

8 November 2022

Carolyn Hunt  
Senior Planning Officer  
Department of Planning and Environment  
35-37 Abbott Street  
Gunnedah NSW 2380

**Re: Peer Review - Bentley Quarry TIA**

Dear Carolyn,

EMM has been engaged by Department of Planning and Environment (DPE) to undertake a peer review of the traffic report<sup>1</sup> for the Bentley Quarry development (Bentley Quarry EIS, DA2022/0107).

## 1 Background

Richmond Valley Council has received a Development Application (DA 2022/0107) seeking consent for the establishment and operation of a hard rock quarry and ancillary facilities at Lot 2 DP 1196757, No. 1465 Bentley Road, Bentley NSW 2480.

The site has been used for rock extraction for many years. The recent operations have been limited to an extraction rate of 3,000 m<sup>3</sup> (estimated to be 6,000 tonnes based on a conversion of 2 tonnes per m<sup>3</sup>) and a disturbance footprint of approximately 1 hectare.

The proponent expects the demand for materials will be on average 100,000 tonnes per annum, however, approval is being sought for a maximum 300,000 tonnes per annum. This will allow flexibility for material to be supplied during periods of high demand, such as following flood events or supplying large construction projects in the local area.

In summary, the proposal involves, extracted from EIS report:

a) Site Establishment

Progressive installation of environmental controls, including visual bunding, sediment and erosion controls and offset planting.

b) Construction

- delineation of the site and stockpiling areas,

<sup>1</sup> Report prepared by GHD dated 29 October 2021 (Appendix K of the EIS)

- construction of perimeter and site fencing,
- construction of the access road and intersection utilising stockpiled material within the existing quarry,
- construction of the access road and intersection with Bentley Road, including signage,
- construction of a site office, weighbridge and car parking area, and
- importation of clean soil for construction of visual bunding.

c) Operation

- vegetation clearance, soil stripping and stockpiling,
- blasting, crushing, screening and stockpiling of basalt material,
- importation of materials for blending,
- blending and precoating aggregate materials, and
- loading and haulage of aggregate materials.

d) Site Closure

Closure and rehabilitation of the site.

In relation traffic, community submissions are predominantly in relation to traffic safety and its impacts to adjoining road networks.

## 2 Documents reviewed

The following documents have been reviewed as part of this peer review:

- Traffic Impact Assessment, prepared by GHD dated 29 October 2021;
- Traffic Management Plan, prepared by GHD dated 06 October 2022;
- Planning Secretary's Environmental Assessment Requirements dated 20 July 2021 (EAR 1589);
- Transport for New South Wales letter dated 06 July /2021 (File No: NTH21/00146/01);
- Council Assessment Report Northern Regional Planning Panel (Panel Reference & DA Number PPSNTH-141 – DA2022/0107); and
- Draft Consent Conditions Northern Regional Planning Panel (Panel Reference & DA Number PPSNTH-141 – DA2022/0107).

### 3 Matters that are adequately addressed in the TIA

The report has adequately addressed the following matters:

- the report has generally prepared in accordance with Austroads Guide to Traffic Management Part 12, the Roads and Maritime Supplements to Austroads and the RTA Guide to Traffic Generating Developments;
- the assumed trip distributions for construction and operations traffic such as 60% to/from the east (eg Lismore area), 30% to/from the south-west (eg Casino area) and remaining 10% to/from the north-west (Bentley, Cedar Point etc) are reasonably accurate;
- a sight distance assessment has been undertaken in accordance with the relevant Austroads guide;
- a turn treatment assessment has been done in accordance with the relevant Austroads guide; and
- the proposed risk mitigation measure while passing the school buses in the Traffic Management Plan (TMP<sup>2</sup>) is reasonable, a 40 km/h speed limit for all traffic while passing a school bus is already a standard legal requirement in many areas of NSW. However, I understand the limitation of proposed remedial mitigation measures on this matter.

<sup>2</sup> GHD TMP dated 6 October 2022

## 4 Matters for further investigation

The matters that are not adequately addressed or need further information/ clarification and their magnitude of impact are summarised in Table 4.1.

