

Austen Quarry Stage 2 Extension Project Modification 1 (SSD 6084 MOD 1) Operational and Truck Dispatch Changes

Environmental Assessment Report Section 4.55(2) of the *Environmental Planning and Assessment Act 1979*

1. BACKGROUND

Hy-Tec Industries Pty Ltd (Hy-Tec), a fully owned subsidiary of Adelaide Brighton Ltd, operates the Austen Quarry (the quarry), located approximately 3.5 kilometres (km) southwest of the village of Hartley in the Lithgow local government area (see **Figure 1**). Hy-Tec leases the quarry site from the Hartley Pastoral Corporation Pty Ltd (HPC).

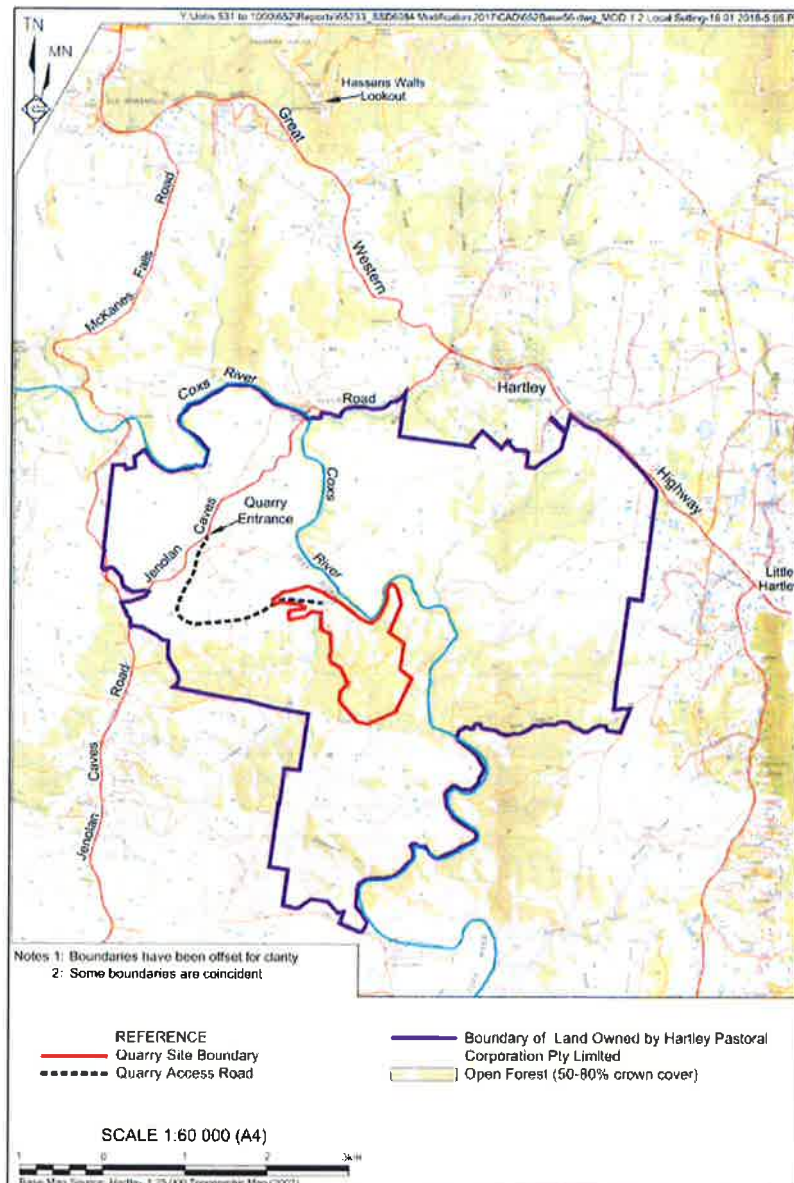


Figure 1: Regional location of Austen Quarry

The quarry is located on the western fringe of the Blue Mountains to the west of the Blue Mountains National Park and south of Mt York and Hassans Wall (see **Figure 1**). Nearby tourist operations include Jenolan Valley View Resort and the Glenroy Cottages and Campground. Other industries located near the quarry include forestry operations and two other quarries near Oberon.

Prior to the quarry becoming State Significant Development (SSD), operations were authorised by a development consent granted by the Council of the City of Greater Lithgow (now Lithgow City Council) on 22 March 1995 (DA 103/94). This consent allowed Hy-Tec to extract, process on-site and transport up to 1.1 million tonnes per annum (Mtpa) of hard rock (rhyolite) products a year.

Hy-Tec now operates under development consent SSD 6084 granted on 15 July 2015 by the Department's Executive Director of Resource Assessments and Compliance, under delegation from the then Minister of Planning. This consent allows Hy-Tec to extract and process rhyolite, to produce high quality aggregates, manufactured sand and road pavement materials. This consent also allows Hy-Tec to:

- carry out quarrying operations on the site until 30 June 2050;
- extract, process and transport up to 1.1 Mtpa of quarry products from the site in any financial year;
- extract to a maximum depth of 685 m AHD;
- load and dispatch trucks between 5 am - 10 pm Monday to Friday and 5 am – 3 pm on Saturday;
- dispatch up to 250 laden trucks from the site on any one day; and
- dispatch an average of 150 laden trucks from the site per day, over the total number of dispatch days in any calendar month.

Quarry products are transported via road to Hy-Tec's concrete batching plants in the Sydney metropolitan area and locally at Wallerawang. The site is accessed from Jenolan Caves Road via a privately owned and partially sealed road. All trucks travelling to and from the quarry use Jenolan Caves Road to travel to the Great Western Highway, where most trucks travel east towards the Sydney metropolitan area.

