



The Gunlake Quarry Continuation Project (SSD-12469087)

Traffic and Transport Peer Review

For the Department of Planning and Environment

17 June 2022

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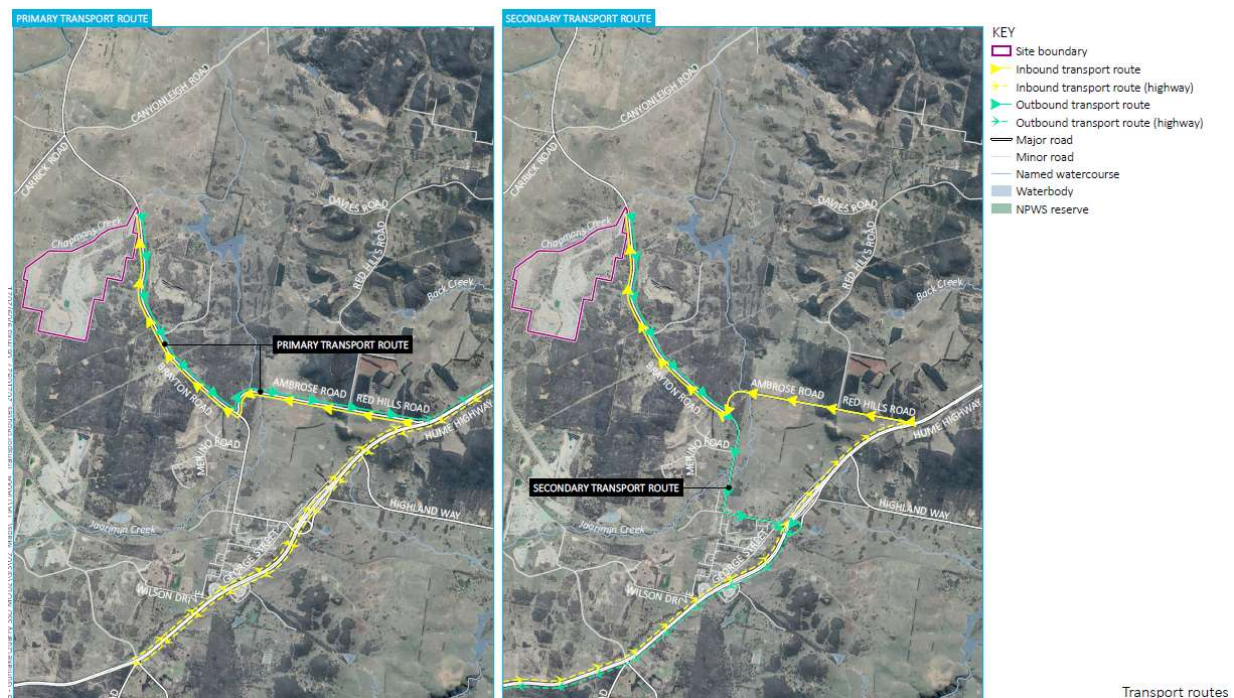
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1. INTRODUCTION

1.1 Background

The Gunlake Quarry commenced operations in 2009 under a project approval (MP07-0074) issued in 2008. The 'Extension Project' was approved in 2017 (SSD-7090) which allowed for greater intensity of use of the quarry. The hard rock quarry is accessed via the Hume Highway, and predominately dispatches vehicles to processing plants within greater Sydney. It is understood that since the grant of project approval MP07-0074, the Gunlake Quarry has been progressively expanding operations to meet demand, resulting in an increase in vehicular (truck) movements.

A Traffic Impact Assessment (TIA) report has been prepared by EMM Consulting in support of a further proposed expansion of quarry operations which forecasts the increase in traffic and resultant impacts. The 'Continuation Project' results in an additional 80 daily traffic movements to the Primary Transport Route compared to the Extension Project as last modified in June 2021. It is noted that the development proposal does not contribute any additional trips to the Secondary Transport Route, as described in Figure 1.1.



Source: EMM Consulting TIA

Figure 1.1: Existing Transport Routes

The EMM TIA states that the peak hourly traffic is anticipated to increase to a total of 40 heavy vehicle trips per hour as a result of the Continuation Project, noting that Table 3.11 of EMM's TIA states that existing operations generate 12 peak hour vehicle trips (based on weighbridge data).

1.2 Scope and Limitations

This report provides an independent peer review of the **traffic and transport** assessments published in the Gunlake Quarry Continuation Project EIS and submissions from the community and agency advice. It is noted that detailed review of pavement life, any review of societal and

environmental impacts, and the extent of community consultation is outside of the scope of this report. The parts of the EIS and Submissions Report that this review has considered are:

- SEARs checklist
- EMM Traffic Impact Assessment (including attached ARRB Road Safety Audit)
- Transport for New South Wales response to EIS
- Goulburn Mulwaree Council (Council) submission on the EIS
- Community Submissions
- Response to Community Submissions.