**Table 4.1** EMM peer review

Item	GHD TIA Reference	Summary	Inadequacies and shortcomings	EMM recommendations	Category
1	N/A	SEARs (1589) and TfNSW agency comments (letter dated 6 July 2021).	The TIA report does not include a separate chapter/section which sufficiently demonstrates whether all the traffic and transport related items raised in SEARs and TfNSW agency comments have been adequately addressed by this TIA report.	<p>The TIA report should include a separate section, preferably in a table format (eg TfNSW comments &amp; GHD responses), listing the traffic and transport related items raised in SEARs and TfNSW agency comments and identifying which section in the TIA where they have been responded to.</p> <p>No all TfNSW comments have been addressed. For example, no intersection analysis (eg SIDRA) has been undertaken as part of the study. Furthermore, no comment on decommissioning stage, no site plan is attached with the report showing the car parking etc.</p>	Moderate

**Table 4.1**      **EMM peer review**

Item	GHD TIA Reference	Summary	Inadequacies and shortcomings	EMM recommendations	Category
2	Sections 2.3.1 and 2.3.2	Traffic volumes	<p>Traffic volume data has been obtained from Richmond Valley Council for Bentley Road for 2006 and 2014, and for Naughtons Gap for 2005 and 2014. I understand that new traffic counts could not be undertaken due to Covid-19 restriction.</p> <p>However, the traffic data for Bentley Road and Naughtons Gap is eight years old.</p> <p>For Bentley Road, 2006 data is not presented from which a historical increase of volume could not be determined. Similarly, the traffic profile for Naughtons Gap Road is not provided in the TIA.</p> <p>Based on the available information, a logical traffic growth profile along Bentley Road or Naughtons Gap Road can't be derived. Estimated 3 to 4% annual baseline traffic growth is probably accurate but there is no information to back this up.</p>	<p>Two peak hour intersection counts (eg 7-9am &amp; 4-6pm) are required at the following two intersections:</p> <ul style="list-style-type: none"> <li>• Bentley Road/Naughtons Gap Road; and</li> <li>• Bentley Road/Bungabee Road.</li> </ul> <p>These current traffic counts (outside the school holiday period) will result in accurate traffic data, rather than relying on the historical profile.</p> <p>Intersections should be analysed in the SIDRA model as requested by TfNSW.</p>	High

**Table 4.1 EMM peer review**

Item	GHD TIA Reference	Summary	Inadequacies and shortcomings	EMM recommendations	Category
3	Section 2.4	Crash History	<p>Section 2.4 outlines the detailed crash history along the adjoining road networks (total 13 crashes with 10 casualty). There were four serious crashes at the Bentley Road/Naughtons Gap Road intersection, three of which were 'right near' type crashes.</p> <p>The report mentions the severity of these crashes may be attributed to the high speed zones and poor gap selection when making right turns.</p> <p>Bentley Road/Naughtons Gap Road is expected to carry 40% of the construction and operations phase traffic for the proposed development. The intersection appears to show a trend for 'right near' type of crashes.</p> <p>The report does not further investigate the causes or road safety hazards or put forward any safety recommendations for this intersection in its summary or conclusion.</p> <p>However, Section 4.2.3 of the report states that <i>the crash history in the vicinity of the study area does not indicate a history of crashes at the existing intersection.</i></p> <p>The crash data analysis and concluding statement contradict each other.</p> <p>In addition, one of the major safety issue along east-west road is sun glare which has not been taken in to consideration.</p>	<p>Crash history should be undertaken along the nominated haulage routes to Lismore, Kyogle and Casino. My understanding is the proposed route to/from Casino is via Bentley Road/Summerland Way and does not include Naughtons Gap Road. Casino will be accessed via Cedar Point.</p> <p>Further investigation to identify the cause of 'right near' type crashes at the Bentley Road/Naughton Gap Road intersection and possible road safety mitigations should be proposed.</p> <p>Also I suggest including a commentary in the TMP in regard to sun glare which is also a community concern.</p>	Moderate
4	Section 3	Proposed development	<p>The proposal is to produce a maximum of 300,000 tonnes per annum or 2,000 tonnes day. Given the proposed operation of five and half days (weekdays, plus half day Saturday) or 286 active days (including public holidays) would equate to production of 1,048 tonnes per day.</p> <p>The proposal of maximum production 2,000 tonnes per day has not been adequately justified.</p> <p>Furthermore, 50,000 tonnes per annum of raw materials that would be transported to the site has not been considered in the traffic generation calculation.</p>	<p>This mismatch between the yearly production and daily production should be corrected.</p>	High