2. PROPOSED MODIFICATION

Hy-Tec is proposing to modify SSD 6084 under section 4.55 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Since starting operations under SSD 6084, Hy-Tec has identified an increase in demand for quarry products used in construction, landscaping and concrete manufacturing. Additionally, Hy-Tec notes that hard rock resources within the Sydney metropolitan area are near exhaustion or closure, leading to a reduction in supply of local aggregate products and increased demand for these products from regional areas.

2.1 Operational Amendments

Hy-Tec proposes to increase its annual dispatch limit by 45 % from 1.1 Mtpa to 1.6 Mtpa, to cater for the increased demand and additional resources. It is not proposed to change the approved methods of extraction, blasting frequency, processing or stockpiling activities.

Hy-Tec is producing lower volumes of overburden material at the quarry than previously predicted and a greater volume of overburden has been sold as product for road works and other projects, reducing the volume of material placed in the overburden emplacement. As a result, the overburden emplacement has not been developed as predicted and Hy-Tec considers it can be reduced in size. Hy-Tec has also determined that a 1.2 hectare (ha) area, previously rehabilitated and proposed to be extracted under the Stage 2 Extension Project, could be preserved without further disturbance.

As shown in **Figure 2**, Hy-Tec proposes to realign the:

- extraction area along the western and eastern boundaries to improve worker safety in narrow areas, reducing the total extraction area from 28.2 ha to 25.2 ha; and
- overburden emplacement area by removing the southern section and extending laterally to the east (into what would formerly have been the extraction area), reducing the overburden emplacement area from 13.5 ha to 12.2 ha.

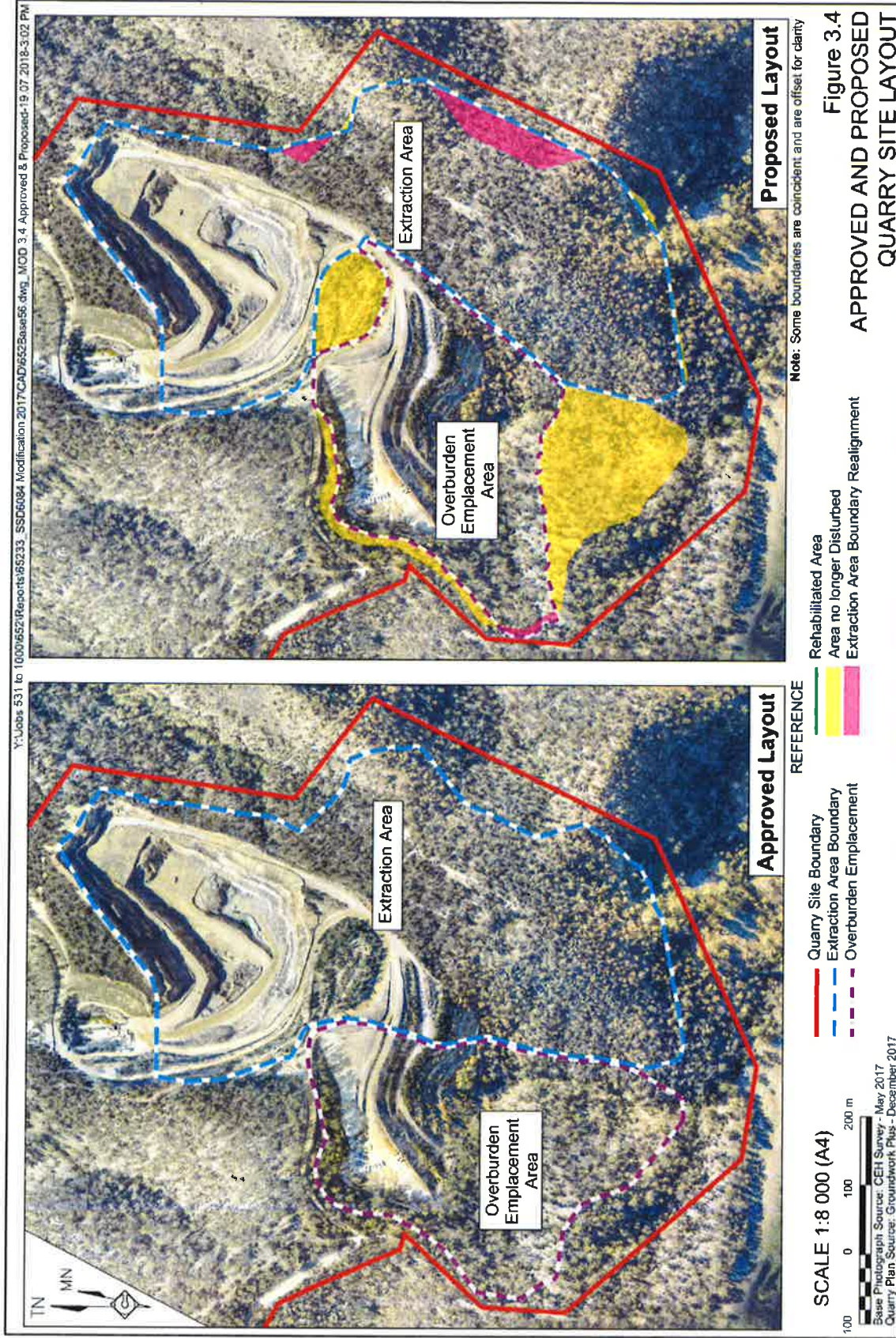


Figure 2: Approved and proposed quarry layout

The proposed changes to the extraction and overburden emplacement areas would result in changes to vegetation clearance, and consequently the biodiversity offsets and final landform. Existing conditions of consent require Hy-Tec to progressively rehabilitate the site and implement a Landscape and Rehabilitation Management Plan. Hy-Tec notes that rehabilitation of the site would remain generally consistent with the 2014 Environmental Impact Statement (EIS) and its Landscape and Rehabilitation Management Plan.