This peer review report is structured as follows:

- **Chapter 2** reviews the need for existing conditions of the site and surrounding road network and assesses the detail provided around the transport aspects of proposed operations
- **Chapter 3** reviews the methodology of traffic impact assessment, and the traffic and transport impacts with the project in its operational phase and the management measures proposed, including road safety impacts
- **Chapter 4** reviews the responses to submissions made by TfNSW and the community
- **Chapter 5** summarises the key conclusions drawn from the peer review and requests additional assessments or clarifications to complete the assessment of the project against the SEARs.

This review has not included detailed verification of transport models, though some basic checks of published outputs have been completed based on site investigations and local knowledge of prevailing traffic patterns and conditions.

This review has assumed that the construction methodologies and construction period traffic estimates are reasonable and has focused on the documentation of the impacts of operational activities on traffic, public transport, pedestrians and cyclists.

1.3 SEARs Related to Traffic and Transport

The SEARs (dated 6 May 2021) lists the items that the EIS must address. Specifically, the SEARs noted the following key issues related to traffic and transport:

- Accurate predictions of the road traffic generated by the development, including a description of the types of vehicles likely to be used for transportation of quarry products
- A detailed assessment of potential traffic impacts on the capacity, condition, safety and efficiency of the local and State road network (as identified above), including undertaking a road safety audit
- A description of the measures that would be implemented to mitigate any impacts.

2. REVIEW OF EXISTING CONDITIONS AND PROJECT

2.1 Site Visit

A site visit was undertaken on Thursday 14th April 2022 to determine the existing conditions and verify the findings of the EMM TIA report, ARRB RSA report, TfNSW and Council's advice on the EIS, and community submissions. Key findings are as follows:

- Several potholes observed on Red Hills Road and Ambrose Road, as shown in Figure 2.1
 - Likely to have been exacerbated by heavy rainfall in the weeks prior to the site visit



Figure 2.1: Red Hills Road Degradation

- Line marking was generally satisfactory on the Primary and Secondary Transport Routes, with some minor fading observed on Red Hills Road and Ambrose Road
- No significant potholes or faded line marking observed on the Secondary Transport Route
- Road shoulders are typically too narrow to store a stationary vehicle (i.e. break downs)
- The Gunlake Quarry access intersection was observed to be fit-for-purpose, with no potholes, adequate signage and line marking
- Cracking was observed on the edges of the vehicle travel lanes on Ambrose Road
- Insufficient sight line from the northern leg of the Ambrose Road / Red Hills Road intersection, as shown in Figure 2.2
 - Sight lines are blocked by vegetation within private land to the east, and vertical curves to the west



Figure 2.2: Ambrose Road / Red Hills Road Sight Distance

- Insufficient sight line from the northern leg of the Brayton Road / Ambrose Road intersection
 - Vertical curve blocks sightlines to eastern and western leg.

2.2 Project Description Detail

The EMM TIA sufficiently described the nature of the existing consent, however, did not detail the specific conditions associated with the Extension Project. Specifically, the TIA did not refer to the need for a transport options assessment, which was conditioned to be undertaken by 2027. Section 2.2 of the EMM TIA stated that maximum daily heavy vehicle movements were proposed to increase to 375 inbound and outbound trips (750 total trips), however, Table 4.1 of the submissions report considers a total of 826 trips per day. In general, the EMM TIA provides, in detail, a description of the Extension Project.

3. REVIEW OF TRAFFIC IMPACT ASSESSMENT

3.1 Methodology and Scope of Assessment

The background traffic volumes used in this assessment are considered reasonable, being based on traffic count data, a reasonable growth rate of 0.5% - 1.0%, approved residential subdivisions, and approved traffic generation for nearby quarries. The distribution of development traffic is confined to the primary and secondary transport routes.

The EMM TIA provided SIDRA analysis of the following intersections:

- Brayton Road / Ambrose Road
- Hume Highway / Red Hills Road
- George Street / Brayton Road
- Hume Highway / Jerrara Road / Marulan South Road offramp (westbound interchange)
- Hume Highway / Jerrara Road (eastbound interchange).

The extent of intersections assessed is considered appropriate. However, given the differential speed of trucks leaving the quarry relative to existing light vehicle trips, it is considered likely that the Continuation Project would have an impact on existing trips. The extent of this impact was not assessed within the TIA.

A sight distance assessment was provided at the quarry access onto Brayton Road and indicated that appropriate safe intersection sight distance is provided.

3.2 Calibration and Validation

The SIDRA modelling undertaken was not calibrated / validated. However, given the lack of queues at these intersections, there is no quantifiable data to validate models against. In lieu of information to the contrary, the lack of calibration / validation of the SIDRA modelling is considered appropriate, with the base SIDRA results consistent with site observations undertaken by Bitzios Consulting.