**Table 4.1 EMM peer review**

Item	GHD TIA Reference	Summary	Inadequacies and shortcomings	EMM recommendations	Category
5	Section 4.1.1	Trip Generation (Construction Phase)	<p>Total 100 vehicular trips are estimated (50 inbound and 50 outbound movements) for one month construction period. These vehicles are assigned over 10 hour construction window on a typical workday.</p> <p>Light and heavy vehicle split has not been provided. The traffic report does not include the number of onsite workers and their travel mode. Furthermore, splitting traffic generation uniformly over the 10 hour period (eg 7 am-5 pm approved construction hours) is unlikely as typically light vehicle inbound peaks occurs in the AM peak and vice versa in the PM peak. Most of the heavy vehicular inbound and outbound movements may also occur in the same peak hours.</p>	It is likely that construction traffic would be less than the operation traffic which would negate the necessity of any traffic analysis. However, this should be clearly articulated in the report. Hence, the trip generation in Table 4.1 should be recalculated.	High
6	Section 4.1.2	Trip Distribution (Construction Phase)	<p>The estimated baseline traffic volume increase from 2014 to 2022 is not clear. Further information is required on how the traffic growth is estimated and the reasoning behind it.</p> <p>Furthermore, the estimated 100 daily vehicular trips increase for all routes is not correct. The maximum traffic increase will occur in Bentley Road is 70 vehicle per day (vpd) to the east of the site and 30 vpd to the west of the site based on the assumed traffic. The traffic increase appears to be blanketed without any consideration of the directional split. This should be rectified.</p> <p>The last paragraph outlines that the construction impact is expected to have negative impact due to 'reduced speed zones' but no information is provided in regard to this.</p>	The estimated growth of background traffic from 2014 to 2022 should be clearly demonstrated, along with the directional split and explanation of 'reduced speed zones'.	High
7	Section 4.2.1.2	Heavy vehicle traffic (Operational phase)	<p>The report states the use of truck and dog trailers for material transport. However, there is no information on the vehicular length or is this the only type of truck or average truck. From our experience, this type of quarry is served by trucks in various sizes.</p> <p>Furthermore, 2,000 tonnes of transport per day equates to <math>2,000/32 = 63</math> truck deliveries (inbound or outbound). No information is provided on the proposed 50,000 tonnes per year raw material transport. Information would be helpful whether any backloading is proposed for this activity (to replace empty trucks arriving on site and loaded trucks travelling outbound).</p>	<p>The proposed truck movements (type of trucks) should be clarified.</p> <p>A logical expiation of the estimated truck movements per day and peak hour should be provided including the 50,000 tonnes per year raw material transport.</p> <p>It is imperative to know the maximum size of trucks that would serve this quarry, otherwise Council would not be able to appropriately condition it in due course.</p>	High