Following the introduction of the *Biodiversity Conservation Act 2016* (BC Act), *Biodiversity Conservation Regulation 2017* and subsequent repeal of the *Nature Conservation Trust Act 2001*, the option to secure a biodiversity offset under a Nature Conservation Trust Agreement is no longer available. Hy-Tec considers that the existing biodiversity offset conditions would not allow the offset requirements to be satisfied under the new Biodiversity Offsets Scheme established under the BC Act. The proposed changes to the overburden emplacement and extraction area would result in a reduction in native vegetation clearance. Subsequently, Hy-Tec proposes to revise its entire offset requirements to enable it to utilise the provisions under the BC Act.

2.2 Transport Changes

To accommodate the increased annual dispatch limit, Hy-Tec proposes to increase its maximum daily truck dispatch limit from 250 to 300 trucks with an associated increase in its average daily truck dispatch limit from 150 to 200 trucks (averaged over a calendar month). In addition to the increased truck numbers, Hy-Tec also proposes to start loading and dispatching trucks at 4 am Monday to Friday, one hour earlier than currently approved.

The earlier dispatch time is proposed as Hy-Tec has observed that morning peak traffic is occurring earlier on the Great Western Highway and in western Sydney. This is assumed to be a result of more people in the Lithgow and Blue Mountains local government areas commuting towards Sydney each morning for work.

Hy-Tec considers that starting product dispatch earlier in the day would increase the efficiency of its operations, reduce the number of product transport trucks travelling in peak hour traffic and provide additional benefits by reducing the time quarry trucks spend idling in traffic, thereby improving fuel consumption and cost-efficiency of truck maintenance.

The proposed modification is further summarised in **Table 1**. The proposed modification is supported by a Statement of Environmental Effects (SEE, see **Appendix A**).

Table 1: Comparison of Hy-Tec's approved and proposed activities at Austen Quarry

Aspect	Existing	Proposed MOD 1
<i>Disturbance area</i>	Approximately 41.7 ha	Approximately 37.4 ha
<i>Project life</i>	30 June 2050	No change
<i>Maximum annual production limit and product transport</i>	1.1 Mtpa	1.6 Mtpa
<i>Extraction area</i>	28.2 ha, to a depth of 685 m AHD	25.2 ha, to a depth of 685 m AHD
<i>Overburden emplacement</i>	Approximately 13.5 ha to an elevation of 810 m AHD	Approximately 12.2 ha to an elevation of 830 m AHD
<i>Extraction method</i>	Conventional drill and blast, load and haul methods	No change
<i>Secondary processing</i>	Four-stage crushing and screening plant and air separator - throughput 400 tonnes per hour (tph)	No change
<i>Stockpiling within the secondary processing area</i>	80,000 t capacity	No change
<i>Hours of operation:</i>		
• <i>Extraction</i>	Mon-Fri: 6 am - 10 pm Saturday: 7 am - 3 pm	No change
• <i>Blasting</i>	Mon-Fri: 10 am - 3 pm	No change
• <i>Loading and dispatch</i>	Mon-Fri: 5 am - 10 pm Saturday: 5 am - 3 pm	Mon-Fri: 4 am - 10 pm Saturday: No change
<i>Yorkeys Creek stockpile area</i>	Area = 4.4 ha	No change

	Capacity = 750,000 tonnes	
Daily truck loads	Average 150 Maximum 250	Average 200 Maximum 300
On-site administration facilities and amenities	Site office, two weighbridges, workshops, stores and amenities	No change
Water management system	Includes sediment basins, sumps, clean water dams, clean water diversions and drains to capture and store surface water runoff and minimise potential for uncontrolled discharges to the Coxs River	No change
Rehabilitation	Removal of all buildings, infrastructure and stockpiles. Revegetation of terminal extraction benches. Temporary measures to ensure erosion and sediment control. Monitoring the success of revegetation and erosion control. Final landform suitable for passive biodiversity conservation (woodland / forest vegetation) and minor grazing.	No change to rehabilitation objectives, proposed final land use or rehabilitation methods. Final landform design would be modified based on updated quarry design.
Biodiversity offsets	Retirement of: <ul style="list-style-type: none"> • 902 ecosystem credits; and • 11,092 species credits for the Silver-leaved Mountain Gum under the <i>Nature Conservation Trust Act 2001</i> , the <i>NSW Biodiversity Offsets Policy for Major Projects 2014</i> and <i>Framework for Biodiversity Assessment 2014</i> .	Retirement of: <ul style="list-style-type: none"> • 840 ecosystem credits; and • 10 784 species credits for the Silver-leaved Mountain Gum under the BC Act and <i>Biodiversity Conservation Regulation 2017</i> .

3 STATUTORY CONTEXT

3.1 Section 4.55(2)

SSD 6084 was approved under Part 4 of the EP&A Act. The modification application is under section 4.55(2) of the EP&A Act. It is considered that the development, as modified, would remain substantially the same development as originally approved.

The proposed modification involves increases to the annual dispatch limit, maximum and average daily truck dispatch limits, extension of weekday truck loading and dispatch hours, and adjustments to the extraction and overburden emplacement areas. These changes would result in an overall reduction in the area to be disturbed of 4.6 ha. Furthermore, the Department notes that the increased production limit is a result of utilising material formerly considered overburden.

The proposal would not change the core elements of the project, including the extraction methods or life of the quarry. Consequently, the Department is satisfied that the proposed modification is within the scope of section 4.55(2), and may be determined accordingly.

3.2 Consent Authority

The Minister for Planning was the consent authority for the original development application, and is consequently the consent authority for this modification application. However, the Director Resource Assessments may determine the application under the Minister's delegation of 11 October 2017, as Hy-Tec has not declared any reportable political donations, no community submissions objecting to the proposed modification were received and Council did not object to the proposed modification.