3.3 Traffic Impacts

The SIDRA analysis indicates that the Continuation Project does not have a perceptible level of service (i.e. intersection delay) impact at the analysed intersections. However, the impact of increased heavy vehicles on travel times along the Primary and Secondary Transport Routes was not assessed as part of the TIA, however the ARRB Road Safety Assessment included a climbing lane assessment which considered the impact of reduced speeds through the vertical crest on Ambrose Road, which would have largest impact on travel times. The ARRB climbing lane assessment did not support climbing lanes based on:

- Slow moving heavy vehicles do have the potential to restrict light vehicle travel speeds along the uphill section of Ambrose Road
- Light vehicle traffic volume is low and the travel time delay that would be brief when considering the total journey along the Primary Transport Route.

Given the very low volume of non-quarry related traffic on Ambrose Road and the relatively short distance of traffic impacts by slow-moving truck, Bitzios Consulting is of the view that the impacts and cost would outweigh the benefits of constructing climbing lanes on Ambrose Road.

The impact of increased heavy vehicle trips on amenity and pavement degradation is outside of the scope of assessment of the EMM TIA, and this peer review. However, it is noted that Gunlake

Quarry provides Section 94 contributions to Goulburn Mulwaree Council to jointly implement a road maintenance work plan.

3.4 Road Safety

A road safety assessment (RSA) was undertaken by the Australian Road Research Board (ARRB) which considered the design, condition and crash history of Brayton Road, Ambrose Road and Red Hills Road. The RSA noted but did not quantify sight distance constraints at the key abovementioned intersections but noted that the Continuation Project is unlikely to impact road safety at these locations, predominately given the higher profile of the trucks on approach to intersections.

Bitzios Consulting disagrees above in that the Continuation Project will increase traffic densities through these intersections which in turn will increase the risk (or likelihood) of accidents due to substandard intersection sight distance. The applicant should provide further details that assess the available sight lines against Austroads Guideline and identify appropriate measures to mitigate any deficiencies in intersection sight distance.

It is noted that the RSA report indicates that no crashes within the study area are linked to Gunlake generated trips.

3.5 Transport Options Review

TfNSW submission requested that.

Based on the proposed change to the road based operations (i.e. significant increase in heavy vehicle numbers), the proponent should assess a rail-based solution through a distribution centre in Sydney. As such, the proponent should conduct a 'Transport Options Review' which is consistent with the requirements as detailed in Schedule 3, **Condition 29 of Land and Environment Court** issued consent (Ref: Appeal No.2017/108663) which would include consideration as to why some of the materials cannot be transported by means other than by public road (e.g. unable to be undertaken by rail)

Community submissions also commented that:

Trip generation would be significantly reduced should a **rail-based solution be implemented**, noting that the previous approval conditioned a transport options review to occur by 2027. A second quarry could be located along the inland rail route.

The applicant's response to the submissions was that an alternate transport feasibility study was undertaken which ascertains:

- Land acquisitions and planning / environmental approvals would be required for the rail corridor, product stockpiling area and a distribution centre close to the batching plants in Greater Sydney.
- There are problems with the capacity of the rail network, diminishing industrial land near freight terminals, a lack of high level planning to allow freight to be a viable alternative
- Relative to other aggregate producers who typically deliver product to Greater Sydney via trucks, the cost imposed by the implementation of rail would significantly disadvantage the quarry within a competitive marketplace
- Government policy does not promote the use of rail over trucks, rather, speaks to increasing the volume of freight carried per trip
- The only viable option for the Gunlake Quarry is road, which has been significantly upgraded by the quarry to exceed Austroads Guidelines and provide a benefit to Marulan township without being conditioned to do so

- The economic viability of the quarry would be significantly impacted by having to utilise rail transport, given the increase in product handling and initial cost of the rail spur.

The applicant's response to submission stated that a range of transport options were prepared as part of the Gunlake Quarry Extension Project application (SSD-7090), and that *the conclusion of these comprehensive transport options assessment were considered during the NSW Land and Environment Court proceedings that approved the Gunlake Extension Project, dismissing the need for rail transport.*

This statement is incorrect as the Land and Environment Court judgement include a condition (condition 29) that stated that

Transport Options Review

29. Within 10 years of commencing development under this consent, and every 10 years thereafter, the Applicant must commission, commence and pay the full cost of a Transport Options Review for the development. This review must:
- (a) be conducted by a suitably qualified, experienced and independent expert/s whose appointment has been endorsed by the Secretary;
 - (b) include detailed consultation with Transport for NSW, RMS and Council;
 - (c) review the economic, social and environmental costs and benefits of all reasonable and feasible options for the transport of quarry products from the site (including by rail and including trucks movements currently permitted by this consent);
 - (d) recommend any appropriate measures or actions to reduce the economic, social and environmental costs associated with transport of quarry products from the site, and
 - (e) be conducted and reported to the satisfaction of the Secretary.

