



Hy-Tec Industries Pty Limited

ABN: 90 070 100 702

Austen Quarry Stage 2 Extension Project (MOD 1 - SSD 6084)

Response to Submissions



Prepared by:

R.W. CORKERY & CO. PTY. LIMITED

June 2018

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EXECUTIVE SUMMARY

This document provides a response to the submissions received by the Department of Planning and Environment (DPE) following the public exhibition of the *Statement of Environmental Effects* (SoEE) supporting an application to modify Development Consent SSD 6084 (SSD 6084).

The SoEE and modification application were placed on public exhibition between 14 March 2018 and 10 April 2018. A total of 10 submissions were received by DPE including the following.

- Eight State Government agency submissions.
- A submission prepared by Lithgow City Council that was later re-affirmed following a Council meeting on 23 April 2018.
- A submission prepared by Blue Mountains City Council

There were no submissions received by DPE from the general public.

The principal issues raised in the submissions concerned traffic-related impacts and road noise experienced at the “Glenroy” property as a result of heavy vehicles approaching and travelling over the Glenroy Bridge. Lithgow City Council has also expressed concern regarding the proposed modification to operating hours. Other issues raised in the submissions that have been addressed in the document include the following.

- Driver behaviour and the Drivers Code of Conduct.
- Potential conflicts with other road users.
- Alternative transport methods.
- Impacts to visual amenity.

During and following the public exhibition period, Hy-Tec continued consultation including with the Hartley District Progress Association, Roads and Maritime Services, Lithgow City Council, Blue Mountains City Council and the State Member for Bathurst. Hy-Tec also consulted with the landowners of the “Glenroy” property and commenced implementing mitigation commitments. As a result of the ongoing consultation, the RMS has confirmed it is withdrawing a request for intersection upgrades. In addition, the landowners of the “Glenroy” property have confirmed their satisfaction with the mitigation measures implemented to date. Hy-Tec has directed all drivers involved in Quarry-related transport activity to reduce their speed to 40km/hr at the approach to and when travelling over the Glenroy Bridge, where it is safe and reasonable to do so. This mitigation has already reduced noise levels generated by Quarry-related transport activities. Hy-Tec has also planted a tree screen and committed to install noise shutters at the family residence (planned for 8 June 2018 and estimated to reduce noise levels by 3dB to 10dB). These measures will reduce noise levels experienced at the family residence from noise generated by all vehicles on the road. Jenolan Caves Road is a State-managed road that is approved for heavy vehicle use 24 hours a day over 7 days a week and therefore heavy vehicle traffic may use this road at any time. Hy-Tec considers that all reasonable and feasible mitigation will have been implemented for road traffic noise.

The results of the noise monitoring campaigns conducted in April 2018 indicate that road traffic noise levels currently comply with the road noise assessment criteria provided in the *NSW Road Noise Policy* (DECCW, 2011). A negligible increase to road noise (<0.1dB(A)) between the

Quarry entrance and the Great Western Highway was predicted in the noise impact assessment for the proposed modifications, indicating that compliance would be maintained under the proposed modification. In addition, the monitoring confirmed that a reduced speed limit for all heavy vehicles involved in transportation activities for the Quarry has successfully reduced the noise generated by those vehicles to a level that is below most other traffic on Jenolan Caves Road. Hy-Tec is also confident that there are important safety benefits for all motorists travelling on Jenolan Caves Road in the vicinity of the Glenroy Bridge through the reduction in potential conflicts with trucks and buses that may occur. Maximum noise levels generated by Quarry-related heavy vehicles is on average 4dB(A) less than other vehicles with this difference noticeable to the residents.

During consultation with Lithgow City Council regarding its submission, Lithgow City Council expressed concerns about setting a precedent if operating hours are permitted to commence early in the morning. However, Hy-Tec considers that each operation and application should be considered on its merits. The principal transport route includes travel on Jenolan Caves Road which is a State-managed road that has a long-standing approval for heavy vehicle use 24 hours a day over 7 days a week and then intersects with the Great Western Highway which is a major arterial connection for Western NSW, the Blue Mountains and Sydney. The concerns expressed by Lithgow City Council are based on the objections of the landowners of one property and Hy-Tec has been consulting with and will have implemented all reasonable and feasible mitigation for this landowner. Monitoring has confirmed that the measures implemented by Hy-Tec have reduced noise generated by Quarry-related transportation activities and will mitigate the noise levels experienced at the family residence for noise generated by all vehicles on Jenolan Caves Road. It is noted that the EPA did not express any concerns for impacts to noise, air quality or water resources outside of the Quarry boundary.

Hy-Tec considers that the proposed modification to operating hours for product loading and despatch are acceptable and have been justified. It has been demonstrated that heavy vehicles from the Quarry make up only a limited proportion of all vehicles using Jenolan Caves Road and that the noise generated by other vehicles approaching and travelling over the Glenroy Bridge is higher than that generated by the Quarry-related heavy vehicles. Other vehicles (both heavy and light) will continue to cross the Glenroy Bridge during the night (i.e. outside of the Austen Quarry operating hours) as it is a State-managed arterial road and is approved for heavy vehicle use, 24 hours a day, 7 days per week. The ongoing mitigation measures implemented by Hy-Tec will reduce noise generated by heavy vehicles from the Quarry and also reduce the noise experienced at the family residence that is generated by all vehicles (both heavy and light) on the road. These mitigation measures will be effective 24 hours a day over 7 days a week. Monitoring of road traffic noise levels at this location will be undertaken in accordance with the Quarry's Noise Management Plan.

It is considered that the benefits of commencing truck despatch activities from 4:00am outweigh the potential impacts because of the following.

- Truck journeys commencing at 4:00am are likely to be up to one and a half hours less than when they commence at 5:00am and provide additional journey benefits throughout the average working day. This has benefits for traffic congestion generally, less stressful driving conditions, more convenient time between breaks for drivers, reduced diesel consumption and therefore less diesel fumes and carbon emissions and improved cost-efficiency of truck maintenance.

- All transport activities are contracted externally by Hy-Tec and as a large percentage of the contractors and drivers are living and operating their businesses from within the Lithgow City local government area, commencing product despatch earlier in the day and avoiding traffic delays where possible, will allow the operators to more effectively run their businesses and to maximise the number of journeys during less busy periods.
- Increasing the available hours for product despatch activities by an additional one hour would provide greater flexibility to Hy-Tec’s operations and its contractors, while allowing for better planning for product despatch activities.

Hy-Tec considers that the remaining issues raised in submissions would primarily be addressed through the Driver’s Code of Conduct and Environmental Management Strategy as well as post-approval management plans for the operation.

Hy-Tec is confident that the mitigation measures already implemented and those proposed would ensure that potential impacts remained at an acceptable level and proposes to continue consultation to ensure this is occurring satisfactorily. The Austen Quarry is a State significant extractive industry operation and as such the benefits of the proposed modifications, as presented, would extend from the Lithgow City local government area to the greater Sydney region through economic benefits, relief to traffic congestion and improved efficiency of operations.

Jenolan Caves Road is a State-managed road that has long-standing approval for heavy vehicle use 24 hours a day over 7 days a week. The modified operations proposed by Hy-Tec are consistent with the classification and current use of the road network. Hy-Tec is encouraged by the results of the recent noise monitoring at the property which demonstrate that the noise generated by Quarry-related heavy vehicles was lower than that generated by other traffic when approaching and travelling over the Glenroy Bridge. Hopefully this is also encouragement for RMS to consider permanently reducing the speed limit for all trucks and buses at this location. The potential benefits of the speed reduction for safer travel across the Glenroy Bridge are also important to recognise. Regardless, Hy-Tec will continue to consult with the landowners at the “Glenroy” property to ensure that the mitigation measures are working as intended.

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1. INTRODUCTION

1.1 SCOPE

This *Response to Submissions* document provides a response to the submissions received by the Department of Planning and Environment (DPE) following the public exhibition of the *Statement of Environmental Effects* (SoEE) supporting an application to modify Development Consent SSD 6084 (SSD 6084).

Hy-Tec Industries Pty Limited (Hy-Tec) is seeking the following modifications to SSD 6084.

1. An increase in the approved annual quantity of Quarry products transported from the Quarry, from the currently approved limit of 1.1 million tonnes per annum (Mtpa) to 1.6Mtpa and the associated increase to the maximum daily product truck despatch limit from 250 to 300 trucks and the average daily product truck despatch limit from 150 to 200 trucks.
2. A modification to the approved hours of operations to permit truck loading and product despatch activities to commence from 4:00am rather than the currently approved start time of 5:00am.
3. A re-alignment of the extraction area boundary to remove areas no longer planned to be extracted and to add small areas required to improve safety within the extraction area.
4. A modification to the approved boundary of the overburden emplacement to remove areas no longer required to be disturbed for development.
5. A modification to the wording of conditions relating to biodiversity offsetting obligations to reflect biodiversity credits only, rather than the currently approved biodiversity offset strategy, and a modification to biodiversity offsetting requirements commensurate with the proposed reduction in disturbance.

In accordance with Section 4.55(2d) of the *Environmental Planning & Assessment Act 1979* (EP&A Act), in determining a modification application, DPE (the consent authority) must consider any submission made during the public exhibition period. The SoEE and modification application were placed on public exhibition between 14 March 2018 and 10 April 2018. A total of 10 submissions were received by DPE including the following.

- Eight State Government agency submissions.
- A submission prepared by Lithgow City Council that was later re-affirmed following a Council meeting on 23 April 2018.
- A submission prepared by Blue Mountains City Council

There were no submissions received by DPE from the general public.

A letter prepared by the landowners of the “Glenroy” property located adjacent to Jenolan Caves Road and dated 6 March 2018, was sent directly to Lithgow City Council. While not officially submitted to DPE for its consideration, the letter was submitted to DPE with the Lithgow City Council submission.

The following subsection provides a brief overview of additional consultation and assessment undertaken during and following the public exhibition period. This is followed by a response to the issues raised in the submissions with traffic and road noise issues given priority. The remaining issues are addressed in no particular order.

1.2 ADDITIONAL CONSULTATION AND ASSESSMENT

1.2.1 “Glenroy” property Landowners

In its request to Hy-Tec to prepare a *Response to Submissions* document, DPE requested an update regarding consultation with the landowners of the “Glenroy” property. Hy-Tec has continued to consult with the landowners of the “Glenroy” property, principally through the implementation of the commitments made to the landowners and described in the SoEE for the proposed modifications. The following engagement has occurred during and following the public exhibition period.

- Hy-Tec has instructed all transportation contractors exiting the Quarry that truck speed on the approach to and when travelling over the Glenroy Bridge must be limited to 40km/hr, where it is safe and reasonable to do so.
- Hy-Tec has instructed all transportation contractors that compression braking must be avoided, unless required for safety reasons.
- Hy-Tec has re-iterated to all transportation contractors the importance of adhering to the obligations required under the Hy-Tec Driver’s Code of Conduct.
- The Hy-Tec driver induction processes for the Quarry have been updated to reflect the Company-mandated speed limits and to reinforce the limit on use of compression braking.
- Noise monitoring at the “Glenroy” property was conducted between 4 April and 12 April 2018. The noise monitoring is discussed further in Section 1.2.7. Monitoring would continue at this location in accordance with the approved Noise Management Plan.
- A total of 50 native trees were planted at the “Glenroy” property on 23 April 2018. The tree species and locations were agreed with and directed by the landowner.
- Hy-Tec has arranged and funded the installation of noise shutters (scheduled to be installed Friday 8 June 2018) at the family residence, which would further mitigate noise impacts (in the range of 3-10 dB) from **all vehicles on Jenolan Caves Road**, not just the Quarry-related transportation activities.

Hy-Tec representatives met with the landowners on several occasions and it should be noted that the landowners have expressed their appreciation to Hy-Tec for the efforts taken to improve noise mitigation at the property to date and to manage transportation activities to minimise the noise generated by trucks crossing the Glenroy Bridge. The landowners have also expressed their appreciation of Hy-Tec’s efforts to contact external parties regarding noise impacts at the Glenroy Bridge including the following.

- Consultation with RMS regarding:
 - a potential reduction to the speed limit at the Glenroy Bridge;

- a potential reduction to advisory speed signs in the vicinity of the bridge; and
- replacement of signs warning against the use of exhaust breaks on the approach to the Glenroy Bridge **for all trucks** on Jenolan Caves Road.
- Consultation with other quarry operators that also use Jenolan Caves Road to request that truck drivers for these companies also consider reducing the speed of their trucks on the approach to and when travelling over the Glenroy Bridge.

Hy-Tec will continue to consult with the landowners of the “Glenroy” property throughout the life of the Quarry. While this will occur informally and involve blast event notifications, attending the property for noise monitoring (short term (attended) noise monitoring or long-term (unattended) monitoring) in accordance with an approved Noise Management Plan, and occasional phone calls, the landowners are welcome to discuss matters that concern them with Quarry personnel at any time and to make formal complaints that would be managed and reported in accordance with the Quarry’s complaints management system, where it is necessary. While all noise monitoring reports are and will be made available from the Hy-Tec website, Hy-Tec would be happy to provide these reports directly to the landowners of the “Glenroy” property should they wish to receive them.

1.2.2 Hartley District Progress Association

On 4 April 2018, representatives of Hy-Tec and R.W. Corkery & Co. attended a meeting of the Hartley District Progress Association (HDPA) and gave a brief presentation on the proposed modifications and the outcomes of the environmental assessments prepared for the *Statement of Environmental Effects* for the operation. The meeting was advertised to HDPA members inviting their attendance. The meeting gave the HDPA members an opportunity to ask questions regarding ongoing operations and the results of the environmental assessments.

The principal outcome of the meeting was general agreement that previously held Quarry Open Days were of benefit both to the community and Hy-Tec by giving the community an opportunity to experience the Quarry setting and to provide an overview of how Hy-Tec manages the operation to limit environmental impacts such as dust and noise. It was agreed that an Open Day would be held in the second half of 2018 (currently planned for Sunday, 14 October 2018) with the event to be advertised through the HDPA newsletter.

1.2.3 The State Member for Bathurst

Representatives of Hy-Tec met with the Hon. Paul Toole MP, State Member for Bathurst on 18 April 2018 to provide him with an update on the operation and proposed modifications. Mr Toole expressed his general support for the operation and the need for the proposed modifications. No specific issues were raised during the discussion.

1.2.4 Roads and Maritime Services

In its request to Hy-Tec to prepare a *Response to Submissions* document, DPE requested that Hy-Tec consult further with Roads and Maritime Services (RMS). Following initial discussions on 17 April 2018, a letter summarising the intended response to the issues raised by RMS in its

submission was sent to Mr Andrew McIntyre, Manager Land Use Assessment, Western Region on 2 May 2018. The response to the issues raised by RMS is described in Section 2 of this document.

On 24 May 2018, RMS provided a response to the letter of 2 May 2018 (provided as **Appendix 1**) which confirmed that RMS was withdrawing its request to upgrade the intersection of Jenolan Caves Road and the Quarry Access Road based on the anticipated volume of traffic using the right-hand turn at this intersection. The Hy-Tec response to the original request is provided in Section 2.1.1 for the information of DPE.

