protected, the Department has also recommended that Gunlake be required to prepare a Noise Management Plan outlining management measures to be implemented to ensure compliance with the revised operating conditions and noise criteria.

The Department notes that Gunlake would also continue to be required to monitor and publicly report the results of its noise monitoring (including during Year 7 of the project which is predicted to be representative of the worst-case noise scenario).

Subject to the conditions included in the draft Notice of Modification, the Department is satisfied that the operational noise impacts associated with the proposed modification are acceptable.

Traffic Noise

The EA includes an assessment of potential road traffic noise impacts, prepared by PEL, which assessed the proposed modification against the applicable daytime and night-time criteria in the *NSW Road Noise Policy* (RNP).

Increased truck movements to and from the quarry have the potential to generate increased levels of road traffic noise at sensitive receivers along the approved bypass road. The modification would not affect road traffic noise levels along Brayton Road south of the bypass road, as no changes are proposed along this part of the transport route.

The existing traffic noise levels calculated by PEL did not identify any current exceedances of the RNP's road noise criteria. The proposed modification is predicted to result in worst-case (ie peak) road noise increases of 4.3 dB(A) and 6.0 dB(A) over the existing daytime and night-time road traffic noise levels, respectively. Despite these predicted increases, the assessment predicted that the applicable road noise criteria would be met at all receivers.

The Department is satisfied that the proposed modification would not significantly increase existing road traffic noise levels. Notwithstanding, the Department has recommended that Gunlake's drivers' code of conduct should include a description of the measures to be implemented to promote responsible, noise-minimising driving practices by both employee and contract drivers as part of the project's revised Traffic Management Plan.

6.3 Air Quality

The EA includes an air quality assessment prepared by PEL. The assessment indicates that the proposed modification has the potential to increase air quality (dust) impacts due to the intensification of quarrying activities (including associated loading and haulage of bulk raw quarry materials and finished quarry products, rock crushing and processing) and wind erosion from the expanded pit and overburden emplacement areas.

The assessment predicted that there would be no exceedances of the EPA's air quality impact assessment criteria for PM_{2.5}, total suspended particulates (TSP) or dust deposition at any nearby privately-owned residence for either the modified quarry operations or total (ie cumulative) emissions. However, the assessment predicted an exceedance on 1 day per year of the cumulative 24-hour average PM₁₀ assessment criterion of 50 µg/m³ at a residence owned by Gunlake (R1, see **Figure 2**).

Gunlake recently commenced monitoring of PM₁₀ by installing a High Volume Air Sampler at R1 and has proposed to continue PM₁₀ monitoring for a period of 12 months. The Department notes that, although R1 is not privately-owned, it is representative of "worst-case" air quality impacts, as it is the closest residence to the quarry. The Department also acknowledges Gunlake's commitment to undertake further investigations of dust sources and dust mitigation if PM₁₀ criteria are frequently exceeded downwind of the quarry.¹

Nonetheless, given the community's concerns regarding potential dust impacts and the prevailing westerly and north-westerly winds, the Department agrees with the EPA's recommendation that monitoring at R1 should be maintained for a period of at least three years or until a history of compliance can be demonstrated. Gunlake has agreed to this monitoring commitment. The Department has therefore recommended that Gunlake should be required to:

- comply with contemporary air quality assessment criteria; and
- prepare and implement an Air Quality Management Plan, including a revised air quality monitoring program that includes monitoring at R1 for a period of at least three years.

The Department has also recommended that Gunlake should comply with additional contemporary operating conditions for managing potential air quality impacts, including:

- implementing best management practice to minimise dust emissions from its operations;
- minimising air quality impacts during adverse meteorological conditions; and
- undertaking air quality monitoring at representative surrounding receivers to ensure compliance with the air quality criteria.

Overall, the Department is satisfied that, subject to the implementation of these measures, the proposed modification is unlikely to result in any significant dust impacts on surrounding residents.