Within 12 weeks of commencing this review or as otherwise agreed by the Secretary, the Applicant must submit a copy of the review report to the Secretary and any other NSW agency that requests it, together with its response to any recommendations contained in the review report.

The above condition relates to the current Gunlake Extension Project and technically is not required until 2027, however given the Continuation project will increase product transportation, **it is** reasonable to require that a Transport Options Review be undertaken for the Gunlake Quarry Continuation Project.

A Rail Transport Economic Assessment was undertaken in 2022 which concludes that it is unviable for Gunlake Quarries to transport quarry product by rail.

Bitzios Consulting has no reason to dispute the findings of the Economic Assessment, however the applicant's response lacks specific details of:

- the assessment of social and environmental costs and benefits
- recommending appropriate measures or actions to reduce the economic, social and environmental costs associated with transport of quarry material from the site
- detailed consultation undertaken with TfNSW and Council

Bitzios Consulting recommends a condition that requires a 'Transport Options Review' which is consistent with the requirements as detailed in Schedule 3, **Condition 29 of Land and Environment Court** issued consent (Ref: Appeal No.2017/108663)

4. SUBMISSIONS AND RESPONSES

Table 4.1: Review of Responses to TfNSW Submissions

Issue Raised	Applicant's Response	Bitzios Comment
Traffic Impacts		
Describe distribution of traffic to / from the north (i.e. Sydney) and south (i.e. Goulburn).	The secondary transport route is only used by outbound trucks to markets south of the quarry. This is limited to 38 outbound movements per day. The northern route of Red Hills Road, Ambrose Road and Brayton Road is subject to 375 outbound, and 413 inbound trips per day.	The TIA sufficiently describes the distribution of trips. It is noted that the TIA states that the Secondary Transport Route would be subject to an average of 25 outbound movements per day, whilst the Submissions Report asserts a maximum of 38 outbound vehicles per day.
<p>How will compliance with maximum hourly and daily numbers will be achieved, monitored and reported.</p> <p>Subsequent Comment: TfNSW 31/5/2022</p> <p>TfNSW notes that the current approval for the Extension Project (SSD 15/7090) contains requirements in relation to monitoring and keeping track of product transport (i.e. Condition 23 in Schedule 3).</p> <p>The information required by this condition is currently difficult to find on the applicant's website and when found, what is available contains minimal information (i.e. two lines per month one of which is the average movements and one of which is the max movements, only one report available). TfNSW is of the view the currently provided information does not comply with the requirements of the above condition (i.e. information on daily maximum movements, reports for the 6-month periods prior to the currently published report).</p> <p>TfNSW requests details are provided from the applicant on how this information will be provided as part of any new approval that is issued for the current SSD application. This includes, but is not limited to,</p>	<p>Accurate record of all trucks movements to / from the quarry will be maintained through:</p> <ul style="list-style-type: none"> ▪ Weighbridge data ▪ Implementation of the Gunlake Quarry Traffic Management Plan ▪ Independent Environmental Audits <p>It is noted that the latest environmental audit did not find any non-compliances related to truck movements.</p>	<p>Based on TfNSW comments, the information provided by the quarry of transport product is insufficient and/or difficult to find.</p> <p>A new condition should be impose that requires the applicant to provide 6-monthly reports to TfNSW</p>

Issue Raised	Applicant's Response	Bitzios Comment
where it will be located on the website so it is easier to find, the structure/layout of how it will be reported so it provides all required information, etc).		
Describe why there is no proposed change to anticipated volumes on the secondary route.	The increased demand for quarry products is within Sydney markets, given increased pressures on construction materials. Trips to / from Sydney utilise the Primary Transport Route.	It is expected that the development is conditioned, as per the Extension Project approval, to specify the number of daily trucks that can use the Secondary Transport Route.
Assess a rail based solution under a Transport Options Review, as per the Land and Environment Court issued Consent.	Refer Section 3.5	Refer Section 3.5
Road Safety		
<p>Assess the Hume Highway / Red Hills Road intersection with respect to:</p> <ul style="list-style-type: none"> ▪ Suitability of deceleration lane ▪ Suitability of acceleration lane ▪ Potential for vehicles to damage infrastructure on corner of intersection ▪ Suitability of lighting ▪ Upgrade of the intersection surface to concrete. 	The road pavement at the Red Hills Road / Hume Highway intersection was upgraded as part of the Extension Project, and now is the responsibility of TfNSW. It is noted that the Australian and NSW governments has provided funding to replace section of the concrete pavement sections of the Hume Highway at Marulan.	The Submissions Report did not assess the adequacy of the Hume Highway / Red Hills Road intersection to cater for increased traffic. Further, the assertion that the federal / state government has funded resurfacing works at this intersection is false, given the that the project is to replace concrete with asphalt, whilst the TfNSW request asked the proponent to investigate replacing asphalt with concrete.
Describe how the drivers code of conduct is managed / enforced for external contractors.	The EIS provides the Driver Code of Conduct as an Appendix of the Traffic Management Plan. The TMP is available on the Gunlake Quarries website.	<p>A review of the Driver Code of Conduct indicates that all drivers (including external) are required to undertake induction when first visiting the site. Induction includes area specific speed limits and practices. The Driver Code of Conduct states that provided monitoring and random enforcement checks are undertaken, with failure to adhere to the code resulting in disciplinary action including termination of employment, temporary or permanent bans from the site, and temporary or permanent bans of a subcontractor company.</p> <p>It is noted that trucks were found to exceed the posted speed limit of 100km/h during the site inspection undertaken by Bitzios Consulting.</p>

