

Our Ref: 80020031:HC
Contact: Hayden Calvey

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Attention: Steve Guy

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Dear Steve,

**IMPACT OF DUBBO QUARRY CONTINUATION PROJECT ON SOUTH KESWICK QUARRY -
TRAFFIC IMPACT ASSESSMENT PEER REVIEW**

Cardno has been engaged to undertake a peer review of the traffic impact assessment (TIA) prepared by EMM Consulting (18 December 2020) for the Dubbo Quarry Continuation Project located off Sheraton Road, Dubbo. The TIA has been prepared in support of a State Significant Development involving the expansion of an existing hard rock quarry into two new resource areas to the south and west of the existing quarry.

Cardno's scope of work includes review of the following key components of the traffic impact report:

- > Review Holcim State Significant Development (SSD) application documents with particular attention to traffic impacts.
- > Review of the previously approved South Keswick Quarry and Southlakes Estate assessment and approval conditions with particular attention to items which may be impacted or sensitive to traffic generated by the Holcim application.
- > Prepare a letter statement of the review from the perspective of the Quarry and a separate letter from the perspective of the Estate. Each letter will focus on issues that may affect the respective quarry or residential site.

Cardno's review is provided in **Table 1-1** on the following page. The key concerns identified were:

- > A lack of reference to previously approved traffic generating developments in the surrounding area, including South Keswick Quarry, and consideration of the combined traffic impact of all traffic generating developments on the surrounding road network, in terms of efficiency, amenity, safety and road pavement life.
- > As per Transport for NSW (TfNSW) Restricted Access Vehicle requirements, trucks (larger than and including a 19m B-Double) are prohibited from using Sheraton Road, south of Mitchell Highway, between 8am-9.30am and 2.30pm-4pm on school days.
- > Consideration should be given to prohibited hours of travel during school zone periods to be consistent with other quarries in the area as well as de-risking the identified "high" risk location of the non-conforming childrens crossing on Sheraton Road.
- > Given the future traffic generation from Southlakes Estate, South Keswick Quarry and Dubbo Quarry, the intersection of Boundary Road and Sheraton Road is a key intersection linking these developments which should be modelled and considered in the TIA.
- > South Keswick Quarry approval, the Quarry is required to upgrade pavement conditions along Sheraton Road from Boundary Road to the beginning of the existing four lane carriageway (near to St John's College). It is reasonable to expect that the design requirement (e.g. equivalent standard axle loads) for the pavement life on Sheraton Road be suitable for the South Keswick Quarry, and any increase in design

requirements (e.g. additional pavement thickness, subgrade or change in material) to accommodate additional development (e.g. Dubbo Quarry) be accounted for via contributions to the cost of delivery by either Council or the Dubbo Quarry for the difference.

- > The report is unclear on details of the largest heavy vehicle, including its type, specific gross vehicle mass and length, and whether future intersections on Sheraton Road at Boundary Road and the new Dubbo Quarry access road will be able to accommodate the maximum size vehicle.

If you require any clarifications, please do not hesitate to contact the undersigned.

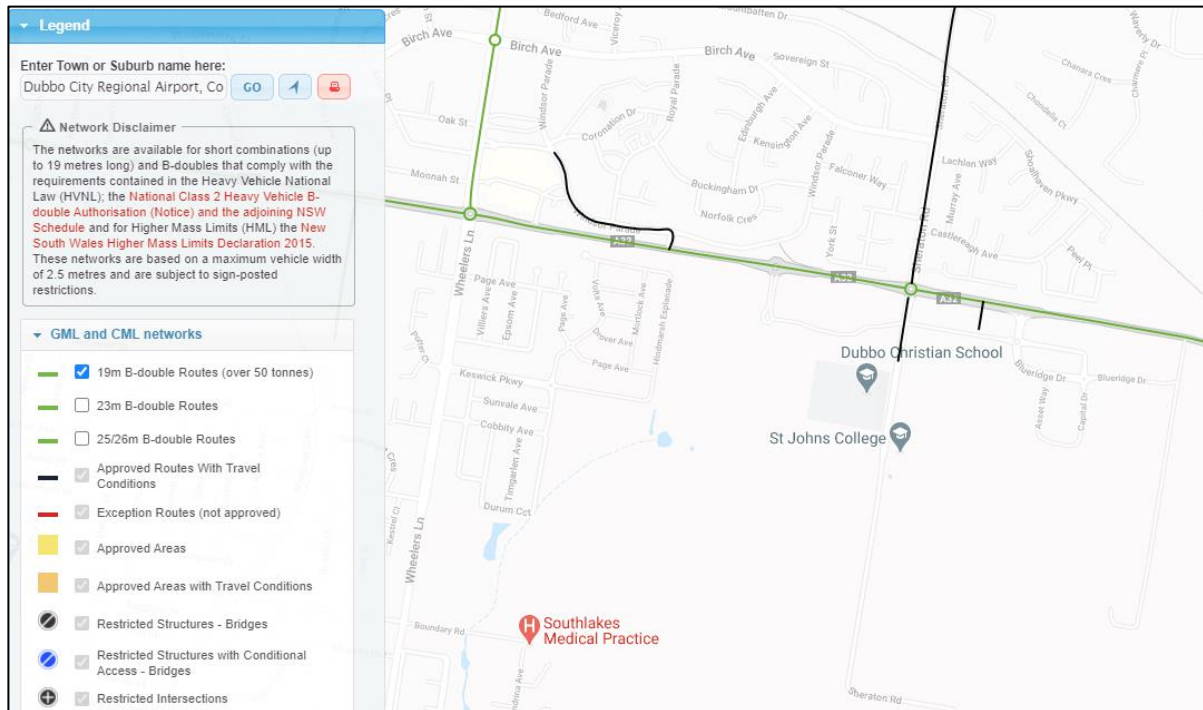
Yours sincerely,



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Table 1-1 Cardno Peer Review