6.4 Biodiversity

The vegetation across the site has been modified by the current quarrying operations as well as historic clearing associated with low intensity grazing and construction of associated infrastructure (including farm dams and access tracks).

Avoidance

Gunlake has designed the modification layout to avoid areas of higher quality native vegetation and riparian areas as far as practicable. Gunlake has also committed to clearly defining a 10 m riparian buffer either side of the riparian areas from which to exclude stockpiles, machinery, fuel (including refuelling activities) and equipment.

Vegetation Impacts

The proposed modification would result in an increase to the approved disturbance footprint of approximately 9.3 ha. The EA includes an ecological assessment by Biosis and the RTS includes further site verification and analysis by EMGA Mitchell McLennan (EMM). Biosis initially assessed the entire disturbance area as conforming to a degraded and highly simplified form of *White Box Yellow Box Blakely's Red Gum Woodland* (Box Gum Woodland). Box Gum Woodland is listed as an endangered ecological community (EEC) under the *Threatened Species Conservation Act 1995* and as a Critically

¹ The Department notes the EPA's recommendation that during those times of the year when prevailing winds are not from the east, Gunlake should be required to use PM₁₀ monitoring data from EPA monitors at Wagga Wagga and Bathurst to determine whether regional air quality is a contributing factor when investigating any local air quality issues.

Endangered Ecological Community under the Commonwealth's *Environmental Protection and Biodiversity Conservation Act 1999*.

EMM subsequently completed additional field surveys to determine the condition of the grassland and to determine if any areas of native grassland would meet the description of Box Gum Woodland EEC. EMM's assessment found the majority of the pit extension area (the southern modification area) contains predominantly native grassland (generally not EEC), while the overburden emplacement extension contains predominantly non-native grassland. EMM's assessment concluded that a total of 0.6 ha of Box Gum Woodland EEC would be impacted, comprising 0.2 ha of remnant woodland and 0.4 ha of derived native grassland.

OEH requested further information on the vegetation mapping. Following further consultation, OEH accepted EMM's calculated impacts to Box Gum Woodland EEC, subject to implementation of OEH's recommendations regarding offsets (see below).

Fauna Impacts

Although the quarry site contains potential habitat, no threatened fauna species were recorded during field surveys. However, three hollow-bearing trees were identified within or in the vicinity of the proposed modification disturbance footprint.

In addition to Gunlake's existing fauna management commitments (including retention of habitat trees where possible and undertaking pre-clearance surveys of hollow-bearing trees), the ecological assessment recommended that should any unexpected threatened flora or fauna be identified at any time during operations, then associated works should cease immediately and a suitably qualified ecologist should be contacted to determine if further assessment is required.

Gunlake has agreed to this recommendation, which would need to be addressed in a revised project Rehabilitation and Biodiversity Management Plan.

To further mitigate potential impacts on threatened fauna habitat, the Department has recommended that Gunlake should install two nest boxes for any hollow-bearing tree destroyed during clearing. The Department is satisfied that, subject to the implementation of this management measure, the proposed modification would not significantly impact threatened fauna.

Flora Impacts

No threatened flora species were identified in the proposed disturbance footprint or surrounds.

Biodiversity Offset

Under existing approval conditions, Gunlake is required to include provisions for the establishment, conservation and maintenance of at least 76 ha of native vegetation on the site. This area must include at least 30 ha of remnant woodland representative of Box Gum Woodland EEC and an area of at least 46 ha of cleared pasture land to be made available for regeneration and replanting of native vegetation, including species representative of Box Gum Woodland EEC.

Gunlake initially did not propose any additional offsets to compensate for the proposed clearing of 0.6 ha of Box Gum Woodland EEC. This was because the ecological assessment calculated that the offsets proposed for the original project compensated for both the original project impacts and the impacts of the proposed modification.

However, both the Department and OEH were of the view that such an approach would not be consistent with the principles of the *NSW Biodiversity Offsets Policy for Major Projects*, specifically that "offsets must be additional to other legal requirements" (ie in addition to the offset requirements under Gunlake's existing project approval).