Issue Raised	Applicant's Response	Bitzios Comment
Road Infrastructure		
<p>TfNSW (3/12/2021) sought details from the applicant on measure that will be implemented to stop/prevent vehicles departing the Hume Highway via Red Hills Road cutting the corner (southern side of the Red Hills Road/Hume Highway intersection) and damaging existing infrastructure within the road reserve (e.g. existing pits, etc)</p>	<p>The applicant's response was that TfNSW has a responsibility to maintain, and if required improve, this intersection</p>	<p>TfNSW have provided further evidence including photographs of the road shoulder degradation caused by trucks cutting the corner when travelling from the Hume Highway into Read Hills Road.</p> <p>The left turn treatment appears to be of sufficient width to provide for design vehicles (including B-Double) to negotiate the turn movement without cutting the corner (and road shoulder). Further, given the high proportion of quarry vehicles using this intersection compared to general traffic (including other non-quarry trucks) it can be reasonably assumed that the impact to the road shoulder is a consequence of the quarry generated traffic.</p> <p>Replacing the asphalt with concrete pavement, as proposed by TfNSW would provide a longer wearing surface and provide better protection to existing PUP pits.</p>

Table 4.2: Review of Responses to Council Submissions

Issue Raised	Applicant's Response	Bitzios Comment
Transport Route		
A structural assessment by an Independent appropriately qualified engineering consultant of all bridges and culverts be undertaken for proposed vehicles exceeding the current allowable load limit along the Primary Transport Route	The Primary and Secondary Transport Routes are gazetted as higher mass limit B-Double 25/26-m routes and suitable for use by all trucks of this size, including quarry trucks. The trucks used to transport quarry products will not change as a result of the Continuation Project and a structural assessment is not required	This issue falls outside of Bitzios Consulting's expertise and therefore we are unable to comment as to whether the applicant's response is considered sufficient to address the issue raised by Council
Widening of bridges and culverts is required on the primary transport route to allow a consistent wide centre line treatment to be implemented.	WCLT has been applied along the Primary Transport Route, with the exception of six culvert crossings (Culverts A to F) where it is currently not applied due to the narrow width of the road formation between the existing culvert headwalls, on the hill west to the Ambrose Road/Red Hills Road intersection and on the approaches to all intersections. Considering the increase in quarry traffic associated with the proposal, Gunlake proposed to extend the WCLT across five of the existing road culverts (Culverts A to E) is considered appropriate. This will require widening of the culverts and relocation of the road safety barrier (see Section 3.2). As explained in Appendix C, widening the road at Culvert F would require extensive engineering due to the physical constraints at this location. These works are considered impractical and cost prohibitive, and the scope of work required is disproportionate to the road safety risk of retaining the existing common centreline arrangement.	<p>The applicant proposed to widen the road at culverts A-E and provide wide centreline treatments, but propose to exclude Culvert F on the basis that the works is impractical and cost-prohibitive</p> <p>ARRB's assessment of extending the WCLT appears to be more related the costs/impacts of widening the road (and extending the WCLT) through the intersection of Ambrose Road / Red Hill Road.</p> <p>The reasons provided by the applicant for not extending the WCLT through the intersection is considered reasonable, however there appears to be no justification for not extending the WCLT through Culvert F which is located west of the intersection.</p> <p>In our view further justification should be provided by the applicant as to why the WCLT is not extended through Culvert F</p>
An independent traffic consultant be engaged to investigate any lighting and/or delineation upgrade at all intersections along the primary transport route and if upgrades are warranted by the independent traffic consultant then those upgrades to be funded and installed by Gunlake	ARRB found that the intersections along the Primary Transport Route do not meet requirements for (a) Full Category V Lighting or (b) Partial Category V Lighting. The review also considered the potential benefit of (c) Flag Lighting. Flag lighting installations do not meet Category V lighting requirements of	The submission is considered to sufficiently addresses the assessment of street lighting at intersections against relevant warrants, including a road safety assessment.