3.3 Other Approvals

Under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), Hy-Tec is approved to remove 721 individual Silver-leaved Mountain Gum plants (EPBC 2013/6967). As this species is listed as vulnerable under the EPBC Act, this is a 'controlled action' under the EPBC Act and biodiversity offsetting must be implemented in accordance with the EPBC Act's Environmental Offsets Policy. Hy-Tec proposes to seek a variation to EPBC 2013/6967 to reflect the reduced number of Silver-leaved Mountain Gum that would be removed due to the changes in the extraction and overburden emplacement areas. The Commonwealth Minister has the approval role for this variation.

Hy-Tec holds a surface water licence (WAL 25616) under the *Water Management Act 2000* to take water from Coxs River, if required. It is not expected that the modification would require any variation to this licence.

The quarry's activities are also regulated under an Environmental Protection Licence (EPL 12323) granted under the *Protection of the Environment Operations Act 1997*. EPL 12323 would need to be varied to reflect the proposed modification.

3.4 Environmental Planning Instruments

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

- *State Environmental Planning Policy (SEPP) (State and Regional Development) 2011*;
- *SEPP (Mining, Petroleum Production and Extractive Industries) 2007*;
- *SEPP No. 33 – Hazardous and Offensive Development*;
- *SEPP (Sydney Drinking Water Catchment) 2011*;
- *Lithgow Local Environmental Plan 2014*; and
- *Lithgow City Council Land Use Strategy 2010-2030*.

The Department has considered the assessment of relevant environmental planning instruments in Hy-Tec's SEE and assessed the proposed modification against the relevant provisions of these instruments. Based on this assessment, the Department is satisfied that the proposed modification can be carried out in a manner that is consistent with the aims, objectives and provisions of these instruments.

3.5 Objects of the EP&A Act

The Minister or delegate must consider the objects of the EP&A Act when making decisions under the Act. The objects of the EP&A Act changed on 1 March 2018. The Department has assessed the proposed modification against the current objects of the EP&A Act. The objects of most relevance to the decision on whether or not to approve the proposed modification are found in section 1.3. They are:

- Object 1.3(a): *to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources*;
- Object 1.3(b): *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment*;
- Object 1.3(c): *to promote the orderly and economic use and development of land*;
- Object 1.3(e): *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats*;
- Object 1.3(f): *to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage)*; and
- Object 1.3(j): *to provide increased opportunity for community participation in environmental planning and assessment*.

The Department is satisfied that the proposed modification encourages the proper management and development of resources (Object 1.3(a)) and the promotion of the orderly and economic use of land (Object 1.3(c)), since the modification:

- involves a permissible land use on the subject land;
- promotes efficient use of resources, which has been determined to be significant from a State and regional perspective;

- can be largely carried out using existing quarrying site and transport infrastructure; and
- would provide ongoing socio-economic benefits to the community of NSW.

The Department has considered the principles of ecologically sustainable development (ESD, Object 1.3(b)) in its assessment of the proposed modification. The Department also noted Hy-Tec's consideration of these matters, and considers that the proposed modification is able to be carried out in a manner that is consistent with the principles of ESD. The Department's assessment has sought to integrate all significant environmental, social and economic considerations.

Consideration of the protection of the environment (Object 1.3(e)) is provided in **Section 5** of this report. The Department believes that the modification as proposed has been designed to minimise potential environmental impacts where practicable, including reducing disturbance to threatened biodiversity.

The Department exhibited the modification application and made the accompanying SEE publicly available (Object 1.3(j)). During the exhibition period the Department received no public or special interest group submissions.

4. CONSULTATION

4.1 Exhibition

The Department exhibited the modification application and accompanying SEE from 14 March until 10 April 2018 and made them publicly available on its website, at NSW service centres and at the offices of the Lithgow City Council (LCC), Blue Mountains City Council (BMCC) and the Nature Conservation Council.

In response to this exhibition, the Department received 10 submissions from public authorities, including eight from NSW Government agencies and two from the respective Councils. The Department received no submissions from the public or special interest groups during the exhibition period. However, a resident located on the haulage route wrote to both Hy-Tec and the Honourable Paul Toole MP, State MLA for Bathurst, about the proposed modification. As these letters were not directly addressed to the Department they have not been treated as a submission, nevertheless the Department has considered the matters raised in them in **Section 5**.

The Department notes that Hy-Tec conducted its own consultation prior to submitting the modification application. This involved a letter box drop of a flyer summarising the proposal, delivered to neighbouring properties and community members that previously requested blast notifications, and a meeting with the Hartley District Progress Association chairperson.

Copies of these submissions and a copy of Hy-Tec's Response to Submissions (RTS) are included in **Appendix B** and **Appendix C**, respectively. A summary of the residual issues raised in the submissions is provided below (see **Appendix D** for agency comments on the RTS).

4.2 Public Authority Submissions

LCC did not object to the modification but expressed concerns regarding early morning noise from truck arrivals and loading and dispatching activities occurring from 4 am on weekday mornings, which could impact receivers near the quarry.

The quarry's original LCC approval (DA 103/94) limited truck movements (including loading and unloading), to 5 am to 10 pm Monday to Friday and 5 am to 3 pm Saturdays. LCC noted that these hours were subsequently carried through to SSD 6084, reflecting LCC's concerns over early morning noise affecting neighbouring properties.

LCC stated that ongoing maintenance to Jenolan Caves Road and Glenroy Bridge would be required to reduce potential road noise impacts. In its RTS, Hy-Tec advised that, in 2012, it funded an upgrade to Glenroy Bridge to remove depressions between the bridge deck and its approaches that were contributing to noise impacts as vehicles entered and departed the bridge. In February 2018, as part of the ongoing maintenance of Jenolan Caves Road, RMS resurfaced the Glenroy Bridge. The

Department understands that this has reduced traffic noise levels from vehicles crossing Glenroy Bridge.