Gunlake subsequently proposed an additional offset to compensate for the vegetation clearance associated with the proposed modification. The additional offset requirement was calculated using OEH's Biobanking Assessment Methodology, which determined an offset ratio of 3.8:1 for Box Gum Woodland EEC. Gunlake proposed an additional offset of 2.28 ha of Box Gum Woodland EEC to offset the clearing of 0.6 ha of this EEC. Gunlake has committed to identifying, protecting and managing this additional offset as part of the project's overall biodiversity offset strategy.

OEH has agreed to the revised offset proposal, subject to the entire offset area being secured via a suitable mechanism such as a Biobanking Agreement (preferably within 12 months of commencement of the proposed expansion) and managed in perpetuity to achieve conservation outcomes.

Conclusion

The Department is satisfied that the proposed modification would not significantly increase the quarry's biodiversity impacts. However, a key issue for the success of Gunlake's biodiversity offset strategy is the long term protection and management of native vegetation on the site.

In this regard, the Department has recommended conditions strengthening the project approval's existing biodiversity offset and management requirements, including conditions requiring Gunlake to:

- commission a suitably qualified expert to prepare a revised Rehabilitation and Biodiversity Management Plan (in consultation with OEH) that describes the implementation of the offset strategy, including detailed performance and completion criteria and the contingency measures that would be implemented to mitigate potential risks to implementation of the strategy;
- lodge a substantial rehabilitation and conservation bond with the Department to ensure that the rehabilitation of the site and offset strategy are implemented in accordance with agreed performance and completion criteria; and
- provide for the long-term security of the offset areas.

With the implementation of these measures, the Department is satisfied that the proposed modification would not significantly impact on threatened fauna or vegetation and can be undertaken in a manner that would maintain and improve the biodiversity values of the site over the medium to long term.

6.5 Water Resources

The EA includes a water assessment prepared by Cardno, which includes an assessment of surface water quality, a water balance model and a groundwater assessment. The assessment considers the potential impacts of the modification on water resources, including surface water flows and downstream water quality in local and regional catchments (including Sydney's drinking water catchment) and groundwater flows in subsurface aquifers.

Surface Water

The site is located adjacent to Chapmans Creek, which flows into Joarimin Creek, which in turn flows into the Wollondilly River, which forms part of Sydney's drinking water catchment.

Surface water runoff from the quarry's operational areas is managed via the use of clean and dirty water diversion drains, sediment and barrier fencing, nominated stockpile areas, grassed swales, earth banks, a stabilised entry and six Water Quality Control Ponds (WQCPs). WQCP1 captures all drainage from the current and proposed quarry footprint and supplies most of Gunlake's water requirements for the crushing and screening plant, vehicle wash and dust control.

Water Use

The proposed increase in production rate and dust suppression requirements for the expanded disturbed area would increase the quarry's operational water demands. At the maximum proposed production rate (750,000 tpa), the water requirement for crushing would increase to approximately 2.4 megalitres per year (ML/year). Gunlake proposes to continue to meet this supply using captured stormwater from WQCP1. The proposed increase in the total surface disturbance area would also increase the volume of water required for dust suppression, which would more than double from 16 ML/year to 33 ML/year.

In total, approximately 35 ML/year of water would be required for dust suppression and processing. The site water balance estimates that, on average, approximately 65 ML/year of water would be captured as a result of rainfall runoff. The water balance therefore predicts that, on average, around 30 ML of stormwater may need to be disposed of in order to provide ongoing on-site storage for subsequent storm events. Under the current approval, Gunlake is permitted to dispose of excess water from WQCP1 via irrigation of approximately 10 ha of pastoral land. This area was identified as being suitable for the disposal of approximately 50 ML/year by irrigation, which to date has not been required. The approved irrigation area would therefore continue to provide adequate capacity for any required water disposal as a result of the proposed modification.