1.2.5 Lithgow City Council

In its request to Hy-Tec to prepare a *Response to Submissions* document, DPE also requested that Hy-Tec consult further with Lithgow City Council. A letter responding to the Lithgow City Council submission was provided to Mr Andrew Muir, Director Economic Development and Environment on 2 May 2018.

Hy-Tec was subsequently advised that the response to the issues raised by the Lithgow City Council would be considered at the Ordinary Meeting of the Lithgow City Council on 28 May 2018.

A further update concerning the ongoing consultation with the landowners of the “Glenroy” property, confirmation of mitigation measures that had been implemented including a report on the landscaping activities at the property (provided as **Appendix 2**) and the feedback from RMS described in Section 1.2.4 was provided to Mr Andrew Muir on 25 May 2018.

Representatives of Hy-Tec and R.W. Corkery & Co. attended the meeting on 28 May 2018 and presented the outcomes of the additional consultation and noise monitoring during the public forum. At the meeting, Lithgow City Council resolved that it still had concerns in relation to the extended transport hours, traffic movements and acoustic amenity in the surrounding area. A letter provided by Council as a result of this meeting and dated 29 May 2018 is provided as **Appendix 3**.

The concerns of Lithgow City Council are addressed throughout Section 2 of this document.

1.2.6 Blue Mountains City Council

In its request to Hy-Tec to prepare a *Response to Submissions* document, DPE also requested that Hy-Tec consult further with Blue Mountains City Council. Mr Glenn Sherlock, Program Leader Transport & Infrastructure Planning with Blue Mountains City Council (BMCC) was contacted on 26 April 2018 to discuss the Blue Mountains City Council submission.

Mr Sherlock was generally satisfied that Hy-Tec remained a partner to the Drive Neighbourly Agreement and that the majority of issues raised in the Blue Mountains City Council submission would be addressed through the management of driver conduct and the complaints procedures available to residents of the Blue Mountains to report poor driver behaviour. Mr Sherlock acknowledged the benefit of knowing that Hy-Tec would investigate complaints and where a persistent issue is identified, to resolve the issue. It was also acknowledged that the

proposed modifications would not directly contribute to changes to visual amenity for Blue Mountains residents, however it was agreed that Hy-Tec would be happy to discuss a contribution to works to replant trees where RMS road works and safety upgrades require tree clearing.

1.2.7 Noise Monitoring

As noted above, short-term (attended) noise monitoring was conducted at the “Glenroy” property on 3 and 4 April 2018 (see **Appendix 4**) and long-term (unattended) noise monitoring was conducted between 4 April and 12 April 2018 (see **Appendix 5**). The results of the noise monitoring indicate the following.

- Hy-Tec continues to remain compliant with operational noise criteria at the “Glenroy” property. These criteria would not change under the proposed modifications. The assessment of potential changes to noise levels (see Appendix 7 of the SoEE - MAC, 2018) predicted that under the proposed modifications, operational noise levels during worst case scenarios and road traffic noise levels during daytime (7:00am to 10:00pm) and night time (10:00pm to 7:00am) periods would continue to be compliant with the relevant criteria.
- During the short-term (attended) monitoring that was attended by a Muller Acoustic Consulting technician, it was observed that heavy vehicles leaving the Quarry were slowing down at the approach to Glenroy Bridge. This has also been confirmed by the landowners of the “Glenroy” property (see Section 1.2.1).
- Monitoring at a location approximately 35m from the Glenroy Bridge on the “Glenroy” property indicates that cumulative road noise levels are compliant with the assessment criteria for arterial roads provided in the *NSW Road Noise Policy* (DECCW, 2011). Therefore, as the cumulative road noise at the family residence on this property would be lower still, it is inferred that road traffic noise at the family residence would also be compliant.
- Review of average and maximum noise levels generated by Quarry-related product transportation and non-project related traffic indicates that Quarry-related vehicles are generating less noise than other vehicles at the monitoring location.
 - LA_{MAX} noise levels recorded at a location 35m from the road indicate Quarry-related heavy vehicles are generating maximum noise levels between 74dB(A) and 80dB(A) and non-Quarry vehicles between 81dB(A) and 83dB(A).
 - $LA_{eq15mins}$ noise levels recorded at a location 35m from the road indicate Quarry-related heavy vehicles are generating noise at levels between 63dB(A) and 70dB(A) and non-Quarry vehicles between 68dB(A) and 75dB(A).

This is considered to be due to the reduction in speed limit to 40km/hr for Quarry-related heavy vehicles but is also a factor of the low proportion of Quarry-related vehicles making up total traffic levels.

- Muller Acoustic Consulting has inferred that short-term maximum noise levels (i.e. those likely to cause sleep disturbance) at the family residence would on average be approximately 55-56dB(A). It is noted that the family residence is approximately 185m from Jenolan Caves Road and the Glenroy Bridge. This

includes all currently implemented noise mitigation. These noise levels would be further reduced by 3-10dB(A) once the noise shutters are installed (currently planned for 8 June 2018).

- Maximum noise levels at the rental residences at the “Glenroy” property remains high (between 74dB(A) and 83dB(A)). This indicates that regardless of the outcome of the modification application, any traffic on Jenolan Caves Road may cause sleep disturbance at these residences. As RMS does not currently support a speed limit change for all vehicles at the Glenroy Bridge and the heavy vehicles transporting Quarry materials are generating less noise than other vehicles on the road, it is therefore concluded that all reasonable and feasible mitigation has been implemented for these properties.

Hy-Tec has committed to the landowners of the “Glenroy” property to undertake noise monitoring (long-term (unattended) monitoring and/or short-term (attended) monitoring) at the property in accordance with an approved Noise Management Plan.

2. RESPONSES TO ISSUES RAISED

2.1 TRAFFIC AND TRANSPORTATION

2.1.1 Intersection / Road Conditions and Maintenance

Representative Comment(s)

The Department requests that Hy-Tec ... provides discussion on:

- *the upgrade of the Quarry Road/ Jenolan Caves Road intersection recommended by RMS;*
-
-

Roads and Maritime provides the following recommendations for the Department’s consideration:

- *Prior to the commencement of Modification 1, a Channelised Right turn lane Short [CHR(s)] is to be provided in Jenolan Caves Road at its intersection with the site access.*

Roads and Maritime Services

Response

As described in Section 1.2.4, a version of this response was provided to the RMS on 2 May 2018 and on 24 May 2018 RMS provided a response (provided as **Appendix 1**) which confirmed that RMS was withdrawing its request to upgrade the intersection of Jenolan Caves Road and the Quarry Access Road. The following provides a summary of the response provided to RMS on 2 May 2018 for the benefit of DPE.

Additional consultation with RMS on 17 April 2018 identified the following in addition to the RMS submission.

- An auxiliary right turn (AUR) treatment (such as that currently at the intersection of Jenolan Caves Road and the Quarry Access Road) is no longer the safety standard applied by RMS.

- The RMS request is principally that the existing AUR intersection treatment should meet current design standards, not that the intersection is unsafe or that the traffic levels proposed for the modification require an upgrade to this intersection.
- The road has previously been widened for the AUR treatment at this intersection and any upgrade would likely involve only line marking works.

Hy-Tec sought additional feedback from Mr Ken Hollyoak of The Transport Planning Partnership (TTPP) regarding the RMS request to upgrade the line marking at the intersection of Jenolan Caves Road and the Quarry Access Road. TTPP has provided a formal letter in response which has been provided as **Appendix 6**.

In summary, TTPP considers that the requested upgrade to a Channelised Right turn lane Short (CHR(S)) is not warranted due to the following reasons.

- It is very rare that vehicles transporting Quarry products use Jenolan Caves Road to the south of the Quarry Access Road. The Road Traffic Impact Assessment that accompanied the SoEE assessed the route for product despatch from the Quarry and considered traffic routes towards Sydney and Lithgow. That is, a right turn at the Great Western Highway (95% of traffic) and a left turn at the Great Western Highway (remaining 5% of traffic). Jenolan Caves Road to the south of the Quarry Access Road is mostly used by light vehicles (locally resident staff arriving to and leaving from work) and the occasional heavy vehicle.
- As Jenolan Caves Road to the south of the Quarry is not a principal transport route, the traffic volume turning right onto the Quarry Access Road from Jenolan Caves Road is too low to require a CHR(S). Hy-Tec accepts that on the occasion when heavy vehicles deliver product to destinations requiring them to travel south on Jenolan Caves Road, they will need to safely return to the Quarry, however it is considered that the existing intersection treatment permits safe access to the Quarry and maintains safety for through traffic, i.e. without the need for line marking.
- There have been no reported crashes within 200m of the Quarry Access Road based on the five-year data period between 2012 and 2016 and no complaints from the local community regarding the intersection.
- TTPP also notes that the requirements for intersection upgrade described in the Austroads Guide (Section C6.3) refer to the requirements for construction of new intersections or where existing intersections are being upgraded. This is not the case for the proposed modifications as the proposed changes to traffic volumes do not warrant an upgrade to this intersection.

The TTPP correspondence in **Appendix 6** provides a review of the Austroads turn treatment warrants and assesses requirements based on predicted traffic on Jenolan Caves Road in 2035, assuming a nominal value of 10 Quarry-related vehicles turning right per hour. The existing right turn treatment is more than sufficient for this intersection and an upgrade to the CHR(S) should only be necessary should traffic volumes increase to approximately 60 vehicles per hour (see Figure 2 of **Appendix 6**).

Should there be a significant change to traffic volumes (which would require a further modification application) or an upgrade to the intersection, Hy-Tec would be happy to discuss the necessary intersection treatment to satisfy RMS safety standards. However, for the transport routes and traffic volumes predicted and assessed for the proposed modifications, it does not follow that the existing intersection treatment is a safety risk and therefore does not warrant upgrade.

Representative Comment(s)

The Department requests that Hy-Tec ... provides discussion on:

- *future maintenance costs; and*
- *intersection monitoring post 2022 at the Jenolan Caves Road/ Great Western Highway Intersection and the potential for any further intersection upgrades at this location.*

Department of Planning and Environment

Response

The maintenance of State roads is funded by the NSW State Government which draws funds from truck registrations and fuel levies. Given the trucks delivering Quarry products for Hy-Tec use predominantly State roads (Jenolan Caves Road and then the Great Western Highway), road maintenance would continue to be funded by the NSW State Government. It should also be noted that Jenolan Caves Road and the Great Western Highway are approved for heavy vehicle (sized up to 19m B-Double) transportation activities 24hrs each day over the 7 days of each week.

Traffic surveys undertaken for assessment of the proposed modifications between Thursday, 16 February 2017 and Wednesday, 1 March 2017 (see Appendix 6 of the SoEE (TTPP, 2017)) identified the following relevant information.

- Average daily weekday traffic on Jenolan Caves Road was 1 490 vehicles.
- 442 of these vehicles (29.7%) were classed as heavy vehicles.
- During the survey period, the Austen Quarry generated 260 weekday average truck movements or 17.5% of total traffic on Jenolan Caves Road in the vicinity of the Quarry.
- The proposed daily average of 200 laden loads (400 truck movements) would constitute approximately 26.8% of total traffic. The currently approved daily average traffic levels of 150 laden loads (300 truck movements) is 20.1%.
- Should the proposed maximum traffic levels of 300 laden loads (600 truck movements) be reached, Hy-Tec would contribute 40.2% of total traffic on Jenolan Caves Road in the vicinity of the Quarry. The maximum level is expected to occur only on approximately five days of every year. The currently approved daily maximum level of 250 laden loads (500 truck movements) contributes 33.6% of total vehicle movements.

In addition, the following data collected by the RMS at Mt Victoria is relevant to vehicles on the Great Western Highway.

- Annual average daily traffic (AADT) on the Great Western Highway at Mount Victoria in 2017 was 11 337 vehicles.
- The heavy vehicle composition of the 2017 AADT at Mount Victoria was approximately 1 928 vehicles (17 percent).
- The proposed daily average of 200 laden loads (400 truck movements) would constitute approximately 3.5% of total traffic on the Great Western Highway at Mount Victoria.

It is clear from the above data that the contribution of Hy-Tec trucks to weekday traffic levels on Jenolan Caves Road and the Great Western Highway is, on average, a relatively limited proportion of the total volume of traffic on these roads. Hy-Tec's maximum daily contribution to total traffic (maximum of 300 loads in any one day) would be approximately 40.2% on Jenolan Caves Road, an increase from the currently approved maximum level of 33.6% of total traffic (or change of 6.6% of total traffic at maximum production). It is anticipated that these traffic levels would only be recorded on approximately five days each year.

As described in Section 5.2.5 of the SoEE, from 2022, Hy-Tec would commence a program of intersection performance monitoring at the intersection of Jenolan Caves Road and the Great Western Highway. The monitoring program would occur at two-yearly intervals and involve:

- AM and PM peak period traffic movement surveys;
- analysis of Quarry truck despatch data and assessment of the level of service for the both the AM and PM peak periods; and
- reporting on the results of this monitoring in each annual review for the Quarry.

If requested, this data would be provided to RMS to assist with planning future upgrades at the intersection. Should a substantiated complaint or written request from RMS be received prior to the commencement of monitoring of the intersection of the Great Western Highway and Jenolan Caves Road, an independent assessment of the level of service at this intersection would be commissioned.

Representative Comment(s)

Roads and Maritime provides the following recommendations for the Department's consideration.

- *Safe Intersection Sight Distance in accordance with Part 4A of Austroads Guide to Road Design is to be provided and maintained at the vehicular access intersection with Jenolan Caves Road.*

Roads and Maritime Services

Response

The safe intersection sight distance for vehicles travelling at 80km/hr described in *Part 4A of Austroads Guide to Road Design* (RMS, 2010) is 181m based on a reaction time of 2.0s (see Table 3.2 of RMS, 2010). As stated in Section 5.2.2.5 of the SoEE, as well as Section 3.1 of the

Road Transport Assessment (TTPP, 2018), it is estimated that for vehicles entering Jenolan Caves Road from the Quarry Access Road, the available sight distance is greater than 200m to the north and south, which satisfies the requirements of RMS.

2.1.2 Driver Conduct

Representative Comment(s)

Roads and Maritime provides the following recommendations for the Department's consideration.

- *A driver code of conduct and management plan is to be developed to manage the risks associated with staff commuting by road to and from the site. The management plan is to specifically address the risks of driver fatigue and poor driver behaviour and include strategies to mitigate those risks to promote safe driver commuting practices.*

Roads and Maritime Services

Response

The existing Traffic Management Plan would be updated to reflect the proposed modifications and would include a copy of the Driver's Code of Conduct for the operation. As described in Section 5.2.5 of the SoEE, the Driver's Code of Conduct covers requirements of Hy-Tec contracted drivers relating to:

- compliance with all road rules and regulations and the approved operating hours of the Quarry;
- management of the truck and load such as ensuring loads are covered and truck bodies are cleaned of debris;
- behaviour while driving and consideration of residents adjacent to roads;
- reducing, where safe, noisy driving practices such as use of exhaust brakes;
- compliance with the Hy-Tec Driver Vehicle Check standard; and
- queueing at the entrance to the Quarry (not permitted).