Nevertheless, a previous acoustic study commissioned by LCC noted that, in relation to extended transportation hours, there would be no future guarantee that previously completed road works (ie road resurfacing) would achieve acceptable acoustic outcomes. The Department's consideration of potential noise and traffic impacts is discussed in **Sections 5.1** and **5.2**, respectively.

LCC also noted a previous complaint regarding trucks queuing outside the quarry entrance, which it considers would impact on surrounding rural and tourism land uses. In its RTS, Hy-Tec explained that this complaint had been addressed. A Hy-Tec employee now opens the quarry gates in the early morning approximately half an hour before operations start and an area inside the gate is available for trucks to park in until the weighbridge is opened. The Drivers' Code of Conduct was also updated to stop all drivers from queuing at the Jenolan Caves Road entrance gate.

The Department considers that these measures should continue to prevent trucks queuing outside the quarry and recommends existing condition 22(d) of Schedule 3 be updated to further ensure that trucks do not queue outside the quarry before the gates open (see **Section 5.2**).

BMCC raised concerns over the proposed increase to the average and maximum daily and monthly truck dispatches. **BMCC** has long-standing concerns about the impacts of heavy vehicles on the safety, amenity and function of the Great Western Highway. **BMCC** noted that Hy-Tec is a partner to the Drive Neighbourly Agreement – "Respect... Our Code on Blue Mountains Roads" and requested its continuing support for this agreement. In response, Hy-Tec further consulted with **BMCC** and advised that it currently is and intends to remain a partner to **BMCC**'s Drive Neighbourly Agreement.

BMCC considered that rail transportation should be investigated as an alternative to road transport of quarry products. In its RTS, Hy-Tec responded that rail transportation would not be viable as quarry products would still need to be delivered and distributed from the receiving rail siding via road.

BMCC raised concerns that additional maintenance of the Great Western Highway would be required to ensure current road standards are maintained. **RMS** is responsible for maintaining the Highway, a key freight and tourist route, and the Department is confident that **RMS** would ensure that it is appropriately maintained. The Department also understands that upgrades are scheduled between Katoomba and Lithgow in the near future.

BMCC considered that Hy-Tec did not adequately address traffic impacts on tourist traffic and cyclists and highlighted a lack of dedicated cycle lanes between the quarry and Katoomba. In its RTS, Hy-Tec stated that future **RMS** upgrades to the Great Western Highway would include off-road shared (ie cyclist/pedestrian) paths and also widened road shoulders which would further benefit cyclists. Existing conditions of consent also require Hy-Tec to implement a Drivers' Code of Conduct as part of its Transport Management Plan, including safe driving practices. The Department recommends that this condition is extended to ensure safe driving practices are implemented to avoid conflicts with other road users (see **Section 5.1**).

The Department notes that tourist traffic is highest during weekends. The quarry operates shorter hours on Saturdays (between 5 am and 3 pm) and does not operate on Sundays. To further address **BMCC**'s concerns, the Department has recommended a truck dispatch limit for Saturdays when tourist traffic is likely to be at its highest, albeit travelling mainly to the west.

BMCC also noted that Hy-Tec should expedite tree planting in areas where trees would be removed due to proposed road works in the area. Hy-Tec considers that the modification would not significantly change the view of the quarry from any vantage point. The Department considers that this is outside the scope of the modification, and understands that Hy-Tec has offered to pay **BMCC** a contribution towards planting in these areas. The Department has considered modification-related visual impacts in **Section 5.5**.

The **Office of Environment and Heritage** (OEH) advised that it supports modifications that seek to avoid impacts on biodiversity. OEH recommended that conditions of consent include the credits to be

retired and that the currently approved Biodiversity Offset Strategy be revised to ensure the continued management of Conservation Area H.

OEH noted that the Department previously approved a request by Hy-Tec for additional time to secure its biodiversity offsets, due to a 14 month delay between the determination of SSD 6084 and the commencement of operations. This deadline is currently 15 September 2018. OEH recommends that any arrangements to secure the offset area should be done in a timely manner. The Department agrees and recommends that Hy-Tec is given 12 months to retire the revised credit package proposed under this modification.

The Department's consideration of biodiversity impacts is discussed in **Section 5.3**.

The Commonwealth **Department of the Environment and Energy** (DoEE) noted that the modification would result in the clearing of 20 fewer individual Silver-leaved Mountain Gums. DoEE supports reduced impacts on Silver-leaved Mountain Gums and accepts the revised credit calculation required to meet NSW offsetting obligations. However, DoEE advised that Hy-Tec is not able to discharge its Commonwealth offset obligations through payments into the NSW Biodiversity Conservation Fund, as the Biodiversity Offset Scheme (including the Biodiversity Assessment Method) is not currently endorsed for offsetting matters protected under the EPBC Act.

The Department's consideration of biodiversity impacts is discussed in **Section 5.3**.

Roads and Maritime Services (RMS) raised concerns over vehicles on Jenolan Caves Road turning right into the quarry access road and recommended that Hy-Tec install a channelised right turn lane at the intersection. Hy-Tec provided additional information to RMS, detailing that a maximum of 13 light vehicles and less than one heavy vehicle per day would turn right from Jenolan Caves Road into the quarry access road. Subsequently, RMS withdrew its proposal for the intersection upgrade.

RMS also recommended that shift changeovers and truck dispatches are avoided during school bus pick up and drop off times and that a Drivers' Code of Conduct and Transport Management Plan should be developed to specifically manage driver fatigue and poor driver behaviour.