Cardno's water balance model indicates that the WQCPs would meet operational water demands 99% of the time. For the small amount of time that water requirements are not met, Gunlake proposes to

source additional water from existing farm dams or an alternative external source. The Department notes that Gunlake's water supply requirements are relatively low and is satisfied that the on-site water storages would be able to satisfy the anticipated water demand for the quarry operations under most (if not all) conditions. The Department also notes that existing project approval conditions require Gunlake to ensure that it has sufficient water for all stages of the project, and if necessary, to adjust the scale of operations to match available water supply. If Gunlake is not able to secure enough water to meet its demands, then its operations may need to be limited, or it may instead investigate additional water efficiency measures. This is consistent with the water efficiency principles established under the *Water Management Act 2000*.

Water Quality

In order to prevent the contamination of clean water and ensure compliance with statutory obligations, Gunlake proposes to continue to operate the existing site water management system and construct additional erosion and sediment management structures to control runoff from the expanded disturbance area.

Cardno's water assessment found that the increased catchment area associated with the increased quarry footprint would be adequately catered for by the existing pit sump and that WQCP1 is adequately sized to store all runoff from this catchment. The assessment found there would be no changes to the other catchments reporting to the five other water storage ponds.

Under the 'harvestable rights' provisions of the *Water Management Act 2000*, landowners have the right to capture up to 10% of the average regional rainfall run-off on their property without requiring a water licence. Gunlake has a maximum harvestable right dam capacity of 18.4 ML. The proposed modification would not change this capacity. The existing WQCPs and farm dams fall within this capacity.

Water NSW indicated that it is satisfied Gunlake's current practices are providing effective sediment control and that the proposed modification would have a "neutral or beneficial effect" on site water quality. However, Water NSW recommended that Gunlake should be required to engage a suitably qualified expert to prepare a revised surface water management plan for the quarry in consultation with Water NSW, and specifically to prepare the erosion and sediment control plans for the site.

Gunlake has agreed to Water NSW's recommendations that the quarry's effluent management area should have a bund on the upslope side and a sloped cap to effectively divert and shed water or prevent it from ponding in the area.

Groundwater

The groundwater environment surrounding the modification area is characterised by two aquifer systems, comprising a hardrock aquifer within the fractured rock underlying the entire site and a less extensive alluvial aquifer associated with shallow alluvial deposits in the drainage lines of the Chapmans Creek catchment.

Groundwater investigations undertaken for the original project EA indicated that low permeability and structural discontinuities in the surrounding geology would restrict propagation of depressurisation around the pit. Due to this low hydraulic conductivity and the absence of proposed changes to the life of the project or the pit depth, it is concluded that the proposed modification would not adversely affect the aquifer systems.

The original project EA predicted that groundwater inflows to the quarry pit would be minimal and would peak at 3.5 ML/year in Year 30 when the pit reaches its maximum depth. The current pit is above the water table and does not experience any inflows. The current water assessment indicates that the proposed modification would not change these predictions. As indicated by NOW, Gunlake would need to apply for a water licence if measured groundwater inflows to the quarry pit exceed 3 ML/per year.

Conclusion

The Department is satisfied that the proposed modification can be managed so that it would not result in significant impacts to surface and groundwater resources. To ensure that the expansion is undertaken in a manner that minimises impacts on water resources, the Department has recommended that Gunlake should update the project's Water Management Plan in consultation with Water NSW, EPA and NOW, with a particular emphasis on the proposed erosion and sediment control design plans,

effluent management area improvements and the groundwater and surface water quality monitoring program.

6.6 Other Issues

The Department's assessment of other issues is set out in **Table 2**.