The Hy-Tec "Chain of Responsibility: Driver – Vehicle Checks" standard applies at all Hy-Tec quarries and involves all relevant personnel from managers through to drivers. Any person who is involved in consigning, packing, loading, despatching and/or driving any of the Quarry products is required to undertake their tasks in accordance with the standard. An important component of the standard is a Driver Fatigue Manual that manages potential fatigue for all operators and contractors.

It is also noted that the National Heavy Vehicle Regulator administers the Heavy Vehicle National Law that includes *Heavy Vehicle (Fatigue Management) National Regulation*. Under the regulation, the following rest and work options are available.

- Standard Hours – the maximum amount of work and minimum amount of rest possible that can be performed safely without additional safety countermeasures.

- Basic Fatigue Management – more flexible work and rest hours, allowing for (among other things) work of up to 14 hours in a 24-hour period. Drivers must be accredited with the National Heavy Vehicle Regulator to operate under these conditions.
- Advanced Fatigue Management – provides for a genuine risk management approach to managing heavy vehicle driver fatigue. Drivers must also be accredited with the National Heavy Vehicle Regulator to operate under these conditions.

All Hy-Tec transportation operations are managed in accordance with these rest and work options, which have been incorporated into the Hy-Tec “Chain of Responsibility: Driver – Vehicle Checks” standard. Hy-Tec takes driver fatigue very seriously and provides crib rooms with ablution facilities, tea, coffee and water for all drivers to encourage rest breaks and the management of fatigue. Efficient transport practices are a vital component of operations at the Austen Quarry and this relies heavily on the capacities of transport contractors.

Hy-Tec also takes driver conduct very seriously, as for the majority of the community the transport activities of the Quarry operation is the component that is the most publicly visible. All drivers are required to sign and abide by the site-specific driver induction and the Driver’s Code of Conduct. It should also be noted that under the requirements of the Driver’s Code of Conduct, failure to comply with the Code of Conduct, Chain of Responsibility: Driver – Vehicle Checks standard or the requirements of the National Heavy Vehicle Regulator may result in disciplinary action. Hy-Tec does not hesitate to ban drivers from the Quarry should they fail to meet the necessary requirements.

Representative Comment(s)

An objector to the previous modification had complaints that vehicles were arriving at the site an hour before opening and queuing at the quarry entrance. This has impacts on the surrounding rural/tourism land uses.

Lithgow City Council

Response

It is noted that this objection was raised a number of years ago and the issue has not been raised in any subsequent applications or in any complaints. Hy-Tec addressed the objection at the time it was made. It should be noted that as a direct result of this objection, Hy-Tec updated its Driver’s Code of Conduct (which is signed by all drivers) to restrict all drivers from queuing at the Quarry entrance gate (on Jenolan Caves Road). Failure to comply with the Driver’s Code of Conduct can result in disciplinary actions and if the issue is not resolved may result in a driver being banned from the Quarry.

To further limit the possibility of queueing on Jenolan Caves Road, a Hy-Tec employee opens the gates to the Quarry approximately half an hour prior to the commencement of operations. Hy-Tec has made an area available for trucks to park and wait within the Quarry before the weighbridge is open. The SAP software used by Hy-Tec to manage product despatch does not permit drivers to receive a ticket for product loading until the designated time for commencement (currently 5:00am) and will not permit trucks to leave after closing (currently 10:00pm Monday to Friday and 3:00pm Saturday). This system ensures that Hy-Tec maintains its commitments regarding operating and transport hours, while the designated parking area avoids the need for drivers to queue at the Quarry entrance gate on Jenolan Caves Road.

Representative Comment(s)

Drive Neighbourly Agreement – ‘Respect...Our Code on Blue Mountains Roads’ ...

Hy Tec is already a partner in this Agreement and their continuing support for the delivery of the “Respect...Our Code on Blue Mountains Roads” Heavy Vehicle Drive Neighbourly Agreement should be reiterated.

Blue Mountains City Council

Response

Hy-Tec acknowledges the comment from Blue Mountains City Council and reiterates its involvement in the Drive Neighbourly Agreement. Hy-Tec considers that its operations contribute to the Driver Neighbourly Agreement through the enforcement of the Driver’s Code of Conduct that includes but is not limited to the following actions.

- Showing courtesy to all road users at all times.
- Complying with all road rules and regulations regarding speed, load limits and driving hours.
- Ensuring that all loads are correctly secured and covered before entering a public road.
- Ensuring all laden vehicles have been cleaned off of any quarry material or other materials that may fall on the road before leaving the site.
- Limiting the use of the exhaust brakes and other noisy driving practices in built-up areas.
- Taking all reasonable measures to ensure laden trucks have appropriate signage, including a contact phone number, so they can be easily identified by motorists, pedestrians or residents.
- Avoiding use of local roads unless it is impractical or unsafe to do so and as a preference to use State and regional roads for the selection of a transportation route once they have exited the Quarry.

Hy-Tec would be happy to consult with Blue Mountains City Council concerning the ongoing management of traffic operations across the Blue Mountains and supports all activities that would promote road safety for all users.

2.1.3 Road Noise at Glenroy Bridge and the “Glenroy” property

Representative Comment(s)

The Department requests that Hy-Tec ... provides discussion on:

- *any potential impacts of Hy-Tec and other quarry operators reducing speeds to 40km/hr on the approach to the Glenroy Bridge;*
- *installation of advisory braking and speed limit signage on the approaches to the Glenroy Bridge;*

Department of Planning and Environment

Please not (sic) that Roads and Maritime does not support the proposal to change the speed zone on Jenolan Caves Road to 40km/h on approach to and over Glenroy Bridge.

Roads and Maritime Services

Response

The RMS position concerning the proposed 40km/h speed limit at the approach to and when travelling over the Glenroy Bridge was confirmed in additional consultation with the RMS on 17 April 2018. In a telephone discussion, an officer of RMS confirmed that the Department does not support the proposed change to the speed zone for the following reasons.

- Speed zones are established using the *NSW Speed Zoning Guidelines* and the proposed change to 40km/hr would not be consistent with the guidelines.
- It would be difficult to manage compliance given it is a short section of a much longer road.

Nonetheless, RMS did confirm that the Department did not object to Hy-Tec directing transport contractors regarding the speed of trucks at this location. Hy-Tec does not foresee any impediment to the ongoing implementation of the reduced speed limit except in situations where the driver deems it not safe or reasonable to do so.

Hy-Tec maintains that the sign-posted speed of 80km/hr is a risk to safety, generates noise and potentially impacts the bridge structure. A letter has been sent to RMS formally requesting that the Department consider reducing the speed limit to 40km/hr for trucks and buses at the approach to and when travelling over the Glenroy Bridge. Hy-Tec has also sought the support of the landowners of the “Glenroy” property and Lithgow City Council on this matter. Regardless of the outcome of the RMS review of the speed limit for this section of Jenolan Caves Road, Hy-Tec considers that an advisory speed limit of 40km/hr for all trucks and buses should be implemented as a minimum standard.

Based on the feedback from the landowners at the “Glenroy” property, there are no safety or other concerns that would result from a reduced speed limit at this location. Given the winding nature of the road at this location, it is difficult to see how it is possible and safe to maintain an 80km/hr speed limit here.

Representative Comment(s)

Noise would be required to be managed by all drivers and the quarry operators. There is no certainty of noise avoidance or implications for any breaches of any traffic management plans.

Due to the above concerns, Council is unable to support the extension of operating hours for the loading, unloading of trucks and vehicle movements.

Lithgow City Council

It is recommended that regular noise monitoring is recommended to be undertaken at the Glenroy Bridge and reported in Hy-Tecs Annual Review.

Lithgow City Council

Response

Hy-Tec acknowledges the comments from Lithgow City Council, however re-iterates the response from Section 2.1.1 that Jenolan Caves Road is a State road approved for 24-hour use over 7 days each week by heavy vehicles. At the proposed average daily traffic levels (200 laden trucks per day), the Hy-Tec contribution to total midweek traffic on Jenolan Caves Road would be approximately 26.8% of total traffic (based on traffic levels recorded on Jenolan Caves Road in February/March 2017).

The comment that there is no certainty of noise avoidance is correct, mostly because the road is approved for heavy vehicle transportation activities 24hrs each day over 7 days each week. The road is an important link to the Great Western Highway and used by several other companies for transportation of quarry and timber products as well as tourist buses to Jenolan Caves and light vehicles traffic to access Oberon and other villages. The majority of these other road users are not limited in the hours that they may use Jenolan Caves Road.

The comments from Council fail to acknowledge the significant mitigation measures that have already been implemented by Hy-Tec in response to consultation with the landowners of the “Glenroy” property. It is also noted that the landowners of the “Glenroy” property have indicated their satisfaction with the measures that have now been put in place. Hy-Tec commissioned long-term (unattended) noise monitoring over eight days at the property with the results indicating that the road noise assessment criteria are satisfied at this location and that the implementation of a reduced speed at this location for heavy vehicles leaving the Quarry has reduced noise levels at this location when compared to other vehicles on that section of the road (see Section 3 of **Appendix 5**).

Hy-Tec considers that the mitigation measures implemented and proposed for the “Glenroy” property will further reduce noise levels generated by vehicles crossing the bridge and also provide mitigation to reduce the noise experienced at the residence (the family residence is some 185m from Jenolan Caves Road and the Glenroy Bridge), acknowledging that vehicles from the Quarry are not the only users of the road. These measures are designed to mitigate the potential impact of noise generated by **all traffic** on Glenroy Bridge, not just that generated by Quarry-related transport activities.

During consultation with Lithgow City Council regarding its submission, Lithgow City Council expressed concerns about setting a precedent if operating hours are permitted to commence early in the morning. However, Hy-Tec considers that each operation and application should be considered on its merits. The principal transport route includes travel on Jenolan Caves Road which is a State-managed road that has a long-standing approval for heavy vehicle use 24 hours a day over 7 days a week and then intersects with the Great Western Highway which is a major arterial connection for Western NSW, the Blue Mountains and Sydney. The concerns expressed by Lithgow City Council are based on the objections of the landowners of one property and Hy-Tec has been consulting with and will have implemented all reasonable and feasible mitigation for this landowner. Monitoring has confirmed that the measures implemented by Hy-Tec have reduced noise generated by Quarry-related transportation activities and will mitigate the noise levels experienced at the family residence for noise generated by all vehicles on Jenolan Caves Road. It is noted that the EPA did not express any concerns for impacts to noise, air quality or water resources outside of the Quarry boundary.

The potential impact of the proposed change to operating hours is principally that Quarry-related heavy vehicles would commence using Jenolan Cave Road to travel to the Quarry from 3:30am and would be leaving the Quarry from 4:00am. That is, the principal change from the existing approved operations is that noise generated by these activities would be occurring an hour earlier. The assessment of road noise impacts concluded that the change in road noise levels generated would be negligible (<0.1dB(A)) indicating that road traffic noise levels would be largely consistent with the current noise levels. The recent noise monitoring indicates that the mitigation measures already implemented have reduced the noise levels generated by Quarry-related transport activities to levels below other traffic on the road. Once the proposed noise shutters are installed, these would provide further improvements (in the order of 3dB to 10dB) to the noise levels experienced at the “Glenroy” property from noise generated by all road users.

Hy-Tec considers that the proposed modification to operating hours for product loading and despatch are acceptable, with justification of the modification as follows.

- The road traffic noise impact assessment for the proposed modifications concluded that the change in road traffic noise resulting from the change to operating hours and traffic levels would be negligible (<0.1dB(A)) between the Quarry entrance and the Great Western Highway.
- Jenolan Caves Road is a State road approved for 24-hour heavy vehicle use and other heavy vehicle operators are currently using Jenolan Caves Road on a 24-hour basis. Hy-Tec’s operations are consistent with this classification and Quarry vehicles are not the only vehicles using the road and crossing the Glenroy Bridge. Based on the results of traffic surveys undertaken in February/March 2017, heavy vehicles from the Quarry are currently approximately 17.5% of all midweek traffic on Jenolan Caves Road.
- The EPA submission notes that the Authority is satisfied that there would be no significant impacts on noise beyond the Site boundary.
- The RMS has recently resurfaced the Glenroy Bridge (February 2018) as a component of ongoing maintenance of Jenolan Caves Road. This has improved noise impacts at the “Glenroy” property from vehicles travelling across the Glenroy Bridge. In addition, signs warning heavy vehicles against the use of compression braking have been replaced.
- Hy-Tec has directed all Quarry-related heavy vehicles to implement a 40km/hr speed limit at the approach to and when travelling over the Glenroy Bridge, where it is safe and reasonable to do so. This measure is intended to reduce the short-term noise levels that result from vehicles crossing the bridge and the success of this measure has been confirmed through noise monitoring (Section 1.2.7). There are also safety benefits from this measure that are important to recognise.
- The recommended speed limit for Quarry-related trucks at the approach to and when travelling over the Glenroy Bridge is implemented through the Quarry site-specific driver induction that all contracted drivers are required to sign and abide by. If drivers fail to meet the requirements they face disciplinary action and may be banned from the site.

- Hy-Tec funded an upgrade to approaches to the northern and southern sides of the Glenroy Bridge in late 2012 to remove general depressions between the bridge deck and its approaches that were contributing to impact noise as vehicles entered onto and departed from the bridge.
- Hy-Tec has worked in conjunction with the landowners of the “Glenroy” property to plant 50 trees that, once grown, would act as a tree screen and further reduce noise levels experienced at the “Glenroy” property.
- Hy-Tec has arranged and funded the installation of noise shutters (scheduled to be installed Friday 8 June 2018) at the family residence which would further mitigate noise impacts (in the range of 3-10 dB) from **all vehicles on Jenolan Caves Road**, not just the Quarry-related vehicles.
- Hy-Tec has recently commissioned a campaign of noise monitoring at the “Glenroy” property that indicated that noise impacts from Quarry-related heavy vehicles is less than other vehicles on the road, further confirming the success of Hy-Tec’s implemented mitigation measures. A summary of the noise monitoring results is provided in Section 1.2.7.
- Noise monitoring at the “Glenroy” property would continue in accordance with the approved Noise Management Plan.

In summary, it has been demonstrated that heavy vehicles from the Quarry make up only a limited proportion of all vehicles using Jenolan Caves Road and that the noise generated by other vehicles approaching and travelling over the Glenroy Bridge is higher than that generated by the Quarry-related heavy vehicles using the bridge. Other vehicles (both heavy and light) will continue to cross the Glenroy Bridge during the night (i.e. outside of the Austen Quarry operating hours) as it is a State-managed arterial road and is approved for heavy vehicle use, 24 hours a day, 7 days per week. The ongoing mitigation measures implemented by Hy-Tec will reduce noise generated by heavy vehicles from the Quarry and also reduce the noise experienced at the family residence that is generated by all vehicles (both heavy and light) on the road. These mitigation measures will be effective 24 hours a day over 7 days a week. Monitoring of road traffic noise levels at this location will be undertaken in accordance with the Quarry’s Noise Management Plan.