The Department notes that existing conditions of consent require Hy-Tec to develop a Transport Management Plan and Drivers' Code of Conduct. Hy-Tec also advised that it implements 'Chain of Responsibility: Driver – Vehicle Checks' which includes a Driver Fatigue Manual. To also help manage driver fatigue, Hy-Tec provides break rooms with tea and coffee facilities for drivers. Should drivers fail to meet necessary Drivers' Code of Conduct or regulatory requirements, disciplinary action would be taken. The Department recommends that the existing conditions for the Transport Management Plan and Drivers' Code of Conduct are revised to specifically include fatigue management and safe driving practices.

The Department's consideration of traffic impacts is discussed in **Section 5.2**.

The **Environment Protection Authority** (EPA) did not object to the proposed modification and considered that it would not lead to any significant noise or air quality impacts beyond the site boundary. However, the EPA did note that as the scale of activity would increase under the modification, Hy-Tec would have to apply for a variation to its EPL.

Noise impacts are discussed in **Section 5.1** and air quality impacts are discussed in **Section 5.5**.

The **Department of Industry – Water** (DoI Water) did not object to the proposal and was satisfied with existing conditions of consent. However, DoI Water noted that groundwater level monitoring carried out in accordance with the approved Water Management Plan must continue. In its RTS, Hy-Tec noted that the existing groundwater monitoring program would be continued and included in any subsequent revisions of the Water Management Plan.

The Department's **Division of Resources and Geoscience** (DRG) and **Geological Survey of New South Wales** (GSNSW) did not object to the proposal and advised that it supports efficient resource recovery, subject to fulfilling rehabilitation requirements. GSNSW requested that it be consulted on any

future modifications to ensure access to prospective land for mineral exploration is not reduced and that potential mineral or extractive resources are not sterilised.

DRG requested that Hy-Tec provides annual production data as a condition of any modified development consent. The Department notes that existing condition 17 of Schedule 2 currently requires Hy-Tec to provide annual quarry production data to DRG.

WaterNSW did not object to the proposed modification but recommended that the existing Water Management Plan, be amended to reflect the proposed modification. WaterNSW noted that it should be consulted on any revisions to relevant management plans. The Department notes that existing conditions require WaterNSW to be consulted in the preparation of the Water Management Plan and that this would include any subsequent revisions.

WaterNSW also requested that the existing Statement of Commitments is retained in Appendix 3 of the consent. The Statement of Commitments would be retained, but would be updated, where necessary, to reflect the proposed modification.

The **NSW Rural Fire Service (RFS)** did not object to the proposed modification and referred the Department to advice provided on 28 August 2013 recommending that a Bush Fire Emergency Evacuation Plan be prepared in accordance with its *Guide for Developing a Bush Fire Emergency Evacuation Plan*. Further, 20,000 litres of water for firefighting purposes should be positioned in a suitable location on site.

The Department notes that existing conditions require Hy-Tec to ensure the development is equipped to respond to fires on site and to assist RFS if there is a fire in the vicinity. The Department considers that provision of 20,000 litres of water would satisfy the first requirement. However, the Department does consider that conditions should be amended to include a requirement for a Bush Fire Emergency Evacuation Plan, prepared in accordance with *Guide for Developing a Bush Fire Emergency Evacuation Plan*.

The **Heritage Council of NSW** did not object to the proposed modification as it would not impact historic heritage items. The Department's consideration of heritage impacts is addressed in **Section 5.5**.

5. ASSESSMENT

The Department has assessed the merits of the proposed modification in accordance with the relevant objects and requirements of the EP&A Act. In assessing these merits, the Department has considered the:

- environmental impact statement (EIS) for the original development consent application;
- existing conditions of consent;
- modification application and accompanying documents; and
- relevant environmental planning instruments, policies and guidelines.

The Department considers that the key issues for assessment are the potential impacts to noise, traffic biodiversity and final landforms. Consideration of these issues is provided below. Other issues are discussed in **Section 5.5**.

5.1 Noise

The proposed increase in dispatch limits along with earlier loading and dispatch operating hours have the potential to change noise emissions from the quarry and disturb the sleep of residents at nearby privately-owned properties. The consent's existing noise criterion of 35 dB(A) was calculated under the then applicable *Industrial Noise Policy*. To consider the potential noise impacts of the modification, Hy-Tec provided a Noise and Blasting Impact Assessment, with the noise assessment prepared in accordance with the new *Noise Policy for Industry 2017 (NPI)* and *Road Noise Policy (RNP)*.

Under the former *Industrial Noise Policy*, noise criteria do not apply under noise-enhancing metrological conditions such as prevailing winds and temperature inversions. Notable changes under the NPI include

the assessment of low frequency noise, application of noise requirements under all weather conditions and an increased minimum daytime intrusive noise emissions limit from 35 to 40 dB(A).

The quarry is located in a rural area which experiences potentially noise-enhancing meteorological conditions. Prevailing winds are from the west-southwest and are commonly experienced in winter, spring and autumn, while northeast winds are more prevalent during summer. Temperature inversions are generally experienced in the Evening and/or Night periods during stable or light wind conditions (F-G class stability conditions) which are predicted to occur at the quarry on 60% of winter nights.

The Department notes that the proposed dispatch time of 4 am – 7 am occurs within the Night period and would be subject to potential temperature inversion conditions during winter. Extraction may also begin at 6 am, before the start of the Day period at 7 am. Therefore, there is still potential for sleep disturbance impacts in this early morning period, which are influenced by the number of noisy events heard distinctly above the background level.

An early morning shoulder period would recognise this gradual increase in noise before the Day period, allowing for an associated increase in noise levels during this transitional time. Hy-Tec notes that, due to traffic on the Great Western Highway and the local road network, noise levels in the vicinity generally start to increase between 4 and 5 am.