Table 2: Assessment of Other Issues

Issue	Potential Impact and Assessment	Conclusion and Recommendation
<i>Blasting</i>	- The EA includes an assessment of blasting impacts undertaken by PEL. - The proposed modification would not change the frequency of blasting (approximately once per fortnight) within the approved blasting hours of 9 am to 5 pm Monday to Friday. Blasting activities would however move closer to R2. - The blasting assessment found that, subject to restrictions on the size of each blast, the levels of ground vibration and peak airblast would be met at all sensitive receivers. The Department notes that the predicted blast overpressure level for a 49 kg MIC was 115 dB(L) at the nearest privately-owned receiver R2, which is the ANZECC design goal limit. - The Department acknowledges Gunlake's commitment to designing its blasts to ensure that the quarry meets blasting criteria at all residences. - The Department also notes that Gunlake would continue to be required to comply with the Department's standard operating conditions for blasting, which include requirements to protect the safety of people and livestock in the surrounding area, and to protect property from blasting damage.	- The Department is satisfied with the blasting assessment and agrees with its conclusions and proposed management measures. - With the proposed measures in place, the Department is satisfied that blasting criteria can be complied with. - No additional conditions are considered necessary.
<i>Aboriginal Heritage</i>	- The EA includes an Aboriginal Cultural Heritage Assessment undertaken by Cultural Heritage Management Australia in consultation with two Registered Aboriginal Parties (RAPs) previously identified for the Gunlake Quarry development area. - The proposed expansion would increase the existing disturbance footprint of the quarry by approximately 9.3 ha. - Surveys undertaken in 2007 and 2014 did not identify any sites of Aboriginal archaeological significance within the proposed disturbance area. - Overall, the assessment concluded that the site had very low archaeological potential, and that the risk of any unforeseen impacts on Aboriginal heritage would be very low. - Gunlake would continue to implement an Aboriginal Heritage Management Plan, which includes procedures for managing the discovery of any additional Aboriginal objects.	- The Department is satisfied that the proposed modification would not result in any significant impacts on Aboriginal cultural heritage. - No additional conditions are considered necessary. - Gunlake would be required to update the project's Aboriginal Heritage Management Plan to reflect the proposed modification and the locations of known sites of Aboriginal heritage significance, in consultation with OEH and the RAPs.
<i>Visual</i>	- The topography of the area is undulating with cleared rural land interspersed with areas of vegetation. The existing quarry site is not visible from Brayton Road or from adjacent residences to the east. A ridge along the eastern boundary and the existing overburden emplacement provide an effective visual screen for the quarry pit and processing area. - As the general nature (ie height) of the overburden emplacement area would remain	- The Department is satisfied that the proposed modification would not significantly impact the visual amenity of the area. - No additional conditions are considered necessary.

Issue	Potential Impact and Assessment	Conclusion and Recommendation
	unchanged, views towards the quarry would continue to be screened. • Gunlake proposes to construct the expanded overburden emplacement area from the outer limit of the proposed footprint, to allow early rehabilitation of the outer face of the emplacement. The overburden emplacement will continue to screen the processing area and existing quarry pit. • Potential visual impacts would be further minimised as Gunlake proposes to progressively rehabilitate the site, including early rehabilitation of the outer faces of the overburden emplacement. • Distant glimpses (2-5 km) of the quarry may continue from isolated parts of private properties.	
<i>Waste</i>	• Gunlake is proposing to import clean waste concrete from its batching plants as part of the proposed modification. • The quarry would receive less than 30,000 tonnes per year of validated clean concrete material from concrete plants which would be re-processed for use as aggregate product. • Gunlake has committed to ensuring that no more than 2,500 t of this material would be held on site at any one time. • The EPA has advised this concrete material would be classified as a general solid waste under the EPA Waste Classification Guidelines 2014.	• The Department has recommended limits on the importation and storage of clean waste concrete consistent with the trigger levels that would otherwise require a licence requirement for a waste storage facility under the POEO Act. • Subject to these conditions, the Department is satisfied that there would not be any significant risks associated with waste management at the site.
<i>Socio-economics</i>	• The project as modified would deliver benefits to the local and regional economy including: – continued employment of up to 25 full time personnel at the quarry and 38 full time personnel in transportation; – contributions to the NSW and Commonwealth Governments through payment of taxes; and – contributions to Council in accordance with its Section 94 Contribution Plan (estimated in the order of \$6.45 M over the modified quarry life). • The proposed modification would ensure that Gunlake continues to make a significant long-term contribution to meeting the coarse aggregate demands of greater Sydney's construction industry.	• The Department agrees that the proposed modification would result in a range of socio-economic benefits to the local and regional economies through direct investment, creation of additional employment and provision of construction materials. • Furthermore, the Department is satisfied that these benefits can be achieved without appreciably increasing the environmental impacts of the existing quarry operations or demand on local infrastructure and community services.
<i>Final Landform/ Rehabilitation</i>	• The proposed changes to the quarry footprint and overburden emplacement area would result in a modified final landform. • There would be no change to the anticipated final land use or rehabilitation objectives for the site.	• No additional conditions are considered necessary. • The Department has recommended that Gunlake should prepare a revised Rehabilitation and Biodiversity Management Plan for the proposed modification.