Finally, it is considered that the benefits of commencing truck despatch activities from 4:00am outweigh the potential impacts because of the following.

- Truck journeys commencing at 4:00am are likely to be up to one and a half hours less than when they commence at 5:00am and provide additional journey benefits throughout the average working day. This has benefits for traffic congestion generally, less stressful driving conditions, more convenient time between breaks for drivers, reduced diesel consumption and therefore less diesel fumes and carbon emissions and improved cost-efficiency of truck maintenance.
- All transport activities are contracted externally by Hy-Tec and as a large percentage of the contractors and drivers are living and operating their businesses from within the Lithgow City local government area, commencing product despatch earlier in the day and avoiding traffic delays where possible, will allow the operators to more effectively run their businesses and to maximise the number of journeys during less busy periods.

- Increasing the available hours for product despatch activities by an additional one hour would provide greater flexibility to Hy-Tec’s operations and its contractors, while allowing for better planning for product despatch activities.

Representative Comment(s)

Letter dated 6 March 2018.

Rosemary Barber – “Glenroy” property (included in the submission of Lithgow City Council)

Response

It is noted that the landowners of the “Glenroy” property provided a letter to the Hon. Mr Paul Toole, MP, State member for Bathurst, dated 6 March 2018 that was included with the submission provided by Lithgow City Council. In this letter, the landowners raised the following concerns regarding the proposed modifications.

- The area is prime beef producing country, a beautiful bird area and attractive to tourists, visitors and residents.
- Other quarries in Lithgow do not start operating until 7:00am.
- Jenolan Caves Road was not built for heavy truck use.
- Glenroy Bridge was not built for heavy truck use.
- Potential impacts to the Glenroy camping area.

It should be noted that these concerns were not raised during consultation with Hy-Tec representatives who had met with the landowners on 3 March 2018 (three days earlier). A brief response to these issues is provided below.

- The existing approved operation of the Austen Quarry does not impact the ability of landowners in the Lithgow City local government area to use their properties for agricultural purposes. This would not change under the proposed modifications as no additional land is required for the proposed ongoing activities.
- The proposed modifications represent a net reduction in vegetation clearing and result in negligible change to road noise. Therefore, it is likely that impacts to birdlife in the local area would be improved under the proposed modifications and the appreciation of birdlife for local residents would not change.
- The proposed modification would not change the attractiveness of the local area to tourists, visitors and residents as there would be negligible changes to air quality, noise, water resources or visual amenity. This was confirmed in the submission from the EPA that notes the following

The EPA has reviewed the SEE for the proposed modifications and considers that the proposed expansion at the premises will not lead to any significant impacts on air, water or noise beyond the site boundary.

- Hy-Tec is not aware of the other quarries in the Lithgow area that limit their operating hours as described in the letter. However, it is important to note that the limits placed on any operation should be specific and relevant to that operation. The submission from the Division of Resources and Geoscience notes the

significance and strategic location of resources at the Austen Quarry in relation to Sydney. The intention of the modification is to improve the management of transportation activities and to maintain the efficient supply of aggregates to the Sydney market. Commencing product despatch activities from 4:00am would improve the management of transportation operations, reduction in fuel use and hence reduced carbon emissions, while also improving opportunities for employment of local transport contractors. The SoEE assessed potential changes to road traffic noise and sleep disturbance, incorporating the earlier starting time, and concluded that the change in road traffic noise levels generated by Quarry-related trucks under the proposed modifications would be negligible (<0.1dB(A)) between the Quarry entrance and the Great Western Highway for both the night time (10:00pm to 7:00am) and daytime (7:00am to 10:00pm) periods. It is important that the operating limits imposed on the Austen Quarry are relevant to that operation and the assessed environmental impacts and are not detrimental when compared to other Companies that are currently using Jenolan Caves Road on a 24/7 basis for their road operations.

- As noted previously, Jenolan Caves Road (including the Glenroy Bridge) is a State road that is approved for 24-hour use by heavy vehicles such as those used for the Austen Quarry. Hy-Tec has been operating at Austen Quarry for over 13 years with minimal impact to the road surface. Regardless, as a State-managed road, the maintenance of Jenolan Caves Road and the Glenroy Bridge are the responsibility of RMS. It is noted that RMS resurfaced the approaches and crossing of the Glenroy Bridge on 8 February 2018 as well as other locations along Jenolan Caves Road as part of its ongoing maintenance program for the road.
- The landowners expressed their concern regarding potential impacts for users of the Glenroy camping ground. However, it should be noted that Hy-Tec is not the only road user in this location and that trucks and passenger vehicles cross the bridge throughout the night (vehicles from the Quarry are limited to the current approved operating hours). Although it is not an official survey of visitor impressions of the tourist facility, a review of Trip Advisor® review for the “Glenroy” property does not indicate that any visitors have complained of road noise impacts from heavy vehicles or any traffic.

The mitigation measures agreed with the landowners, most of which have already been implemented, would further mitigate noise impacts for campers in this location. As described previously, a recent noise monitoring campaign has demonstrated that the noise generated by Quarry-related product delivery during the currently approved transport hours is generally lower than that generated by other vehicles on the road, principally due to the recently implemented direction from Quarry management to reduce the speed of Quarry-related heavy vehicles at this location and the fact that there are fewer Quarry vehicles than other traffic. In addition, it was predicted that the change in road traffic noise levels resulting from the proposed modifications would be negligible (<0.1dB(A)) for both daytime and night time periods based on trucks travelling at the currently approved speed limit (80km/hr) along this section of Jenolan Caves Road.

2.1.4 School Bus

Representative Comment(s)

Roads and Maritime provides the following recommendations for the Department's consideration.

- *Haulage operations and shift changeover times coinciding with local student school bus pick up/drop off times are to be avoided.*

Roads and Maritime Services

Response

As described in Section 5.2.6.3 of the SoEE, Hy-Tec actively manages product despatch times to avoid peak traffic periods, where possible. The site-specific driver induction procedures and the Driver's Code of Conduct are used to direct and manage driver behaviour with disciplinary procedures ensuring that drivers continue to comply with the requirements of the code. Management of potential conflict between school buses and Quarry-related vehicles in this manner is considered acceptable and would continue under the proposed modifications. It should be noted that Hy-Tec has not received any complaints from the local community regarding conflicts between vehicles leaving the Quarry and school buses.

2.1.5 Rail Opportunities

Representative Comment(s)

All due consideration should be given to the transportation of materials by rail.

Blue Mountains City Council

Response

The use of rail to transport Quarry products was considered during preparation of the EIS for the Stage 2 Extension Project and continues to be of little benefit for the following reasons.

- Quarry products would have to be delivered by road to a rail siding, possibly at Lithgow, Lidsdale or Mount Victoria. This would negate the benefits of using rail and require regular access to local roads.
- Hy-Tec does not have access to a rail facility within the Sydney metropolitan area capable of unloading the aggregate products and transferring the products to trucks for distribution. The cost of acquiring and constructing such a facility would be prohibitive.
- Hy-Tec's concrete batching plants are strategically located throughout Sydney as the locations of its customers are not static. These destinations for the products of the Quarry are not near rail sidings and would require further transport by road.

In summary, rail transportation through the Blue Mountains would require road transport to the rail siding on the western side of the mountains and further road transport from the rail siding to a final destination in Sydney, requiring a three-part journey. Due to the logistical inefficiency of rail transport and likely prohibitive cost, road transportation is the only feasible alternative for transportation of Quarry products from the Quarry.

2.1.6 Cyclist Road Use

Representative Comment(s)

There is no mention of the impact on cyclists along the routes. Cycling has a strong tourism and transport focus with sections of the highway between the quarry and Katoomba in particular being hazardous with no shoulder or dedicated cycle lane provided.

Blue Mountains City Council

Response

Section 5.2.6.3 of the SoEE noted that pedestrians and cyclists are likely to benefit from the completed and planned upgrade work along the Great Western Highway, that includes elements such as over or underpass crossings, off-road shared paths and widened road shoulders.

As noted in Section 2.1.1, the contribution of trucks from the Austen Quarry on traffic levels on the Great Western Highway would be approximately 3.5% of total vehicles based on the AADT measured by RMS at Mount Victoria. Given that Hy-Tec's contribution to traffic on one of the most important motorways in NSW would remain minor, it is not considered likely that the proposed modifications would significantly increase potential conflict between heavy vehicles and cyclists on the Great Western Highway.

2.1.7 Tourist Traffic

Representative Comment(s)

Also of concern is the interaction of truck traffic with tourism traffic on the GWH. There is considerable collateral around this tourism resource.

Blue Mountains City Council

Response

The Great Western Highway is a major freight, tourist and commercial link between Sydney, the Blue Mountains and the central west of NSW. The continued upgrade works on the highway and the involvement of the Federal government in funding these works attests to the importance of this highway for a variety of users and its significance to the NSW and Australian economy. Hy-Tec understands that the highway upgrades will continue between Katoomba and Lithgow in the near future and are likely to be adapted at the time of construction as traffic levels and the use of the highways changes to meet the needs of the State.

As noted in Section 2.1.1, the average contribution of trucks from the Austen Quarry on the Great Western Highway would increase from approximately 2.3% of total vehicles to 3.5% of total vehicles based on the AADT measured by RMS at Mount Victoria in 2017 and the existing contribution measured during traffic surveys between Thursday 16 February 2017 and Wednesday 1 March 2017. It is not considered likely that the proposed modifications would significantly increase potential conflict between heavy vehicles and tourist traffic on the Great Western Highway.

2.2 BIODIVERSITY OFFSET STRATEGY – CONSENT CONDITION 25

Representative Comment(s)

OEH suggest the following wording for the additional condition:

The Applicant must retire the required biodiversity credits, as per table below, to the satisfaction of OEH. The retirement of the credits must be carried out in accordance with the NSW Biodiversity Offsets Policy for Major Projects, and can be achieved by:

- a) *Acquiring or retiring 'biodiversity credits' within the meaning of the Biodiversity Conservation Act 2016;*
- b) *Making payments into an offset fund that has been established by the NSW Government; or*
- c) *Providing suitable supplementary measures.*

Credit Type	Offset Type	Number of Credits
Ecosystem Credit	PCT 1093 - Red Stringybark - Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	649
Ecosystem Credit	PCT 649 - Apple Box - Broad-leaved Peppermint dry open forest of the South Eastern Highlands Bioregion	131
Ecosystem Credit	PCT 840 - Forest Red Gum - Yellow Box woodland of dry gorge slopes, southern Sydney Basin Bioregion and South Eastern Highlands Bioregion	60
Species Credit	<i>Eucalyptus pulverulenta</i>	10,784

OEH suggest that Condition 25 be reworded to the following:

The applicant must submit a revised Biodiversity Offset Strategy, which includes management of Conservation Area H, prepared in consultation with OEH, to the satisfaction of the Secretary.

OEH suggest not linking this condition to the project credits as suggested by the proponent ...

*Conservation Area H on Lot 31, DPI009967 is managed as part of a conservation agreement between HPC and OEH (National Parks and Wildlife Service) for the protection and conservation of habitat for the threatened *Eucalyptus pulverulenta*. Any amended conditions should ensure the continued management of Conservation Area H.*

Office of Environment and Heritage

Response

Hy-Tec notes that the OEH comments are generally consistent with the recommendations presented in the SoEE. While Hy-Tec is comfortable to accept the recommendation of the OEH regarding the biodiversity-related conditions of SSD 6084, the preference of the Company is that arrangements for ongoing biodiversity management should not be unnecessarily overcomplicated. It should be noted that regardless of the mechanism used to satisfy offsetting obligations for the Stage 2 Extension Project, the following areas would continue to be managed for native vegetation conservation.

- Conservation Area H.
- Silver-Leaved Mountain Gum replanting areas that were required for offsetting arrangements under the controlled activity approval EPBC 2013/6967.
- The rehabilitation area conserved as a result of the proposed modifications.

Hy-Tec still considers that offsetting obligations may be satisfied under an approved biodiversity offset area, noting that this would create a fourth distinct management area within the Quarry Site dedicated to native vegetation conservation. Although not an ideal situation in terms of ongoing management, Hy-Tec acknowledges the commitments made under previous consents and for the Stage 2 Extension Project. Each of these areas would continue to be managed under the Quarry's *Landscape and Rehabilitation Management Plan*.

2.3 VISUAL AMENITY

Representative Comment(s)

In the SEE, visual impacts are considered to remain generally consistent with the existing approved conditions. However, the Blue Mountains City Council notes that trees which currently provide visual screening to the site are likely to be removed during highway upgrades in the next 12 - 24 months.

Department of Planning and Environment

The recently completed upgrade works through Hartley and the proposed works along the highway between Mt Vic and Katoomba over the next 12-24 months will involve the removal of trees which currently provide screening to the site. The expediting of the revegetation plan is essential. Perhaps the use of advance plantings should be considered.

Blue Mountains City Council

Response

Hy-Tec notes the comment from Blue Mountains City Council, however given that the proposed modifications would not significantly change the view of the Quarry from any vantage points (especially those between Mount Victoria and Katoomba), the removal of tree screening for road safety works is a matter for RMS and Blue Mountains City Council. As noted in the Blue Mountains City Council submission, Hy-Tec is partner to the *Drive Neighbourly Agreement – 'Respect...Our Code on Blue Mountains Roads'* (see Section 2.1.2) which focuses on promoting road safety in the local government area. Consistent with this agreement and Hy-Tec's existing relationship with the Blue Mountains City Council, Hy-Tec would be comfortable to discuss a contribution (financial and/or through the commitment of man-hours) to assist with the re-establishment of vegetated areas that are removed by RMS. It is expected that RMS would also be party to any revegetation works. It should be clear that this is a matter for discussion between Blue Mountains City Council and Hy-Tec and not relevant to any conditions of consent for the operation of the Quarry. However, discussions with representatives of Blue Mountains City Council on 24 April 2018 have initiated Hy-Tec's involvement in the revegetation activities. Hy-Tec is proud of its existing positive contributions to the local community in Lithgow and the Blue Mountains, which would continue with these revegetation activities in the Blue Mountains.

Representative Comment(s)

The Department also notes the potential tree screen to be offered to the owners of the "Glenroy" property.

Department of Planning and Environment

A landscaping plan is to be submitted showing the type and location of the vegetation proposed to be planted.

Lithgow City Council

Response

As noted in Section 1.2, 50 native trees were planted at the “Glenroy” property on 23 April 2018. The tree species and locations were agreed with and directed by the landowner. A report prepared by Skillset Environmental Land Works describing the outcomes of this planting campaign is included as **Appendix 2**.

While the presence of trees in this location will change, the landscape on the eastern side of the Glenroy Bridge, it is not considered that this change would negatively impact road users. In fact, while the tree screening would ultimately act as a noise barrier, it would also restrict views from the road towards the “Glenroy” property. This may currently be distracting road users as they approach Glenroy Bridge and therefore tree screening may be of benefit to road users.