5.1.1 Traffic noise impacts

Currently, Hy-Tec is able to dispatch a maximum of 20 trucks per hour between 5 am and 7 am. Under the modification, Hy-Tec proposes to dispatch at the same rate, but commencing 1 hour earlier on weekdays.

Jenolan Caves Road is categorised as an arterial/sub arterial road with noise criteria of 60 dB(A) during the Day period and 55 dB(A) in the Night period under the RNP. Hy-Tec considered nearby receivers on the haulage route and identified R24A as the most affected by road traffic noise due to its location on Jenolan Caves Road (ie between the quarry access road and Great Western Highway and adjacent to the Glenroy Bridge). The assessment below is therefore focused on this receiver only.

Table 2 shows that at R24A existing non-quarry road traffic noise levels exceed the RNP assessment criteria for both Day and Night periods. However, existing quarry road traffic noise on its own is below the criteria.

Hy-Tec's road traffic noise assessment predicts that the quarry-related traffic contribution to total road traffic noise levels would increase by less than 0.1 dB(A) during the Day (7 am to 10 pm) and Night period (10 pm to 7 am).

The overall change to cumulative road traffic noise levels from the proposed modification would therefore be negligible for both periods. This is consistent with the RNP which requires that, where existing road traffic noise criteria are already being exceeded, any additional increase in total road traffic noise level should be limited to 2 dB(A), as anything less is imperceptible to the average person.

Table 2: Predicted road traffic noise levels at R24A (dB(A))

Period	Assessment Criterion	Existing Quarry Traffic Noise	Future Quarry Traffic Noise	Existing Non-Quarry Road Traffic Noise	Existing Road Traffic Noise (Cumulative)	Future Road Traffic Noise (Cumulative)	Change in Noise Level
Day	60 dB L _{Aeq, 15hr}	57.1	58.0	67.7	68.1	68.1	<0.1
Night	55 dB L _{Aeq, 9hr}	49.3	49.3	57.5	58.1	58.1	<0.1

As discussed in **Section 4.2**, LCC raised concerns about potential early morning noise and ongoing maintenance of Jenolan Caves Road and Glenroy Bridge. The Department notes that the proposed traffic noise impacts are within recommended RNP criteria and that Jenolan Caves Road is a State-managed road, approved for heavy vehicle use 24 hours per day. As a result, the Department is satisfied that road traffic noise is within recommended limits and would have limited impacts to receivers.

Receiver R24A

Following Hy-Tec's letter box drop (see **Section 4.1**), the owners of the Glenroy Cottages and Campground (R24A), wrote to it expressing concerns with the modification, particularly traffic noise and sleep disturbance from vehicles crossing Glenroy Bridge. Receiver R24A has a family residence set back approximately 190 m from Jenolan Caves Road. It also contains three rental cottages setback from Jenolan Caves Road at varying distances and a further rental property located immediately beside the road.

Hy-Tec met with the owners of R24A in February and March 2018 to discuss their concerns raised and potential mitigation measures. During these discussions it was noted that heavy vehicles approaching Glenroy Bridge at reduced speeds are noticeably quieter than if they travel close to or at the current speed limit of 80 km/hr. The lack of advisory signage to limit compression braking was also raised as a concern. Hy-Tec committed to raise these issues with RMS and advised its drivers to reduce to 40 km/hr on the approach to the Glenroy Bridge.

RMS advised that it does not intend to change the speed limit on this section of road. However, Hy-Tec consulted with RMS and confirmed that it is not concerned about Hy-Tec drivers reducing to 40 km/h in this location, if safe to do so. Hy-Tec maintains that the sign-posted speed of 80km/hr is unsafe, noisy and could potentially cause impacts to the bridge structure. It will seek support from R24A and LCC to formally request RMS to reduce the speed limit to 40km/hr for all heavy vehicles travelling over Glenroy Bridge.

The Department considers that any request and action to change the speed limit on the Glenroy Bridge section of Jenolan Caves Road is independent of the determination of this modification. The Department notes the steps taken by Hy-Tec to manage traffic noise impacts in the area, including revisions to its Drivers' Code of Conduct.

To better determine road traffic impacts at R24A, Hy-Tec conducted noise monitoring in April 2018 (including LA_{max} to assess sleep disturbance). The results indicated that cumulative road noise levels are compliant with assessment criteria under the RNP (see **Table 2**). Given that cumulative road noise is compliant at the monitoring location 35 m from the road, cumulative road noise levels should also be compliant with assessment criteria at the family residence and three of the rental cottages, as they are set back further from Jenolan Caves Road and Glenroy Bridge.

One rental property is located immediately beside Jenolan Caves Road. The Department notes that the noise criteria set for temporary short term accommodation are not as strict as for permanent residences. Hy-Tec notes the rental accommodation at R24A is mainly used at weekends, when the quarry operates for a shorter duration on Saturdays and does not operate on Sundays. Given that the predicted road traffic noise increase would be imperceptible (ie less than 2 dB(A)), the property is not a permanent residence, and the road is approved for 24-hour heavy vehicle use, the Department considers the noise impacts at this location are acceptable.

The noise monitoring results also showed that quarry-related heavy vehicles generated LA_{max} noise levels between 74 dB(A) and 80 dB(A), while non-quarry heavy vehicles generated LA_{max} noise levels between 81 dB(A) and 83 dB(A). Quarry heavy vehicles are assumed to be generating less noise because of the reduced speed travelling over Glenroy Bridge.

The RNP advises an internal sleep disturbance criterion of 50 – 55 dB(A). Hy-Tec predicts that external maximum noise levels at the family residence would be approximately 55 dB(A); however, when accounting for the standard 10 dB(A) external noise attenuation provided by a building façade (with open windows), this would reduce to 45 dB(A) internally.