Issue Raised	Applicant's Response	Bitzios Comment
	<p>AS1158 but provide some level of alert to approaching drivers about the presence of the intersection. ARRB concluded that streetlighting to Category V standards would be out of character for the Primary Transport Route and that flag lighting would not provide a material improvement to address Council's stated concerns about safety.</p>	
<p>The intersection of the Brayton Road and Ambrose Road intersection should be assessed to ensure it meets the relevant Austroads Guidelines</p>	<p>The Brayton Road/Ambrose Road intersection was included in the Road Safety Audit conducted by ARRB as part of the EIS (refer to Appendix F.2 of the EIS). As outlined in Appendix C, the intersection largely meets the relevant Austroads Guidelines in key areas of design and safe road performance. However, the audit found that there is no advanced intersection warning sign on either approach to the intersection with Ambrose Road and there is limited delineation of the traffic islands. Suggested corrective actions were:</p> <ul style="list-style-type: none"> ▪ provision of side-road intersection signs on both approaches ▪ painting the median islands with retroreflective white paint; ▪ managing roadside vegetation impacting lines of sight ▪ altering the yield control from GIVE WAY to STOP; ▪ renewing the line-marking approaching the intersection. <p>These are considered to be inspection and maintenance issues to be addressed by Council using the section 7.11 contributions paid by Gunlake. ARRB's Road Safety Assessment stated</p> <p>The intersection of Ambrose Road and Brayton Road was designed to facilitate heavy vehicle swept paths and provides median separation on all three approaches, which enhances vehicle separation,</p>	<p>The ARRB Road Safety Assessment acknowledge restrictions to intersection sight distance</p> <p>The EIS response and supporting Traffic Report do not detail or assess the available intersection sight distances against Austroads Guideline, so it is unclear at what extent of sight line restriction exist.</p> <p>The applicant's proposed treatments do not address the sight line restrictions and therefore would not lower the residual risk as suggested in the ARRB Road Safety Assessment.</p> <p>The applicant should provide further detailed assessment of the intersection sight distance in accordance with Austroads Guidelines.</p>

Issue Raised	Applicant's Response	Bitzios Comment
	<p>prevents corner cutting by all traffic, and therefore slows turning speeds.</p> <p>A recent review of the intersection identified sight line restrictions for drivers of light vehicles when exiting Ambrose Road looking to the south and the north. These restrictions impact light vehicle drivers observing other light vehicles; heavy vehicles approaching the intersection have a higher profile and so are readily observed.</p>	
<p>The sight distance be reviewed at the intersection of Red Hills Road and Ambrose Road for vehicles existing Red Hills Road. If improvements are identified by the review they be implemented in accordance with Austroads Guidelines</p>	<p>Gunlake are not the road authority and does not have the ability to implement actions recommended in the RSA report, mainly related to inspection and maintenance issues.</p>	<p>The site visit undertaken by Bitzios Consulting, community submissions and the ARRB RSA confirms that there is insufficient sight distance at the priority-controlled intersections. It is noted that the increased volume of vehicles along the Primary Transport Route inherently increases the likelihood of conflict at the sub-standard intersections.</p> <p>The applicant should provide further detailed assessment of the intersection sight distance in accordance with Austroads Guidelines.</p>
<p>The speed limit for the Primary haulage route should be reduced to 80kmh for all vehicles. It is noted that the applicant, Council, the Gunlake Community Consultative Committee and the Local Member of Parliament have all previously endorsed and advocated for this outcome.</p>	<p>Gunlake are not the road authority and do not have the ability to prevent overtaking or reduce the speed limit. However, Gunlake imposes a requirement for its drivers to adhere to an 80 km/h speed limit and as with Council, Gunlake supports a permanent reduction in speed limit along the Primary Transport Route to 80 km/h and continues to lobby TfNSW to achieve this outcome.</p>	<p>Speed limits on public roads are the responsibility of Council and TfNSW</p>
<p>Minimum 3m trafficable clear zones should be installed for the full length of the Primary Haulage route – with the exception of bridges, culverts and other area agreed by the General Manager where it is impracticable to do so - and be constructed in line with Austroads guidelines for heavy vehicle use.</p>	<p>Previous upgrades of the Primary Transport Route provided minimum 3-m wide clear zones, except through deep cutting sections and across the road culvert or high fill embankments, where steel guardrail has been installed. This is considered to satisfy the requirements of the Austroads Guide.</p>	<p>The submission is considered to satisfactorily address this issue</p>