Given that the tree planting has already occurred at the direction of the landowner, a landscaping plan is not considered necessary.

The landowners of the “Glenroy” property also requested tree screening of the operational areas of the Quarry and 30 native trees have been planted on bund walls between the Quarry and Jenolan Caves Road to better screen these areas.

2.4 WATER RESOURCES

Representative Comment(s)

Water NSW requests the following.

- *The Water Management Plan ... be amended to reflect the proposed site layout changes and that any proposed revisions be referred to WaterNSW for comment.*
- *The Statement of Commitments in Appendix 3 be retained.*

Water NSW

The department recommends the following points are noted by the proponent:

- *Monitoring of groundwater levels is to be continued to obtain additional groundwater levels; and*
- *Groundwater monitoring is to be in accordance with the DPE Secretary approved Water Management Plan*

Department of Industry – Lands & Water

Response

The feedback from Water NSW and the Department of Industry – Lands & Water is noted. Hy-Tec agrees that the Water Management Plan for the operations would need to be updated to reflect the modified layout. The existing monitoring programs would be continued under any modified plan.

Hy-Tec proposes to retain the Statement of Commitments as Appendix 3 of SSD 6084, incorporating the minor changes to remove commitments reflected in the conditions of consent or in the management plans for the operation.

2.5 RESOURCE RECOVERY

Representative Comment(s)

MOD 1 to the Austen Quarry (SSD 6084) will increase resource recovery and efficiency of approved extractive operations at the subject site. GSNSW supports measures that seek to maximise resource recovery, subject to fulfilling rehabilitation requirements.

Division of Resources and Geoscience

Response

The submission of the Division of Resources and Geoscience is noted. While it is acknowledged that the preservation of the rehabilitated land within the existing extraction area represents a loss of recoverable resource, Hy-Tec considers that preservation of the existing rehabilitation and vegetation condition, as well as the overall reduction in disturbance for the Quarry is also of benefit. While the decision to conserve this area to satisfy biodiversity offsetting obligations is yet to be confirmed, it has been decided that this area will not be extracted under existing plans.

3. CONCLUSION

This *Response to Submission* document has addressed the comments included in submissions provided to the Department of Planning and Environment concerning the proposed modifications to Development Consent SSD 6084 for the Austen Quarry. Hy-Tec considers the fact that no public submissions were received by the Department of Planning and Environment as an indication of the following.

- Hy-Tec's existing good relationship with the local community as a trusted business owner and contributor to the local economy.
- The community's impression of Hy-Tec's environmental management and performance to date and trust that Hy-Tec will continue to operate in an environmentally responsible manner.
- The thoroughness of Hy-Tec's assessment and the community's acceptance of the proposed ongoing measures to manage and mitigate the potential environmental impacts of the operation.

This is further confirmed in the submissions from the EPA, Water NSW and DRG which indicated support for the proposed modifications, as presented, assuming the continued implementation and management of environmental matters through approved management plans.

Hy-Tec appreciates the positions of both the Lithgow City Council and Blue Mountains City Council with regards to transportation, road noise and visual amenity, which are locally experienced impacts. Hy-Tec is confident that the mitigation measures already implemented and those proposed would ensure that potential impacts remained at an acceptable level and

proposes to continue ongoing consultation with both Councils to ensure this is occurring satisfactorily. However, Hy-Tec also notes that the Austen Quarry is a State significant extractive industry operation and as such the benefits of the proposed modifications, as presented, would extend from the Lithgow City local government area to the greater Sydney region through economic benefits, relief to traffic congestion and improved efficiency of operations.

Hy-Tec also appreciates the concerns raised by the landowners of the “Glenroy” property and hopes that through the consultation and implemented mitigation measures that the relationship between the Quarry operators and the Barber family is maintained. Jenolan Caves Road is a State-managed road that has long-standing approval for heavy vehicle use 24 hours a day over 7 days a week. Hy-Tec is encouraged by the results of the recent noise monitoring at the property which demonstrate that the noise generated by Quarry-related heavy vehicles was lower than that generated by other traffic when approaching and travelling over the Glenroy Bridge (principally as a result of the recent policy to limit Quarry-related vehicles speed to 40km/hr). Hopefully this is also encouragement for RMS to consider permanently reducing the speed limit for all trucks and buses at this location. The potential benefits of the speed reduction for safer travel across the Glenroy Bridge are also important to recognise. Regardless, Hy-Tec will continue to consult with the landowners at this property to ensure that the mitigation measures are working as intended.

4. REFERENCES

Austroads (2010). *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections.*
Prepared by Gary Veith, APRB Group, Sydney NSW.

Department of Environment, Climate Change and Water (DECCW) (2011). *Road Noise Policy.*

Appendices

(Total No. of pages including blank pages = 70)

- Appendix 1 SSD6084_MOD 1: Austen Quarry Extension Project – Letter from RMS dated 24 May 2018 (4 pages)
- Appendix 2 Hy-Tec Austen Quarry Revegetation – Skillset Environment Land Works – May 2018 (6 pages)
- Appendix 3 Response to Submission – Austen Quarry Extension Project – Modification 1 – Lithgow City Council – 29 May 2018 (4 pages)
- Appendix 4 Monitoring Noise Assessment – Muller Acoustic Consulting – April 2018 (34 pages)
- Appendix 5 Road Truck Noise Investigation – Muller Acoustic Consulting – May 2018 (8 pages)
- Appendix 6 SSD6084_MOD 1: Austen Quarry Extension Project – Response to RMS (12 pages)



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Appendix 1

SSD6084_MOD 1: Austen Quarry Extension Project – Letter from RMS dated 24 May 2018

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24 May 2018

SF2012/117114; WST08/00023/14

Nick Warren
Senior Environmental Consultant
RW Corkery & Co Pty Limited
PO Box 239
BROOKLYN NSW 2083

Attention: Mr Nick Warren

Dear Mr Warren

SSD6084_ MOD 1: Austen Quarry Extension Project

Thank you for your email on 02 May 2018 referring additional information from TTPP and RW Corkery and Co Pty Ltd (Ref: 16330) to Roads and Maritime Services for comment. Reference is made to our previous letter to the Department of Planning and Environment dated 10 April 2018.

The additional information has been reviewed. Roads and Maritime notes from the additional information, that the proposal will generate a maximum of 13 light vehicles and less than one heavy vehicle per day turning right from Jenolan Caves Road into the Quarry Access Road.

Given the traffic volumes turning right into the site are low, Roads and Maritime withdraws its requirement requiring the access intersection to be upgraded to include a CHR(s) turning treatment. Consequently, your client, as part of this project, will no longer be required to enter into a Work Authorisation Deeds (WAD) with Roads and Maritime.

Please note all other comments made in Roads and Maritime's previous submission dated 10 April 2018 stand. Should you require further information please contact the undersigned on 02 6861 1453.

Yours faithfully

A handwritten signature in blue ink, appearing to read "Andrew McIntyre".

Andrew McIntyre
Manager Land Use Assessment
Western Region

cc The Manager
Resource Assessments
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Roads and Maritime Services

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Appendix 2

Hy-Tec Austen Quarry Revegetation – Skillset Environment Land Works – May 2018

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Hy-Tec Austen Quarry Revegetation

Ground work completed in April and May of 2018

Scope

Skillset Environment Land Works were engaged by Hy-Tec Austen Quarry at Hartley to install 1330 plants during the 2018 autumn planting season. All plants were grown at Lithgow District Community Nursery using local provenance seed. The planting plan included installing 50 Casuarina along the Cox's River, 35 mixed native plants along the Northern Ridge, 335 mixed native plants on the Overburden Site, 630 *Eucalyptus pulverulenta* at the Offset Site, and 280 along the Quarry Highwall.

Method

Experienced and qualified bush regeneration and ecology staff implemented revegetation activities to meet the Austen Quarry revegetation requirements. Revegetation using native tube stock was completed in autumn to ensure that seedlings had enough time to establish before winter with future planting is planned to take place in early spring. Revegetation planning should also take into account short and long-term rainfall and temperature forecasts.

Land Works crews established the project site and marked out planting locations using hardwood stakes and flagging tape. The arrangement of plants were as random as possible and mimic the natural distribution of surrounding vegetation or be similar to historical vegetation composition and density. Seedling tubestock were placed into a bucket with water and tree tonic solution to soak. Holes are dug using an auger or shovel with a depth that plants are 50mm below the ground level. Any glazing of surrounding soil during the auguring process must be broken or disturbed to ensure that plants don't encounter root issues. Water crystals, mycorrhiza fungi and 1 native fertiliser tablet are mixed into the soil at the bottom of the hole. One litre of water is poured into the hole and allowed to soak in. Lower branches of the seedling may need to be trimmed or removed if it prevents the individual from being planted properly. The plant is placed into the hole and backfill with softer soil, any clods or rocks were left out of the backfill as it may cause air pockets and dry roots out. Once hole is half filled additional water was poured to remove any air pockets, process was repeated until soil reached the top of the hole. Once planted surrounding soil was smoothed out into a dish shape so that water will pool around the stem of the plant. Tree tonic solution was mixed with 4 litres of water and apply to each plant.

Planting conditions were extremely favourable, however planting should not be completed on days hotter than 35°C. If the day during planting and days after are above 30°C a second watering should be completed 2 days after installation. Tree guards and weed mats were installed on all tubestock plants. Mulch may be applied around each plant at a depth of 100mm for moisture retention, with lack of organic mulch rocks and sticks were placed around the guard of each plant. Maintenance and watering of revegetation should be completed monthly if conditions are preferable, during extended dry periods it is advised plants are watered fortnightly. Weeds within and around guards should be controlled to minimise competition and increase seedling growth rate.

Results

Fifty (50) *Casuarina cunninghamiana* were planted along the Cox's River at Glenroy Cottages and Campground. The planting will create habitat for riparian fauna while also sheltering the property from road noise.



Thirty five (35) mixed plants were installed across the Northern Ridge Line, species included *Eucalyptus pulverulenta*, *Eucalyptus mannifera*, *Eucalyptus dives*, *Eucalyptus bridgesiana*, *Acacia falciformis*, and *Acacia dealbata*. This corridor planting will replace old *Acacia dealbata* planting and connect two areas of natural woodland. The planting will also provide a visual screen for neighbouring properties.



2 – Skillset Environment Land Works – 1300 853 525

Three hundred and thirty five (335) mixed plants were installed across the Overburden Site, species included *Eucalyptus pulverulenta*, *Eucalyptus mannifera*, *Eucalyptus dives*, *Eucalyptus bridgesiana*, *Acacia falciformis*, and *Acacia dealbata*. This corridor planting will rehabilitate a previously quarried area with local provenance species providing habitat, soil stabilisation, and nutrient cycling.



Six hundred and thirty (630) *Eucalyptus pulverulenta* were installed across the Offset Site. This offset planting will provide a host of ecosystem services including but not limited to flora and fauna habitat, soil stabilisation, and nutrient cycling. This planting will also help preserve the *Eucalyptus pulverulenta* threatened species.



Two hundred and eighty (280) mixed plants were installed across the Quarry Highwall Site, species included *Eucalyptus pulverulenta*, *Eucalyptus mannifera*, *Eucalyptus dives*, *Eucalyptus bridgesiana*, *Acacia falciformis*, and *Acacia dealbata*. This corridor planting will rehabilitate a previously quarried area with local provenance species providing habitat, soil stabilisation, and nutrient cycling. This planting will also provide a screen for neighbouring residents.



Conclusion

The 2018 autumn planting session at HyTec was successful with all plants being installed with the Land Works scientific method. All tubestock were in great health when planted and with consistent watering, maintenance and monitoring will grow well and provide considerable habitat and ecosystem services.

A revegetation condition assessment methodology has been developed by Skillset Environment Land Works to accurately score the health condition of individual plants. This methodology will be implemented at HyTec Austen Quarry Hartley to achieve the best environmental outcome for all revegetation sites. The collection of plant condition data will allow Land Works to understand how plants are responding to post planting and how to best maintain them. The assessment also picks up specific influences and impacts (browsing, frost, dehydration, nutrient deficiency, and soil composition) that may cause a reduced health/condition score. Plants are rated 3 for healthy, 2 for moderately healthy, 1 for stressed and 0 for dead. This method allows an index calculation for individual species and the entire site which will be tracked over the life of the revegetation contract. It will allow Austen Quarry and Land Works to gain greater understanding of how species and revegetation sites are responding every six months.

Appendix 3

Response to Submission – Austen Quarry Extension Project – Modification 1 – Lithgow City Council – 29 May 2018

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1575775, 1577361, 1577282: LGS
Economic Development & Environment



29 May 2018

Darryl Thiedeke
Darryl.Thiedeke@adbri.com.au

Nicholas Warren
nick@rwcorkery.com

Dear Darryl and Nick,

**RESPONSE TO SUBMISSION - Austen Quarry Extension Project - Modification 1
(SSD 6084 MOD 1)**

Council considered further information provided by the proponent received 14 May 2018 at its Ordinary Meeting of 28 May 2018 and resolved to indicate to both you and the Department of Planning and Environment that it still has concerns in relation to the extended transport hours, traffic movements and acoustic amenity of the surrounding area.

Please do not hesitate to contact Miss Lauren Stevens who is available between 8:15am and 10:30am Monday to Friday on (02) 63549999, in Council's Environment & Development Department should you have any queries in relation to this matter.

Yours sincerely

Andrew Muir

DIRECTOR ECONOMIC DEVELOPMENT AND ENVIRONMENT

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Appendix 4

Monitoring Noise Assessment Muller Acoustic Consulting April 2018

(Total No. of pages including blank pages = 36)

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Noise Monitoring Assessment

Austen Quarry, Hartley, NSW.

Prepared for: RW Corkery & Co Pty Limited
April 2018
MAC170523RP3



Document Information

Noise Monitoring Assessment

Austen Quarry, Hartley, NSW

April 2018

Prepared for: RW Corkery & Co Pty Limited (on behalf of Hy-Tec Pty Ltd)

Prepared by: Muller Acoustic Consulting Pty Ltd
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Document ID	Status	Date	Prepared By	Signed	Reviewed By	Signed
MAC170523RP3	Final	9 April 2018	Robin Heaton	<i>Robin Heaton</i>	Oliver Muller	<i>Oliver Muller</i>

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by RW Corkery & Co Pty Limited (RWC) on behalf of Hy-Tec Industries Pty Ltd (HT) to complete a Noise Monitoring Assessment (NMA) for Austen Quarry Operations, Hartley, NSW.

The monitoring has been conducted in accordance with the approved Austen Quarry Noise Management Plan and in general accordance with Conditions L4.1 to L4.3 of EPL#12323 (EPL); at three representative monitoring locations.

The assessment was conducted in accordance with the following documents:

- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI), 2017;
- Environment Protection Licence EPL#12323;
- RW Corkery & Co Pty Limited, Austen Quarry Noise Management Plan (NMP); and
- Standards Australia AS 1055.1:1997 - Acoustics - Description and measurement of environmental noise - General Procedures.