7 RECOMMENDED CONDITIONS

The Department has prepared a Notice of Modification (see **Appendix D**) to reflect the proposed modification and provide updated and appropriate conditions of consent. It has also prepared a consolidated project approval which reflects the changes to the project resulting from the Notice of Modification (see **Appendix E**).

Gunlake has reviewed and accepted the recommended conditions of approval.

8 CONCLUSION

The Department has assessed the merits of the modification application and its supporting EA, the submissions received and the RTS, in accordance with the requirements of the EP&A Act.

Based on this assessment, the Department is satisfied that the environmental impacts of the modified development would not be significantly different from those of the existing development. However, to ensure the amenity of the local community continues to be protected, the Department has recommended a number of conditions strengthening requirements relevant to the management of traffic, noise, air quality and water resource impacts. In this regard, the Department has reviewed the existing conditions of approval and where relevant, has recommended revised conditions consistent with current practice and contemporary standards to ensure that the environmental impacts associated with the proposed modification are effectively mitigated or minimised.

Additionally, the Department has recommended conditions strengthening the requirements around implementation of the biodiversity offset strategy, specifically regarding the ongoing management and long-term security of the offset areas.

The Department recognises that the quarry as modified would generate ongoing and additional employment for 25 full time employees and 38 transport contractors, with associated flow-on employment and economic benefits to the local, regional and State economies.

The Department accepts that there is substantial existing and projected demand for quarry products to support greater Sydney's construction industry and the projected growth in housing and major infrastructure development in the Sydney-Canberra Growth Corridor and Western Sydney region. The continued operation and expansion of the quarry would contribute to greater resource security to satisfy these demands.

The proposed extension to the quarry would allow Gunlake to continue to access a high quality hard rock resource. The Department therefore considers that the proposed extension area forms a logical progression in the development of the quarry and should be approved, subject to conditions.

8 RECOMMENDATION

It is **RECOMMENDED** that the Executive Director Resource Assessments and Compliance as delegate for the Minister for Planning:

- **considers** the findings and recommendations of this report;
- **determines** that the proposed modification is within the scope of Section 75W of the EP&A Act;
- **approves** the application to modify the project approval, subject to conditions, under Section 75W of the EP&A Act; and
- **signs** the attached notice of modification (see **Appendix D**).


Howard Reed
Director Resource Assessments

2.4.15

Oliver Holm
Executive Director
Resource Assessments and Compliance

APPENDIX A: ENVIRONMENTAL ASSESSMENT

Refer to Department's website:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6553

APPENDIX B: SUBMISSIONS

Refer to Department's website:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6553

APPENDIX C: RESPONSE TO SUBMISSIONS

Refer to Department's website:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6553

APPENDIX D: NOTICE OF MODIFICATION

APPENDIX E: CONSOLIDATED PROJECT APPROVAL