Table 4.3: Review of Responses to Community Submissions

Issue Raised	Applicant's Response	Bitzios Comment
Traffic Impacts		
Trip generation would be significantly reduced should a rail based solution be implemented, noting that the previous approval conditioned a transport options review to occur by 2027. A second quarry could be located along the inland rail route.	Refer to Section 3.5	Refer to Section 3.5
The relative speeds of truck to light vehicle on the primary / secondary transport route is likely to cause delays to passenger vehicles during peak hours. Overtaking / climbing lanes should be investigated.	The RSA report assessed the potential for increased travel times and found that light vehicle volumes are low (12 vehicles in PM peak hour). Further, the delay to travel time occurs over a short length relative to the length of the entire journey. Whilst overtaking lanes were considered by the RSA report, the construction of a climbing lane is not supported due to the travel time and roads.	The ARRB RSA argues that whilst climbing lanes are potentially required, they should not be implemented citing relative delays, low volumes of light vehicles and environmental impacts. Whilst the above arguments are relevant, the decrease in speed to 21.6 km/h on a "low volume" road increases the propensity for light vehicles to illegally overtake.
The majority of heavy vehicle trips are to / from Sydney, increasing congestion, emissions and likelihood of crashes within the city.	Trips to / from Sydney are linked to Gunlake's Concrete Plants which are located in industrial areas, close to arterial roads.	The impact of additional heavy vehicles is unlikely to significantly impact the Greater Sydney Road network, given the limited number of non-arterial roads within Sydney that can accommodate quarry vehicles.
Johnniefelds Quarry has not operated for five years and should be removed from the traffic assessment.	Whilst the quarry is not currently operation, the development approval is still active. The inclusion of Johnniefelds Quarry generated traffic is considered to constitute a conservative assessment.	It is agreed that the Johnniefelds Quarry should remain within the traffic assessment. Removal of these trips would result in a less conservative assessment.
Road Safety		
Limited sight distance at intersection of Brayton Road / Ambrose Road and Red Hills Road / Ambrose Road given vertical curve and speed. Subsequent Comment: I refer to the Gunlake Submission Response Clause 4.2.2, Road Safety Assessment Report Actions page	Gunlake are not the road authority and does not have the ability to implement actions recommended in the RSA report, mainly related to inspection and maintenance issues.	The site visit undertaken by Bitzios Consulting, community submissions and the ARRB RSA confirms that there is insufficient sight distance at the priority-controlled intersections. It is noted that the increased volume of vehicles along the Primary Transport Route inherently increases the likelihood of conflict at the sub-standard intersections.

Issue Raised	Applicant's Response	Bitzios Comment
<p>16. See also Appendix A ARRB report clauses 3 and 4.</p> <p>In my submission I pointed out that the two major intersections on the haulage route (Red Hills Rd/Ambrose Rd and Ambrose Rd/Brayton Rd) are both extremely dangerous to cars because of line of sight is as low as 100 m. The ARRB report recognises the safety aspects of the intersections but does not propose a solution to the problem.</p> <p>In the Gunlake response they propose to erect intersection warning signs and to clear some vegetation. This is an entirely inadequate response to solving the safety issues at these intersections. Clearing the vegetation would have a modest effect on improving visibility out to 100 m. Regarding the warning signs, most of the people using the intersections are locals are already fully aware of the intersections and their dangers, but they still have close encounters with other vehicles.</p> <p>It is my understanding that Austroads Guidelines recommend a line of sight of around 290 m. The line of sight for these intersections is about 1/3 of the recommended distance.</p> <p>Gunlake must be made to improve the line of sight at these intersections.</p>		<p>The applicants' submissions report acknowledged restricted sight distance at these intersections, however a detailed assessment of the available sight distances against Austroads Guideline has not been provided.</p> <p>The applicant should provide further detailed assessment of the intersection sight distance in accordance with Austroads Guidelines including measure to mitigate any deficiencies in intersection sight dsitance.</p>
<p>The increase in heavy vehicle trips relative to the existing background traffic is likely to significantly worsen pavement condition</p>	<p>The contributions made to Council by Gunlake shall increase under the Continuation Project (tonnage / kilometre basis). Road maintenance is Council's prerogative.</p>	<p>The site visit undertaken by Bitzios indicated that there was limited cracking within the roadway, however, there was a moderate quantity of potholes along the Primary Transport Route. This may be a function of recent rainfall within the study area.</p> <p>It is noted that contributions to Council are proposed to increase under the Continuation Project with the increased tonnage / kilometre within Council's Road network. Whilst Gunlake Quarry is required to pay yearly contributions, the onus of maintaining and potentially upgrading the road rests with Council.</p>