This assessment was undertaken during April 2018 and forms part of the noise monitoring program to address conditions of EPL#12323, Austen Quarry Development Consent SSD 6084 (SSD-6084) and the Noise Management Plan.

A glossary of terms, definitions and abbreviations used in this report is provided in **Appendix A**.

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2 Noise Criteria

2.1 Attended Noise Compliance

Schedule 3, Condition 3 of the Austen Quarry Development Consent (SSD-6084), approved on 15 July 2015, outlines the applicable noise criteria for all privately owned residential receivers surrounding the quarry site. The operating criteria specified in SSD-6084 also aligns with criteria in EPL#12323 for the quarry at all receivers ie 35dBA LAeq(15min). **Table 1** presents the criteria for privately owned residential receivers surrounding the quarry, as outlined in SSD-6084 and EPL#12323.

Table 1 Noise Criteria			
Receiver	Day dB(A) LAeq(15min)	Evening dB(A) LAeq(15min)	Morning Shoulder dB(A) LAeq(15min)
All privately owned residences	35	35	35



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3 Methodology

3.1 Locality

The quarry is located on Jenolan Caves Road, Hartley, NSW approximately 10km south of Lithgow, NSW. Receivers in the locality surrounding the quarry are primarily rural/residential. The Great Western Highway is situated to the north east of the site and Jenolan Caves Road to the west of the site.

3.2 Noise Monitoring Locations

Three monitoring locations have been selected as part of the NMA and in accordance with the Noise Management Plan (NMP) and are summarised below:

- Location A (residence identifier R24A as per NMP), is located at 200 Jenolan Caves Road approximately 2.5km north of the project;
- Location B (residence identifier R31 as per NMP), is located at 781 Jenolan Caves Road and approximately 1km south west of the project site; and
- Location C (residential identifier R48 as per NMP) located at 64 Carrol Drive, Hartley which is approximately 2.5km north east of the quarry.

The monitoring locations with respect to quarry location are presented in the locality plan shown in **Figure 1**.

3.3 Assessment Methodology

The attended noise surveys were conducted in general accordance with the procedures described in Australian Standard AS 1055-1997, "Acoustics - Description and Measurement of Environmental Noise" and EPL#12323. The measurements were carried out using Svantek Type 1, 971 noise analyser on Tuesday 3 April 2018 and Wednesday 4 April 2018. The acoustic instrumentation used carries current NATA calibration and complies with AS IEC 61672.1-2004-Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ± 0.5 dB(A).

Noise measurements were of 15 minutes in duration and where possible, throughout each survey, the operator quantified the contribution of each significant noise source. One measurement was conducted at each of the monitoring locations during the day, evening and morning shoulder monitoring periods to quantify the noise sources in the ambient noise environment.



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3.4 Operational Logs

Operational logs for the primary and secondary crushers have been provided by Austen Quarry management. It is noted that transportation activities commence at 5.00am and work shifts for processing equipment commence at 6.00am. Daily pre-shift meetings and safety checks often delay commencement of onsite operations until closer to 7.00am. Morning shoulder measurements were conducted from 6.00am to 7.00am on Wednesday 4 April 2018 to capture the commencement of onsite operations at the nominated monitoring locations. It is noted that for noise monitoring during the morning shoulder period, the secondary crusher and associated processing equipment (screens, conveyors and the air separator) had not yet commenced operation. **Table 2** presents a summary of the hours of operation of the primary and secondary crushers with the quarry operational logs which are reproduced **Appendix B**.

Table 2 Primary and Secondary Crushers Hours of Operation				
Date	Primary Crusher		Secondary Crusher	
	Commenced Crushing	Ceased Crushing	Commenced Crushing	Ceased Crushing
3 Apr 18	7.10am	4.40pm	6.30am	6.05pm
4 Apr 18	7.17am	5.00pm	7.50am	4.55pm

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4 Results

4.1 Assessment Results - Location A, 200 Jenolan Caves Road

Operational attended noise monitoring was completed in each assessment period at Location A on Tuesday 3 April 2018 and Wednesday 4 April 2018. **Table 3** presents the monitored noise level contributions and observed meteorological conditions for each measurement.

Table 3 Operator-Attended Noise Survey Results – Location A							
Date	Time (hrs)	Period	Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
			L _{Amax}	L _{Aeq}	L _{A90}		
3/4/2018	16:20	Day	83	62	36	Dir: E Wind Speed: 0.4m/s Rain: Nil	Birds 38 - 50
							Water Flowing 33 - 36
							Cars 54 - 71
							Trucks 64 - 83
							Aircraft 39 - 41
Austen Quarry L _{Aeq} (15min) Contribution							Not audible
3/4/2018	18:02	Evening	69	54	42	Dir: E Wind Speed: 0.1m/s Rain: Nil	Cars 56 - 62
							Trucks 61 - 69
							Insects 43 - 46
							Aircraft 48 - 53
							Austen Quarry L _{Aeq} (15min) Contribution
4/4/2018	6:19	Shoulder	83	64	35	Dir: NE Wind Speed: 0.1 m/s Rain: Nil	Birds 36 - 44
							Water Flowing 34 - 36
							Cars 64 - 68
							Trucks 67 - 83
							Austen Quarry L _{Aeq} (15min) Contribution



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4.2 Assessment Results - Location B, 781 Jenolan Caves Road

Operational attended noise monitoring was completed in each assessment period at Location B on Tuesday 3 April 2018 and Wednesday 4 April 2018. **Table 4** presents the monitored noise level contributions and observed meteorological conditions for each measurement.

Table 4 Operator-Attended Noise Survey Results – Location B

Date	Time (hrs)	Period	Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
			L _{Amax}	L _{Aeq}	L _{A90}		
3/4/2018	15:48	Day	56	37	31	Dir: E Wind Speed: 1.0m/s Rain: Nil	Dog Noise 42 - 56
							Aircraft 33 - 43
							Site Hum 27 - 34
Austen Quarry LAeq(15min) Contribution							29
3/4/2018	18:28	Evening	63	34	27	Dir: NE Wind Speed: 1.3m/s Rain: Nil	Insects 27 - 36
							Dog 50 - 63
							Aircraft 36 - 41
Austen Quarry LAeq(15min) Contribution							26
4/4/2018	6:44	Shoulder	57	39	30	Dir: NE Wind Speed: 0.2m/s Rain: Nil	Birds 29 - 57
							Traffic 26 - 33
							Site Noise 32 - 45
Austen Quarry LAeq(15min) Contribution							33

4.3 Assessment Results - Location C, 64 Carrol Drive

Operational attended noise monitoring was completed in each assessment period at Location C on Tuesday 3 April 2018 and Wednesday 4 April 2018. **Table 5** presents the monitored noise level contributions and observed meteorological conditions for each measurement.

Table 5 Operator-Attended Noise Survey Results – Location C														
Date	Time (hrs)	Period	Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA							
			L _{Amax}	L _{Aeq}	L _{A90}									
3/4/2018	16:42	Day	70	46	34	Dir: E Wind Speed: 1.4m/s Rain: Nil	Birds 37 – 69							
							Distant Dogs 33 - 34							
							Traffic 42 - 70							
							Leaves Rustling 41 - 44							
Austen Quarry L _{Aeq} (15min) Contribution							Not audible							
3/4/2018	18:58	Evening	55	38	30	Dir: E Wind Speed: 1.6m/s Rain: Nil	Insects 28 - 35							
							Traffic 27 - 55							
							Austen Quarry L _{Aeq} (15min) Contribution							Not audible
							Austen Quarry L _{Aeq} (15min) Contribution							Not audible
4/4/2018	5:57	Shoulder	75	50	32	Dir: NE Wind Speed: 0.2m/s Rain: Nil	Birds 40 - 75							
							Traffic 42 - 55							
							Austen Quarry L _{Aeq} (15min) Contribution							Not audible
							Austen Quarry L _{Aeq} (15min) Contribution							Not audible



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5 Noise Compliance Assessment

The compliance assessment for the nominated monitoring locations are presented in **Table 6** to **Table 8** for day, evening and morning shoulder assessment periods.

Table 6 Daytime Noise Compliance Assessment

Receiver No.	Quarry Noise Contribution	Quarrying Noise Criteria	Compliant
	LAeq(15min)	LAeq(15min)	
A	Not Audible	35	✓
B	29	35	✓
C	Not Audible	35	✓

Table 7 Evening Noise Compliance Assessment

Receiver No.	Quarry Noise Contribution	Quarrying Noise Criteria	Compliant
	LAeq(15min)	LAeq(15min)	
A	Not Audible	35	✓
B	26	35	✓
C	Not Audible	35	✓

Table 8 Morning Shoulder Noise Compliance Assessment

Receiver No.	Quarry Noise Contribution	Quarrying Noise Criteria	Compliant
	LAeq(15min)	LAeq(15min)	
A	Not Audible	35	✓
B	33	35	✓
C	Not Audible	35	✓

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6 Discussion

6.1 Discussion of Results - Location A

Monitoring conducted at Location A, 200 Jenolan Caves Road, Hartley, NSW, was dominated by passing traffic. Traffic included trucks from the Austen Quarry, adjacent (non-project) quarries and several transport firms. Local light vehicle traffic also contributed to the overall ambient environment. It was noted that Austen trucks were observed to predominantly approach and cross the Glenroy Bridge at a slower speed than other road trucks, as per the instructions of Austen Management. Quarry noise emissions were inaudible during all three monitoring periods during the April 2018 survey. Other extraneous noise sources audible during the three attended surveys included birds, and water flowing from nearby Coxs River.

6.2 Discussion of Results - Location B

Monitoring results at Location B, 781 Jenolan Caves Road, Good Forest, NSW, identified that the quarry was audible at this monitoring location during all monitoring periods, although remained within the applicable noise criteria. This is consistent with the predictions made in the EIS for Stage 2 of the Project (RWC, 2014). Mobile plant noise was intermittently audible during the morning shoulder as they accessed the pit at the start of shift from the workshop area. General quarry hum was audible during the day and evening monitoring periods. Notwithstanding, extraneous noise sources dominated the noise environment which included birds, distant traffic hum, dog barking, insects and aircraft noise.

6.3 Discussion of Results - Location C

Quarry noise was inaudible during all three survey periods at Location C, 64 Carroll Drive, Hartley, NSW. Highway and passing local traffic, local wildlife and distant dogs barking dominated the ambient noise environment.



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7 Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Noise Monitoring Assessment for RW Corkery & Co Pty Limited on behalf of Hy-Tec Industries Pty Ltd for Austen Quarry, Hartley, NSW. The assessment was completed to assess the quarry's compliance with the relevant criteria outlined in EPL#12323 and SSD-6084 for three nominated residential receivers surrounding the quarry.

Operator attended noise monitoring was undertaken on Tuesday 3 April 2018 and Wednesday 4 April 2018 at the nominated monitoring locations with quarry noise contributions compared against the relevant criteria.

The assessment has identified that noise emissions generated by Austen Quarry comply with relevant noise criteria specified in EPL#12323 and SSD-6084 at all assessed locations for the three relevant assessment periods.



MAC170523RP3



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MAC170523RP3



Appendix A – Glossary of Terms



MAC170523RP3



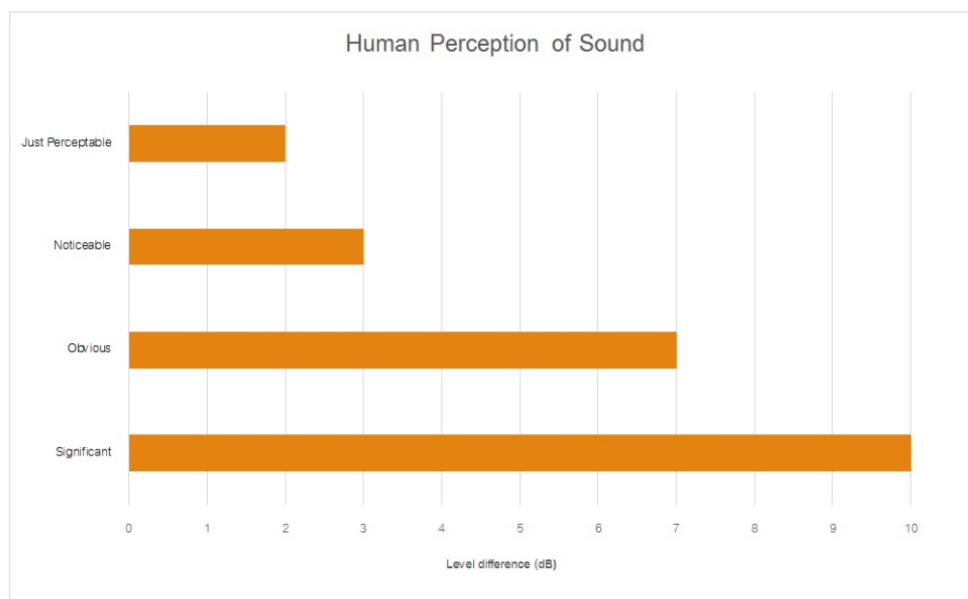
Table A1 provides a number of technical terms have been used in this report.

Table A1 Glossary of Terms	
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured LA90 statistical noise levels.
Adverse Weather	Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
Ambient Noise	The noise associated with a given environment. Typically a composite of sounds from many sources located both near and far where no particular sound is dominant.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to noise.
dB(A)	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(Z), dB(L)	Decibels Linear or decibels Z-weighted.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A noise level which is exceeded 10 % of the time. It is approximately equivalent to the average of maximum noise levels.
LA90	Commonly referred to as the background noise, this is the level exceeded 90 % of the time.
LAeq	The summation of noise over a selected period of time. It is the energy average noise from a source, and is the equivalent continuous sound pressure level over a given period.
LAm _{ax}	The maximum root mean squared (rms) sound pressure level received at the microphone during a measuring interval.
RBL	The Rating Background Level (RBL) is an overall single figure background level representing each assessment period over the whole monitoring period. The RBL is used to determine the intrusiveness criteria for noise assessment purposes and is the median of the ABL's.
Sound power level (LW)	This is a measure of the total power radiated by a source. The sound power of a source is a fundamental location of the source and is independent of the surrounding environment. Or a measure of the energy emitted from a source as sound and is given by : $= 10 \cdot \log_{10} (W/W_0)$ Where : W is the sound power in watts and W ₀ is the sound reference power at 10-12 watts.

Table A2 provides a list of common noise sources and their typical sound level.

Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA	
Source	Typical Sound Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawn-mower (operator position)	90
Heavy traffic (footpath)	80
Elevated speech	70
Typical conversation	60
Ambient suburban environment	40
Ambient rural environment	30
Bedroom (night with windows closed)	20
Threshold of hearing	0

Figure A1 – Human Perception of Sound



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MAC170523RP3



Appendix B – Operational Logs



MAC170523RP3





DAILY PRODUCTION LOG & CHECKLIST - PRIMARY

6667

Date: 3.4.18 Operator: King

Weather Conditions: raining Quarry Bench ID: 7.15

Shift Start Time	6:00	Shift Finish Time	5:00
Crusher Start Time	7:10	End of day Crusher stopped	4:40

Belt Weightometer Reading - Daily

Conveyor 1 Start 947602	Conveyor 1 Finish 953179	Total Tonnes Crushed 5579
Conveyor 6 Scalps Start	Conveyor 6 Scalps Finish	Total Tonnes Stockpiled

Cartage of Raw Feed from Face to Boot – Number of loads

KK1 Loads to Boot	KK3 Loads to Boot
KK2 Loads to Boot	Contractor Loads to Boot

Stoppages due to Trucks	Stoppages due to Jaw
-------------------------	----------------------

Plant Stopped	Plant Started	Downtime (Hrs/Min)	Reason
6:00	7:10	1hr 10m	tool box, move sand
8:15	8:35	20m	CV2 general fault = d/s. ?
9:50	10:15	25m	rock in P/F
12:55	1:35	40m	smoke
4:40			end crushing

Pre start checks;

Generator hours: 22489 - 22499 Generator oil level: ✓

Plant Visual ✓

COMMENTS

greaser still faulting

Owner: Quarry Manager	HY-TEC CONCRETE & QUARRIES	Form: HTQY-P-SFT-034
Foms & Templates	Revision: 3	Status: Approved
		Issue Date: 14 Feb 2012

Owner: Quarry Manager	HY-TEC CONCRETE & QUARRIES	Form: HTQY-P-SFT-035
Forms & Templates	Revision: 3	Status: Approved Issue Date: 14.02.12

DAILY PRODUCTION LOG & CHECKLIST - SECONDARY

Date: 3.4.18 Operator: leon

Weather Conditions;

Shift Start Time	<u>6am</u>	Shift Finish Time	<u>7PM</u>
Crusher Start Time	<u>6.30</u>	End of day Crusher stopped	<u>605</u>

Weightometer Reading; Start: 2010632 Finish:

Plant Stopped	Plant Started	Downtime (Hrs/Min)	Reason
<u>6am</u>	<u>6.30am</u>	<u>30 min</u>	<u>prestart / TOOLBOX</u>
<u>6.30am</u>	<u>7.43am</u>	<u>1h 13min</u>	<u>NO Rock</u>
<u>9.52</u>	<u>9.53</u>	<u>1</u>	<u>Adj: 450</u>
<u>125</u>	<u>137</u>	<u>12min</u>	<u>Metal alarm NO TRANSPORT (pr)</u>
<u>2.55</u>	<u>2.56</u>	<u>1</u>	<u>Adj: 450</u>
<u>4.50</u>	<u>5.04</u>	<u>14m</u>	<u>Take measurements + Pics @ S3</u>
<u>605</u>			<u>OUT OF STONE ON 1 + 3 feeders</u>

PRODUCTION SUMMARY

Fines 327

Belts	Size	Description	Total	Gate open	Comments
CV 8	20 mm	Concrete Aggregate	<u>1278</u>		
CV 20	Course Sand 4-0mm	Manufactured Sand	<u>971</u>		
CV19*	10-7mm Blend*	Concrete Blend	<u>1318</u>		
CV19	7mm	Concrete Aggregate			
CV17	10mm	Concrete Aggregate			
CV15	14mm	Concrete Aggregate	<u>98</u>		
CV5	Ballast/40mm	Non Spec Aggregate			

Total 3992

COMMENTS



DAILY PRODUCTION LOG & CHECKLIST - PRIMARY

12246

Date: 6.4.18 Operator: K. G. ...

Weather Conditions: fine Quarry Bench ID: 775

Shift Start Time	6:00	Shift Finish Time	5:00
Crusher Start Time	7:00	End of day Crusher stopped	4:55

Belt Weightometer Reading - Daily

Conveyor 1 Start 95 31 79	Conveyor 1 Finish 96 06 74	Total Tonnes Crushed 7490
Conveyor 6 Scalps Start	Conveyor 6 Scalps Finish 856	Total Tonnes Stockpiled

Cartage of Raw Feed from Face to Boot – Number of loads

KK1 Loads to Boot	46	KK3 Loads to Boot	21
KK2 Loads to Boot	44	Contractor Loads to Boot	

Stoppages due to Trucks	Stoppages due to Jaw
-------------------------	----------------------

Plant Stopped	Plant Started	Downtime (Hrs/Min)	Reason
6:00	7:00	1hr.	tool box, new bench, CV8 L/T
4:55			and crushing

Pre start checks;

Generator hours: 22502-22512 Generator oil level: ✓

Plant Visual ✓

COMMENTS

Owner: Quarry Manager	HY-TEC CONCRETE & QUARRIES	Form: HTQY-P-SFT-034
Forms & Templates	Revision: 3	Status: Approved Issue Date: 14 Feb 2012

Owner: Quarry Manager	HY-TEC CONCRETE & QUARRIES	Form: HTDY-P-SFT-035
Forms & Templates	Revision: 3	Status: Approved Issue Date: 14.02.12

DAILY PRODUCTION LOG & CHECKLIST - SECONDARY

Date: 4.4.18 Operator: Jezza
Weather Conditions; cloudy

Shift Start Time	6.00	Shift Finish Time	9 PM
Crusher Start Time	7.17	End of day Crusher stopped	5 PM

Weightometer Reading; Start: 2014998 Finish:

Plant Stopped	Plant Started	Downtime (Hrs/Min)	Reason
6.00	7.17	1hr 17m	TOOLBOX/PRE-START/NO ROCK
9.41	9.42	1m	Adj: 450
11.52	11.54	2m	Adj: 450 + 550
2.30	2.31	1m	Adj: 450
5 PM			PRODUCT TO WET SPRAY LEFT ON IN MANUAL ON TOP PLANT.

PRODUCTION SUMMARY

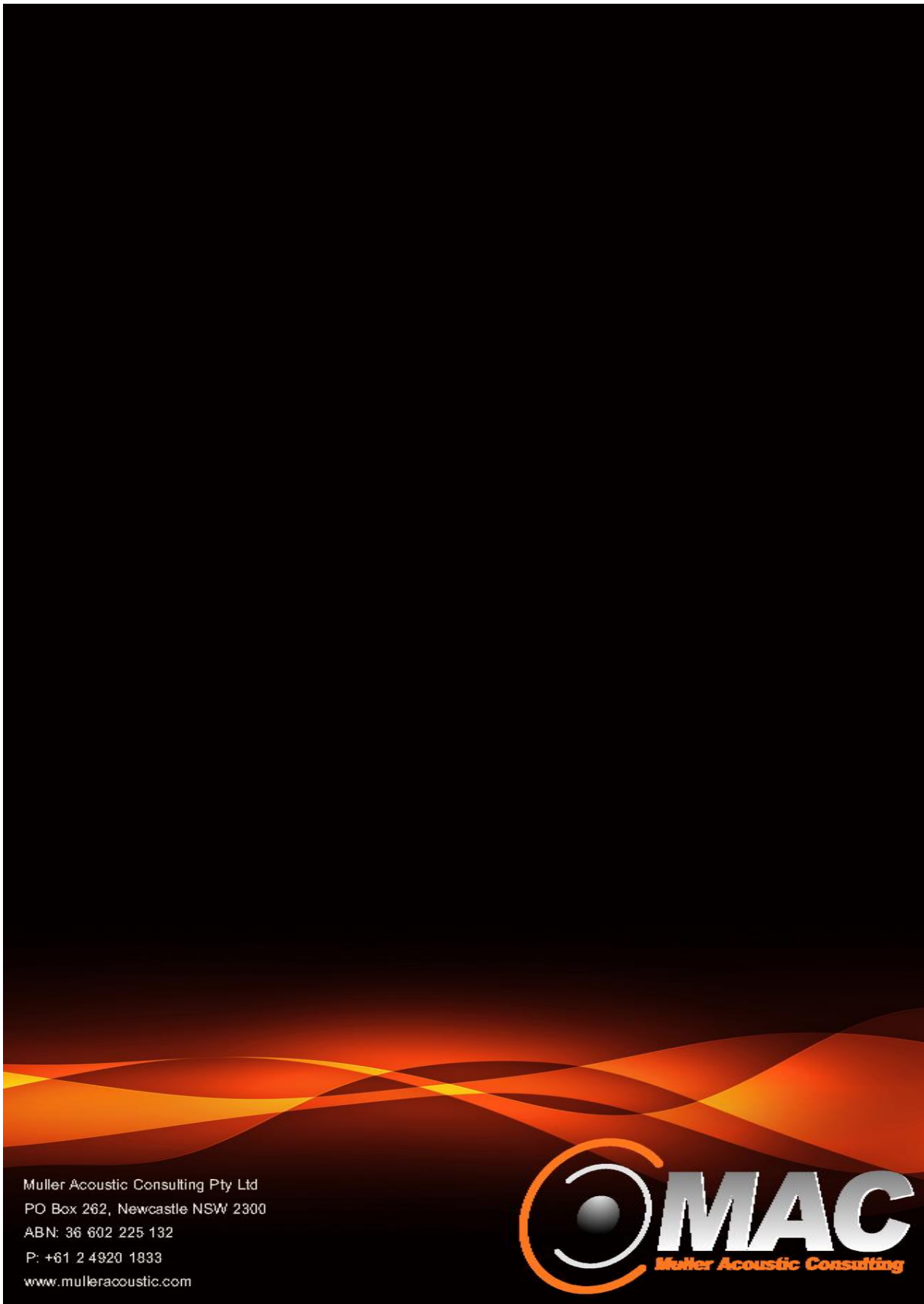
FINES: 390

Belts	Size	Description	Total	Gate open	Comments
CV 8	20 mm	Concrete Aggregate	1424		
CV 20	Course Sand 4-0mm	Manufactured Sand	965		
CV19*	10-7mm Blend*	Concrete Blend	1439		
CV19	7mm	Concrete Aggregate			
CV17	10mm	Concrete Aggregate			
CV15	14mm	Concrete Aggregate	100		
CV5	Ballast/40mm	Non Spec Aggregate			

TOTAL = 4318

COMMENTS

Check solinoid on 20mm stacker + check sprays on sand stacker
Clean crew - clean 450/550 top down - get rid of all dust on structure



Appendix 5

Road Truck Noise Investigation Muller Acoustic Consulting May 2018

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PO Box 262
Newcastle NSW 2300
ABN: 36 602 225 132
P: +61 2 4920 1833
www.mulleracoustic.com

25 May 2018

MAC170523RP4V02

Attention: Nick Warren
RW Corkery & Co Pty Limited
Level 1, 12 Dangar Road
BROOKLYN NSW 2083

Dear Nick,

Road Truck Noise Investigation – Austen Quarry, Hartley, NSW.

1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by RW Corkery & Co Pty Ltd to complete an acoustic assessment (the 'assessment') to investigate the noise contribution of Austen Quarry Trucks ('project vehicles') at the nearest residential receiver adjacent to the Glenroy Bridge crossing, Hartley NSW.

A key element of the assessment was to compare noise emissions from quarry vehicles against non-project vehicles. Additionally, the assessment has quantified whether there are any noise emission reductions for trucks travelling at low speeds over the bridge, which is a recent initiative adopted by quarry management for their vehicles.

2 Noise Monitoring Methodology

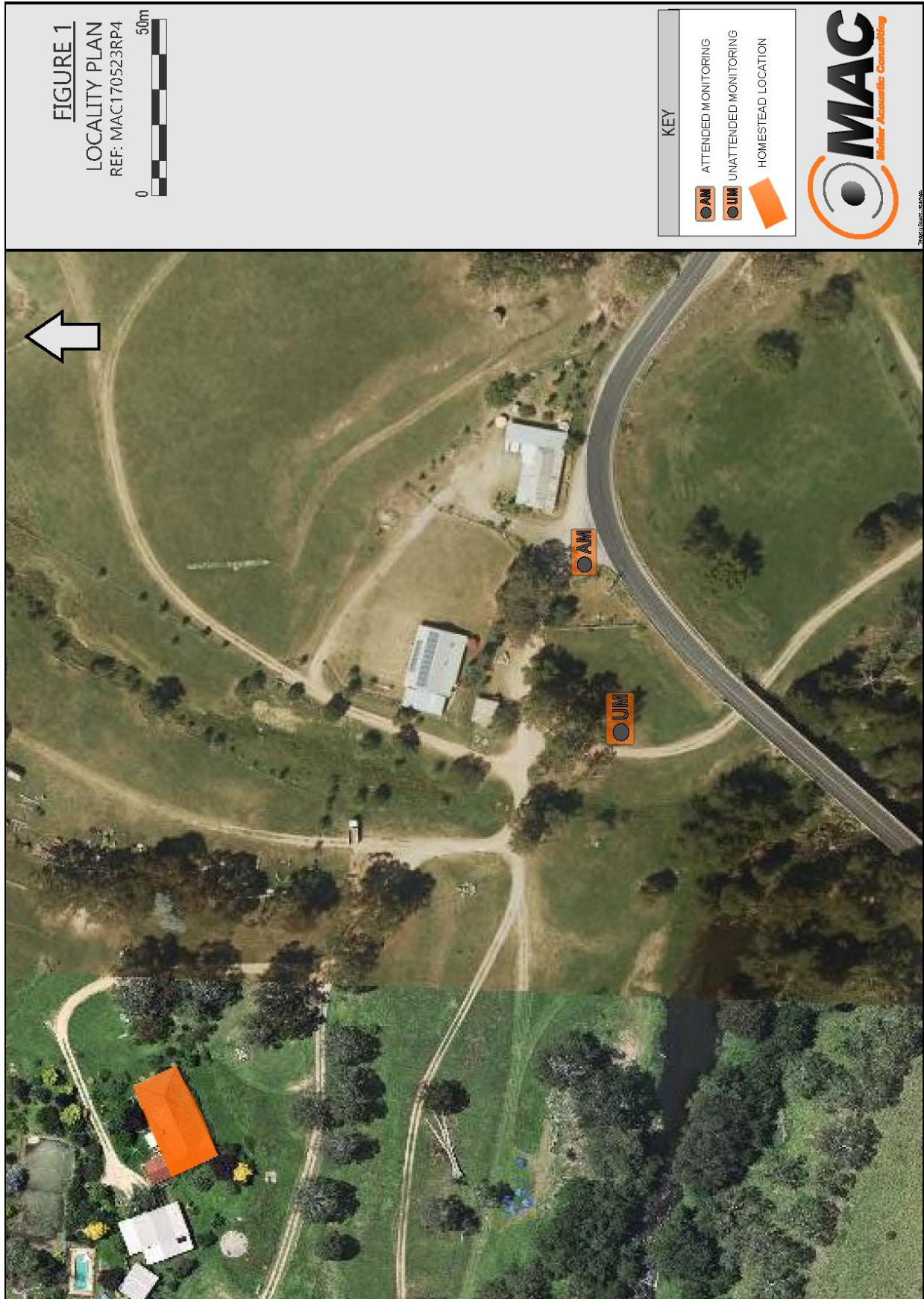
All noise surveys were conducted in general accordance with the procedures described in Standards Australia AS 1055-1997, "Acoustics - Description and Measurement of Environmental Noise". Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed $\pm 0.5\text{dBA}$. All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

2.1 Unattended Noise Monitoring Methodology

To quantify the noise emissions from vehicles as they cross the Glenroy Bridge, unattended noise monitoring was conducted at 200 Jenolan Caves Road, Hartley, NSW. The selected monitoring location is shown in Figure 1. Monitoring was carried out using a Svantek 977 noise analyser from Wednesday 4 April 2018 to Thursday 12 April 2018.