**Table 4.1 EMM peer review**

Item	GHD TIA Reference	Summary	Inadequacies and shortcomings	EMM recommendations	Category
8	Section 4.2.2	Trip distribution (Operational phase)	Similar to Item 6, the 150 vehicle trips increase should consider the trip distribution accurately.	The operations trip generation in Table 4.2 should be recalculated also including light vehicles	High
9	Table 4.2	2032 traffic assessment	<p>It is not clear why a 2032 traffic assessment has been undertaken. A sensitivity testing for a 10 year development horizon (after commencement of operation of the quarry) is considered reasonable but it should include any cumulative traffic happening in this area for other developments (if any). Alternatively, a sensitivity testing should be undertaken for decommissioning stage eg 30 years of operation of the quarry.</p> <p>Due to the recent floods in Lismore area, it is expected that there will be reasonable traffic growth in the locality for government's incentive to buyback and relocate of flood affected dwellings. This should be considered in the assessment, if needed.</p>	An explanation of the traffic calculation for a 10 year horizon and cumulative traffic impact assessment should be considered, if warranted.	Minor
10	Section 4.2.3	Network impact	The traffic volumes would change based on the above comments.	<p>Rewrite this chapter with the correct vehicular numbers.</p> <p>Midblock capacity analysis should include overtaking/ climbing lanes on both directions (eg Level of Service).</p>	High
11	Section 4.3.2	Turn Treatments	The intersection turn treatment assessment would require an update based on the comments provided above.	Update turn treatment assessment	High
12	Appendix A	Site access intersection upgrade	<p>The report states that truck and dog trailer combinations will be used to transport quarry material by the development.</p> <p>The proposed intersection upgrade concept plan does not show a swept path assessment of a truck and dog trailer entering and exiting the upgraded site access intersection.</p>	The intersection upgrade concept should show a swept path assessment by the longest vehicle entering and exiting the site, total four movements to/from the east and the west (in & out). Further comments on the intersection concept plan proposed are provided in the following chapter.	High

## 5 Concept plan of the site access at Bentley Road

Appendix A of the TIA includes a concept plan showing the site access intersection on Bentley Road (Sketch no. 12547851-SKT-0001, Rev no. A, dated 08 October 2021). Our civil engineer has reviewed the concept plan and has provided the following comments:

1. on review of the concept design dimensions, there is a concern with the storage distance. Assuming the intersection is for the use of 26 m long B-double trucks, the storage of the lane is insufficient at 20 m compared to the length of the vehicle at 26 m;
2. the distance from the start of the taper to 2 m width is stated at 57 m on the plans. This should be 63.33 m based off the equation  $E = (A/Wt) \times 2$  from the AGRD part 4A Section 7.5.2;
3. as stated earlier, no swept paths are shown or considered. The design will have significant variance once swept paths are applied, as to account for the use by specific trucks. This will affect the kerb returns, positioning of the holding line, configuration of the intersection and shape of the median. Consequently, this concept design does not effectively show the true extent of works;
4. the change in the positioning of the access road holding line will also have an effect on the sight distances;
5. the road names are not clearly identifiable on the plans, these are usually shown parallel with the road;
6. the existing road/lane widths are not shown. The proposed lane widths are not shown by standard dimensioning, rather by a leader/arrow;
7. the title block does not have the address stated and there are no discernible markings on the plan as to the location of the design such as the lot or house numbers;
8. there are no notes of the design criteria, including the design speeds and vehicular type on the plans, intersection treatments utilised;
9. the width of the verge is not shown (typically 1 m);
10. the ASD and SISD are stated as achieved in the report, however, these are not shown in the plan. The crest on the left hand site for exiting vehicles from the site should be taken into consideration and shown in the plan; and
11. there should be a note regarding the necessary removal of trees to achieve the site distances.

I recommend updating the concept plan based on the above comments.

Furthermore, it is recommended that the intersection should be constructed prior to the commencement of construction to facilitate safe construction vehicular access to the site.

## 6 Limitation of our assessment

Our peer review is based on the documents provided. EMM has not undertaken any site inspection as part of this peer review and therefore, the topographic assessment of the site eg grade, crossfall etc could not be verified.

Our peer review does not include any pavement impact assessment which is an important factor to calculate the future contribution required by council to maintain the current pavement condition on the affected roads.

## 7 Conclusion/summary

EMM has been engaged by DPE to undertake a peer review of the traffic report prepared as part of the Bentley quarry development.

Despite the TIA having been prepared generally in accordance with relevant guides and standards, there are a number of critical items that should be rectified/further clarified. The key issues that required further investigation and assessment are outlined in Table 4.1 and Section 5 of this report.

If you have any questions, please don't hesitate to contact me on 0425 478 650.

Yours sincerely



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