Issue Raised	Applicant's Response	Bitzios Comment
Wide double centreline treatment is reduced at road reserve pinch points, limiting effectiveness	Gunlake proposes to increase the width of five (from a total of six) culverts in order to provide a continuation of the existing wide centreline treatment. The remaining pinch point, described as Culvert F, requires extensive engineering due to the physical constraints at the location. Relative to the road safety benefits offered by providing wide centreline treatment at this location, the works are considered impractical and cost prohibitive.	The ameliorative works to improve the consistency of wide centre line treatments offers a safety benefit to all users of the road. Culvert F is located on a section of Ambrose Road, with good sightlines and limited horizontal curves. As such, maintaining this culvert as per existing conditions is considered appropriate.
An independent road safety review should be undertaken	The TIA and RSA reports were both undertaken by independent consultants. The RSA was undertaken by a Level 3 accredited auditor.	The road safety audit appears to be thorough and has been undertaken by a Lead Road Safety Auditor. The RSA is fit-for-purpose with no further assessment needed to supplement this assessment.
Trucks regularly breakdown on Ambrose Road given the gradient.	No specific response – It is noted that the recorded road safety problems history on the identified transport routes would be exacerbated by the Continuation Project.	The shoulder could potentially be widened on steep inclines (typical breakdown locations) to allow broken down trucks to store clear of the travel lane.
The Primary Transport Route is collocated with a school bus route.	The road shoulder has been widened as part of the Extension Project in specific areas which allows the school bus to pull completely off the road in dedicated school bus bays. Additional signage of the school bus route was installed as part of the Extension Project road upgrades.	Consultation by the proponent with the school bus operator indicated that they do not require any further school bus bays. Driver awareness of the school bus route and significance of flashing lights is included in the Driver Code of Conduct.
The condition of the pavement on the Primary Transport Route is considered to be poor. Repairs are regularly required, the value of which exceed Gunlake's contributions to Council.	The increase in truck traffic on the primary transport route will result in an increase in Gunlake's contributions to Council.	The site visit undertaken by Bitzios indicated that there was limited cracking within the roadway, however, there was a moderate quantity of potholes along the Primary Transport Route. This may be a function of recent rainfall within the study area. It is noted that contributions to Council are proposed to increase under the Continuation Project with the increased tonnage / kilometre within Council's Road network. Whilst Gunlake Quarry is required to pay yearly contributions, the onus of maintaining and potentially upgrading the road rests with Council.

Issue Raised	Applicant's Response	Bitzios Comment
The posted speed limit along the Primary Transport Route should be reduced to 80 km/h for trucks only.	Gunlake's Driver Code of Conduct restricts trucks to 80km/h along the Primary Transport Route and is supportive of Council's position that the posted speed should be 80km/h for all vehicles.	<p>Posted speed limits would need to be applied to all classes of vehicles within the road. However, this is not something that can be implemented / enforced by Gunlake outside of the Driver Code of Conduct.</p> <p>It is noted that trucks were found to exceed the posted speed limit of 100km/h during the site inspection undertaken by Bitzios Consulting.</p>
An independent pavement impact assessment should be undertaken.	A Pavement Structural Evaluation was conducted in October 2021 which found that with the Continuation Project, the remaining structural life of the pavement is at least 15 years.	The Pavement Structural Evaluation is an objective assessment based on Austroads methodology. Assessment of pavement life is outside of the scope of this EIS Peer Review, however, the report prepared by Pavement Management Services appears to be fit for purpose and based solely on empirical data.

5. CONCLUSIONS AND POTENTIAL CONDITIONS

5.1 Key Findings

Bitzios consulting has reviewed the traffic impact assessment and note the following:

- The project was described in sufficient detail in the EMM TIA and Submissions Report
- The methodology and scope of traffic analysis was generally acceptable, however, the transport options assessment provided in the Submissions Report requires further information to be considered a holistic assessment
- The findings of the traffic impact assessment were considered to be logical, and consistent with first principles analysis
- The RSA undertaken by ARRB is generally fit for purpose, and thoroughly describes existing issues, and accurately assesses the likely impacts of the Continuation Project
- The EMM Submissions Report generally responds well to concerns raised by TfNSW and the community, however, there is scope for further clarification around key items.

In summary, the EMM TIA has generally addressed the items raised in the SEARs Checklist. The EMM Submissions Report has adequately addressed the majority of items raised by TfNSW and the community, however, there are some items which require further clarification.

5.2 Potential Conditions and Further Information

Conditions are recommended to be imposed on the Continuation Project to achieve the following:

- Increased frequency of independent Environmental Audits (currently three years)
- Provide 6-monthly Product Transport Reports to TfNSW
- The widening of Culverts A – E, as identified in the Submissions report
- Provide a Transport Options Review which is consistent with the requirements as detailed in Schedule 3, **Condition 29 of Land and Environment Court** issued consent (Ref: Appeal No.2017/108663)

It is recommended that further information is provided by the proponent to allow the proper assessment of the EIS, and provide clarity around potential conditions:

- The Transport Options Review should be expanded to provide a more holistic assessment of each option
- An assessment of the increase in traffic (and potential changes to vehicle size) on the geometric design of the Hume Highway / Red Hills Road intersection, including methods to mitigate the impact of vehicles cutting the corner when turn left from Hume Highway
- An intersection capacity assessment of the Brayton Road / Quarry Access Road
- A detailed intersection sight distance assessment of Brayton Road / Ambrose Road, Ambrose Road / Redhill Road, quantifying any sight distance constraints and proposed mitigation measures
- Further justification should be provided by the applicant as to why the WCLT is not extended through Culvert F
- Explain the extent of environmental impact associated with the widening of the Primary Transport Route on steep inclines in order to provide a breakdown lane or a passing lane.