2.2 Attended Noise Monitoring

Attended noise measurements were conducted to supplement the unattended noise monitoring survey to directly quantify project vehicle noise contributions. The measurements were carried out using a Svantek Type 1, 971 noise analyser on Wednesday 4 April 2018 adjacent to the entry gate of 200 Jenolan Caves Road. The attended monitoring location is presented in Figure 1. The morning shoulder measurement period was selected in an effort to minimise sources such as birds and traffic noise from the nearby Great Western Highway.



3 Noise Assessment Results

3.1 Unattended Noise Monitoring Results

To ascertain project vehicle contributions to the unattended noise monitoring results, Austen Quarry weighbridge vehicle egress records were reviewed in conjunction with monitoring data. On average, it was determined that the travel time from the project site to the bridge is eight to nine minutes. This average duration was confirmed with several project vehicle truck drivers and was taken into account when attributing contributions to project vehicles. The calculations include a +3dB correction to account for return vehicles to the quarry which should be considered a representative worst case.

Table 1 presents the calculated LAeq and LAmax noise contributions from project and non-project related vehicles.

Table 1 Unattended Noise Monitoring Summary		
Vehicle Type	Unattended Monitoring Location ^{1,2}	
	LAeq(15hr) - Day	LAeq(9hr) – Night
Criteria	60	55
Project Vehicles	51.2	46.4
Non-project Vehicles	52.8	50.5
Difference (Project and Non-project)	1.6	4.1
All Vehicles (project +Non-project)	55.1	51.9
Difference (Project and All)	3.9	5.5

Note 1: Based on an average LAeq(15hr) and LAeq(9hr) for weekday results only (ie excludes Saturday and Sunday).

Note 2: Includes +3dB adjustment for return trips to and from site.

Generally, project vehicle contributions are 4dB lower when compared to all vehicles (ie ambient) during the day period (7am to 10pm) and 5.5dB lower during the night period (7am to 10pm). The maximum noise levels (ie maximum noise event) from project vehicles crossing the bridge were generally 4dB lower than non-project vehicles. This is primarily due to lower speeds of project vehicles travelling across the bridge compared to non-project vehicles.

It is noted that the duration correction from the project site to the bridge has been estimated for the average truck speeds and may vary slightly from truck to truck. Additionally, unattended noise monitoring, to some degree is influenced by extraneous noise sources such as birds and other wildlife.

3.2 Attended Noise Monitoring Results

Table 2 presents the results of the attended noise monitoring results and provides a comparison of the average LAeq and LAmax levels for project vehicles against non-project vehicles. It is noted that the attended measurements were conducted at 6.30am on Wednesday 4 April 2018 when project vehicles movements were at their peak, and therefore results should be considered a worst case scenario.

Table 2 Attended Noise Monitoring Summary – 15 minute measurement			
Vehicle Passby Number	Vehicle Type/ Identification	Attended Monitoring Location	
		LAeq	LAmax
1	Project Vehicle	68	80
2	Non-Project Vehicle (Fuel Tanker)	75	83
3	Project Vehicle	67	79
4	Project Vehicle (ICF)	68	78
5	Project Vehicle (GPS)	70	80
6	Project Vehicle (JJJ)	66	78
7	Non-Project Vehicle	69	81
8	Non-Project Vehicle	68	81
9	Project Vehicle (TJB)	63	74
Project Vehicle Average		67	78
Non-Project Vehicle Average LAeq		71	82

4 Discussion

A hypothetical calculation of road noise levels has been completed to the family residence at 200 Jenolan Caves Road. This residence is approximately 190 metres from Jenolan Caves Road. Calculations identify that maximum noise levels could be around 55dBA from truck movements (ie all sources). It is understood that some preliminary mitigation has been considered at this dwelling, with roller shutters a preferred option. Attenuation specification of roller shutters indicates shutters attenuate between 3dB to 10dB, although the higher attenuation levels are anticipated to include shutters that consist of acoustic seals with no air gaps.

5 Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed an acoustic assessment to establish the contribution of Austen Quarry project vehicles at the nearest residential receiver adjacent to the Glenroy Bridge crossing, Hartley NSW. The findings of the assessment identified that project vehicle contributions were between 4dB to 6dB lower compared to all vehicles (ie ambient) for long-term monitoring average noise events. Short term attended noise monitoring during peak quarry movement (ie for a worst-case scenario) periods identified that project vehicles contributed 4dB less than non-project vehicles.

Key contributors to the reduction in noise emissions is primarily due to current management measures implemented by the quarry and their drivers traveling at lower speeds when vehicles travel across the bridge.

We trust the above information is satisfactory and if you require anything further on this issue, please contact the undersigned.

Yours sincerely



Robin Heaton
Acoustic Engineer
BEng (Hons)
rheaton@mulleracoustic.com



Oliver Muller
Principal Acoustic Scientist
BSc(REM & HGeog)|MAAS
omuller@mulleracoustic.com

Appendix 6

SSD6084_MOD 1: Austen
Quarry Extension Project
Response to RMS Comments
The Transport Planning
Partnership
May 2008

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Our Ref: 16330

2 May 2018

R W Corkery Pty Limited
Level 1, 12 Dangar Road
PO Box 239
BROOKLYN NSW 2083

Attention: Nick Warren

Dear Nick,

**RE: SSD6084_ MOD 1: AUSTEN QUARRY EXTENSION PROJECT
RESPONSE TO ROADS AND MARITIME SERVICES COMMENTS**

Thank you for sending the RMS letter dated 10 April 2018 providing their comments on SSD6084_ MOD 1: Austen Quarry Extension Project.

The Transport Planning Partnership (TPPP) has reviewed the letter and would like to provide a response to the recommended Channelised Right turn lane Short [CHR(S)] at the Jenolan Caves Road intersection with the Quarry Access Road.

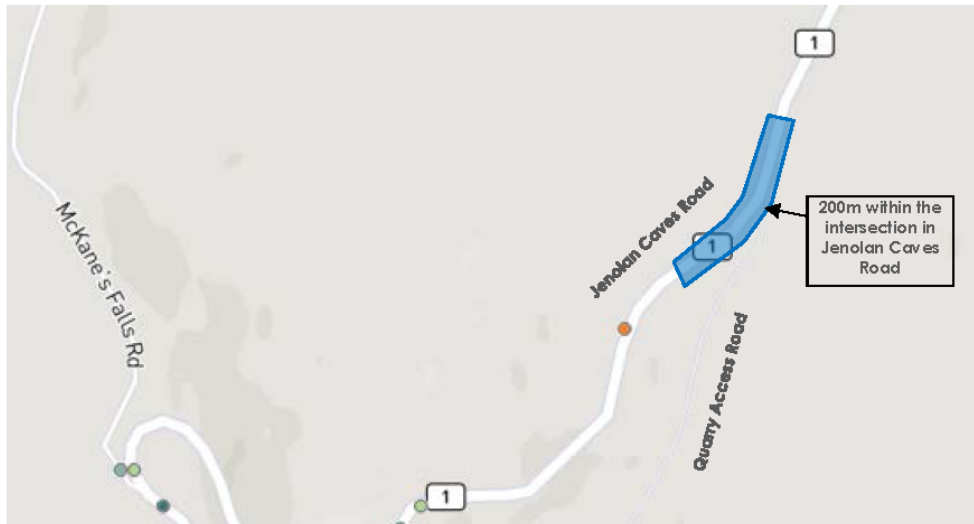
TPPP is in the view that the recommended CHR(S) turn treatment in Jenolan Caves Road into the Quarry Access Road is not warranted due to the following reasons:

- The Jenolan Caves Road section south of the Quarry Access Road is only occasionally used for transporting quarry products and is mostly used by locally resident Quarry staff.
- In the rare case that a heavy vehicle was used for local deliveries that requires a truck to return to the quarry and turn right from Jenolan Caves Road into the site, the traffic volume is considered too low to meet the warrant for a CHR(s) turn treatment at the intersection. This is further explained below in accordance with Austroads Guide to Road Design Part 4 (2017).
- No reported crashes have occurred within 200m of the intersection according to the latest five-year data period between 2012 and 2016. Figure 1 shows a single vehicle crash that involved the vehicle leaving the carriageway some 350m south of the intersection. This crash location is not relevant to the subject intersection.

The Transport Planning Partnership
Suite 402, 22 Atchison Street
ST LEONARDS NSW 2065



Figure 1: Crash Location (2012-2016)



Source: Transport for NSW

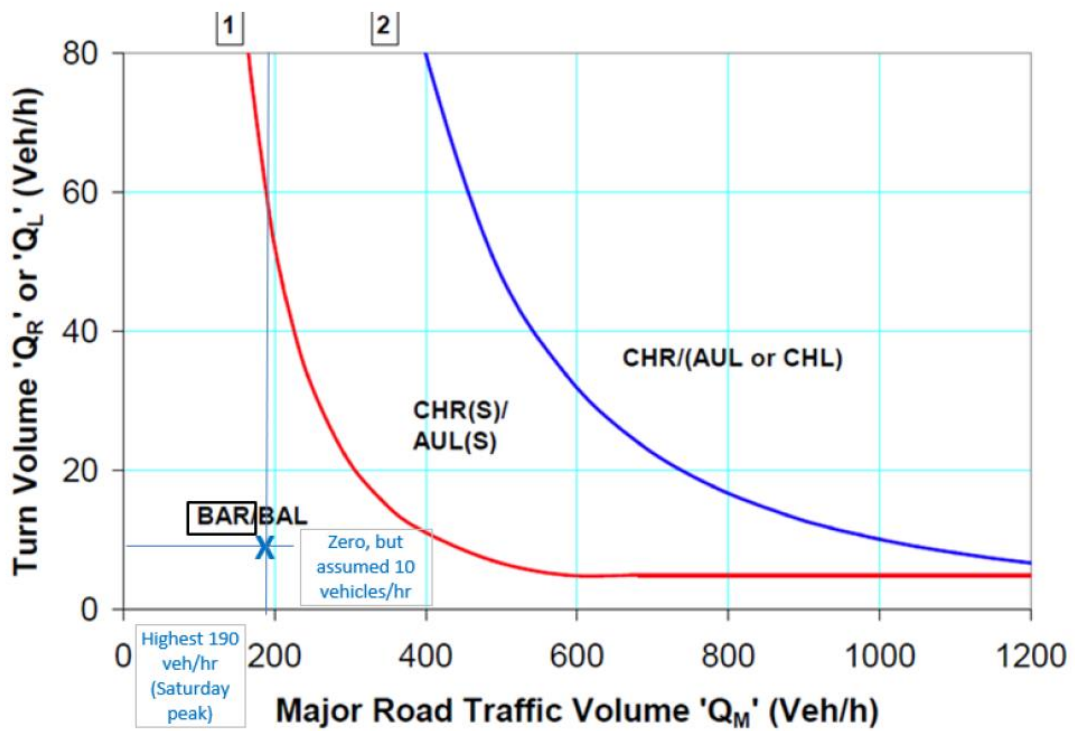
Traffic projections for year 2035 have been undertaken as a worst-case scenario to check the traffic volumes against the turn treatment warrants.

- TTPP's traffic assessment indicates that the 2035 baseline two-way traffic volumes on Jenolan Caves Road would be 169 vehicles ($Q_{T1}+Q_{T2}$) in the peak hour on Saturday (11am-12pm). This is an escalation from the existing 124 vehicles as shown in Attachment 1 (excluding about five Quarry vehicles turning left from Jenolan Caves Road into Quarry Access Road) with a growth rate of 2.0% per annum. The predicted Quarry traffic would be 21 vehicles per hour (Q_L) including 20 heavy vehicles and one light vehicle that would turn left from Jenolan Caves Road into Quarry Access Road. This gives a total of 190 vehicles, representing Q_M in the major road.
- Based on the traffic surveys undertaken for TTPP's traffic assessment, it was found that during the AM and PM peak hours there were no northbound right turn movements from Jenolan Caves Road into the Site. For the year 2035 traffic estimates, it was assumed 13 site related light vehicles per day would make the northbound right turn movement from Jenolan Caves Road into the Site. All of which are related to staff vehicle trips that would occur outside peak periods, and none of which would involve heavy vehicles. On the attached graph we have conservatively indicated that $Q_R = 10$ whereas, in reality, it is more likely to be 3-4 vehicle movements in the peak hour.
- On this basis, the projected traffic volumes are:
 - $Q_M = Q_{T1} + Q_{T2} + Q_L = 190$ vehicles
 - $Q_R = 10$ vehicles.

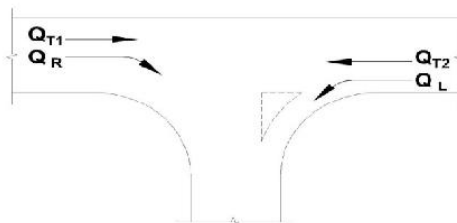


These Q_M and Q_R values have been used to check the turn treatment warrants in Figure 2, based on a speed zone of 80km/h speed zone as recommended by Roads and Maritime Services.

Figure 2: Austroads Turn Treatment Warrants



(b) Design speed < 100 km/h



Turn type	Splitter island	Q_m (Veh/h)
Right	No	$= Q_{T1} + Q_{T2} + Q_L$
Right	Yes	$= Q_{T1} + Q_{T2}$
Left	No/yes	$= Q_{T2}$

Source: Austroads Guide to Road Design Part 4 (2017)



Figure 2 indicates that the projected traffic volumes would warrant a BAR treatment, but the subject intersection already provides a higher-order turn treatment with an Auxiliary Right Turn (AUR) treatment. The AUR layout provides a 120m long auxiliary northbound lane enabling traffic to bypass a vehicle waiting to turn right.

Figure 3: Existing Layout



TTPP acknowledges that there are benefits of a CHR(S) over an AUR turn treatment with the provision of a dedicated right turn lane to separate the through and right turn movements. However, the warrant as indicated in the Austroads Guide (Section C6.3) is applicable for the construction of intersections on new roads, or as an intervention level when upgrading existing intersection turn treatments. Neither of these is the case for this existing intersection.

Therefore, TTPP is in the view that the Jenolan Caves Road intersection with the Quarry Access Road would only require upgrading to CHR(S) should the traffic volumes increase to meet the warrant for the higher-order turn treatment (i.e. above 60 vehicles per hour) and that currently the traffic falls a long way short of these requirements.



We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'K. Hollyoak', is written over a light grey rectangular background.

Ken Hollyoak
Director



Attachment 1 – Tube Count Data