Item	TIA Reference	TIA Observation, Statement or Conclusion	Cardno Review
1	Table 1.1 (Item 1)	"Accurate predictions of the road traffic generated by ... any proposed traffic generating developments in the area"	<p>The report does not make any detailed reference to previously approved traffic generating developments in the surrounding area, namely South Keswick Quarry (to the north of the Dubbo Quarry site) and Southlakes Estate (to the west of the Dubbo Quarry site). It is important to consider the combined traffic impact of all traffic generating developments in the area, as a small increase in traffic generation from the Dubbo Quarry may have a larger overall impact on traffic efficiency, amenity, safety and/or road pavement life.</p> <p>The forecast growth assumptions of 1% for 25 years, to 2045 should be reviewed against the cumulative background traffic generation from the residential subdivisions and quarry approvals in the area. It may be that the growth rate. The cumulative assessment should consider the Boundary Road / Sheraton Road intersection and not just the Mitchell Highway / Sheraton Road roundabout.</p>
2	Section 2.3	Road capacity of 30,000 vehicle movements	It is unclear how a "daily traffic capacity of 30,000 vehicle movements" has been derived for a four-lane divided carriageway other than an expansion on the 900 vehicles per hour per lane. However, this is unlikely to change the findings of the assessment if the daily capacity was lower given the key consideration for daily flows is pavement life and residential amenity for the likes of Sheraton Road and Boundary Road
3	Section 3.6 and Table 1.2 (Dubbo Regional Council Item 3)	Types of heavy vehicles during operation	<p>The report is unclear on details of the largest heavy vehicle, including its type, specific gross vehicle mass and length. Section 3.6 is ambiguous as both a 20m Truck and Dog and 20m Quad Dog Trailers are referred to.</p> <p>Section 3.6 also refers to trucks larger than 20m potentially requiring access to the subject site. It is good practice to specifically identify the largest vehicle which will require access to the site and design the access road widths and model the intersection turning paths accordingly. This would prevent any maintenance issues and costs arising in the future.</p> <p>Additionally, it is unclear if the geometry of Sheraton Road at the future Boundary Road intersection is sufficient for 20m long vehicles. Further information on the proposed site access and DA 2017/640 should be provided to ensure the SSD can be supported by the proposed intersection arrangement, which appears to be reliant on a separate application.</p>
4	Section 4.6.2 and Table 3.1	Pavement maintenance of Sheraton Road	<p>Cardno supports the recommendation that Holcim should contribute to the maintenance of Sheraton Road as indicated in the SSD, south of Mitchell Highway. As per the calculations in Table 3.1, average daily heavy vehicle usage from the Dubbo Quarry will increase by a rate of 1.43 (from 70 heavy vehicle movements per day, up to 100 heavy vehicle movements per day), contributing to a potential increased deterioration rate of the road pavement on Sheraton Road.</p> <p>Furthermore, as part of the South Keswick Quarry approval, the Quarry is required to upgrade pavement conditions along Sheraton Road from Boundary Road to the beginning of the existing four lane carriageway (near to St John's College). It is reasonable to expect that the design requirement (e.g. equivalent standard axle loads) for the pavement life on Sheraton Road be suitable for the South Keswick Quarry, and any increase in design requirements (e.g. additional pavement thickness, subgrade or change in material) to accommodate additional development (e.g. Dubbo Quarry) be accounted for via contributions to the cost of delivery by either Council or the Dubbo Quarry for the difference.</p>
5	Table 4.5 (Item 1)	Children's crossing	The Road Safety Audit correctly highlights an existing issue with the children's crossing located on Sheraton Road. The proposed mitigation of this concern is reliant on the Driver Code of Conduct which is an administrative control rather than a physical measure, however it is considered that further consideration be given to the following:

			<ul style="list-style-type: none"> – Upgrade of the crossing to be in line with current standards and de-risking the outcome; and / or – Prohibit heavy vehicle movements generated by the Dubbo Quarry to travel along Sheraton Road during school zone hours. This would be consistent with approvals of other quarry's as well as the TfNSW Heavy Vehicle Access restrictions already in place for Sheraton Road.  <p>The map displays a network of roads in Dubbo, Australia. A legend on the left side of the map provides details on the network, including GML and CML networks, approved routes, and restricted areas. The map shows various roads such as Birch Ave, Windsor Parade, and Sheraton Rd. Key locations marked include Dubbo Christian School and St Johns College. The map also shows a network of roads with different colors and line styles indicating various types of routes and restrictions.</p>
7	Section 4.5	Lack of analysis for Boundary Road / Sheraton Road	<p>Considering the future traffic generation from Southlakes Estate, the South Keswick Quarry and the Dubbo Quarry, the intersection of Boundary Road and Sheraton Road is a key intersection linking these developments which should be modelled and considered.</p> <p>While a future roundabout at this intersection has been noted, Dubbo Regional Council will be constructing an interim T-intersection with Give Way priority as part of the Boundary Road Extension Project. The intersection will not be a standard T-intersection, with Boundary Road to the west and Sheraton Road to the north forming the priority road. Vehicles from South Keswick Quarry and Dubbo Quarry approaching the intersection from the eastern leg of Sheraton Road will be required to give way to oncoming traffic, and without any intersection modelling, it is unknown whether this will cause any delays, queueing or impact on Level of Service.</p> <p>Figure 1-2 Draft T-intersection at Boundary Road / Sheraton Road</p>