Hy-Tec has undertaken two mitigation initiatives to further reduce road noise levels at R24A. In late April 2018, Hy-Tec planted 50 native seedlings adjacent to Jenolan Caves Road and Glenroy Bridge at R24A (see **Figure 3**). Eventually, Hy-Tec estimates that these trees will provide an additional 1 – 2 dB(A) in noise reduction for the family residence and some of the rental cottages. However, the Department considers that any noise reduction from these trees is unlikely to be of significance for the foreseeable future, until they mature.



Figure 3: Planting of seedlings at R24A

In June 2018, Hy-Tec also installed window shutters at the family residence on R24A. The shutters are predicted to reduce road traffic noise by a further 3 – 10 dB(A). This would likely result in, at a minimum, an internal noise level of 42 dB(A) at the family residence, below the internal sleep disturbance criteria of 55 dB(A).

The Department acknowledges the efforts undertaken by Hy-Tec to address the concerns raised by the owners of R24A. The Department considers that, based on Hy-Tec's predictions, the reduced truck speeds would provide a noticeable reduction in noise levels experienced at the family residence, while the window shutters would provide a benefit from all traffic noise. The owners of R24A advised Hy-Tec of their satisfaction with the results to date, but nevertheless expressed ongoing concerns about road traffic noise.

The Department notes the concerns also raised by LCC about potential noise impacts (see **Section 4.2**) and considers that Hy-Tec's commitments should be included in conditions of consent. Therefore, the Department recommends that the existing Noise Management Plan condition is updated to require annual noise monitoring at R24A, and that the results are used to inform noise management practices and published in the Annual Review. The Department also recommends that the existing Transport Management Plan and Drivers' Code of Conduct are updated to reflect the reductions in speed and compression braking on this section of Jenolan Caves Road.

5.1.2 Operational noise impacts

In October and December 2017, Hy-Tec conducted attended noise monitoring which confirmed that quarry noise contributions were less than 35 dB_{LAeq,15min} at all receiver locations during the proposed morning shoulder period (4 am to 7 am), Day period (7 am to 6 pm) and Evening period (6 pm to 10 pm). Monitoring also demonstrated compliance with the consent's existing noise criterion, set under the *Industrial Noise Policy*.

In its SEE, Hy-Tec modelled noise levels from the increase in production and dispatch rates to identify potential impacts at the closest receivers. These noise levels were compared to Project Trigger Noise Levels (PTNLs) established under the new NPI to determine if operations, as proposed to be modified, would comply with the revised criteria (see **Table 3**).

During both calm and temperature inversion conditions (which represent a worst case and occur largely during winter nights), noise emissions would not exceed either the existing noise criterion of 35 dB(A) or the new PTNLs (see **Table 3** and **Figure 4**).

Table 3: Predicted operational noise levels (dB(A))

Receiver	Predicted Noise Levels Calm Conditions				Predicted Noise Levels Temperature Inversion			Noise Criteria PTNLs		
	L _{Aeq,15min}				L _{Aeq,15min}			L _{Aeq,15min}		
	Day	Evening	Night*	Night**	Evening	Night*	Night**	Day	Evening	Night
R9	26	25	<25	25	29	<25	28	40	35	35
R16	29	29	<25	28	32	<25	32	40	35	35
R22	<25	<25	<25	<25	25	<25	<25	40	35	35
R23	25	25	<25	25	27	<25	27	40	35	35
R24A	27	27	<25	27	30	<25	30	44	44	43
R27	<25	<25	<25	<25	25	<25	<25	40	35	35
R31	33	33	<25	32	35	25	35	40	35	35
R48	30	29	<25	<25	32	<25	32	40	35	35
R49	25	25	<25	<25	27	<25	27	40	35	35
R54	31	31	27	30	34	29	33	40	35	35

Notes: *Product loading and dispatch operations only from 4 am to 6 am

** Extractive operations, processing, product loading and dispatch from 6 am to 7 am

While the annual dispatch limit is proposed to increase, the Department notes that the increase in saleable product is the result of utilising overburden as product, rather than changes to extraction processes. As a result, there is no significant change to operational noise levels. The Department is therefore satisfied that Hy-Tec could continue to comply with its current consent criterion of 35 dB(A) at all receivers, for all time periods.

The Department notes that the assessment has been completed in accordance with the NPI, which sets the minimum daytime intrusiveness criterion at 40 dB(A). However, the Department recommends that the existing daytime noise criterion is retained, based on noise modelling which shows that the quarry operates well within its existing limit of 35 dB(A).

Low frequency noise impacts

The NPI requires assessment of low frequency noise to reflect more recent understanding of the impact of tonal and low-frequency noise on the community. The NPI requires the difference between C-weighted and A-weighted sound levels to be less than 15 dB, or else a correction factor must be applied, depending on specific circumstances. Hy-Tec assessed the likelihood of low frequency noise emissions from the quarry which predicts the highest L_{Ceq} – L_{Aeq} to be 12.5 dB at receiver R54. As this is less than 15 dB, the Department is satisfied that low frequency noise is unlikely to impact receivers near the quarry.

Sleep disturbance

Truck loading and dispatch, and truck movements on the quarry access road could potentially disturb the sleep of nearby receivers in the proposed morning shoulder period. **Table 4** shows that noise predictions for L_{Amax} during calm conditions and temperature inversion conditions are below the sleep disturbance criteria.

Table 4: Maximum noise level event assessment night/morning shoulder period

Receiver	Predicted Noise Levels Calm Conditions	Predicted Noise Levels Temperature Inversion	Noise Level Assessment Level L _{Amax}
	L _{Amax}	L _{Amax}	
R9	36	39	52
R16	39	42	52
R22	33	35	52
R23	35	38	52
R24A	37	40	53
R27	32	35	52
R31	43	46	52
R48	40	42	52
R49	35	37	52
R54	41	44	52

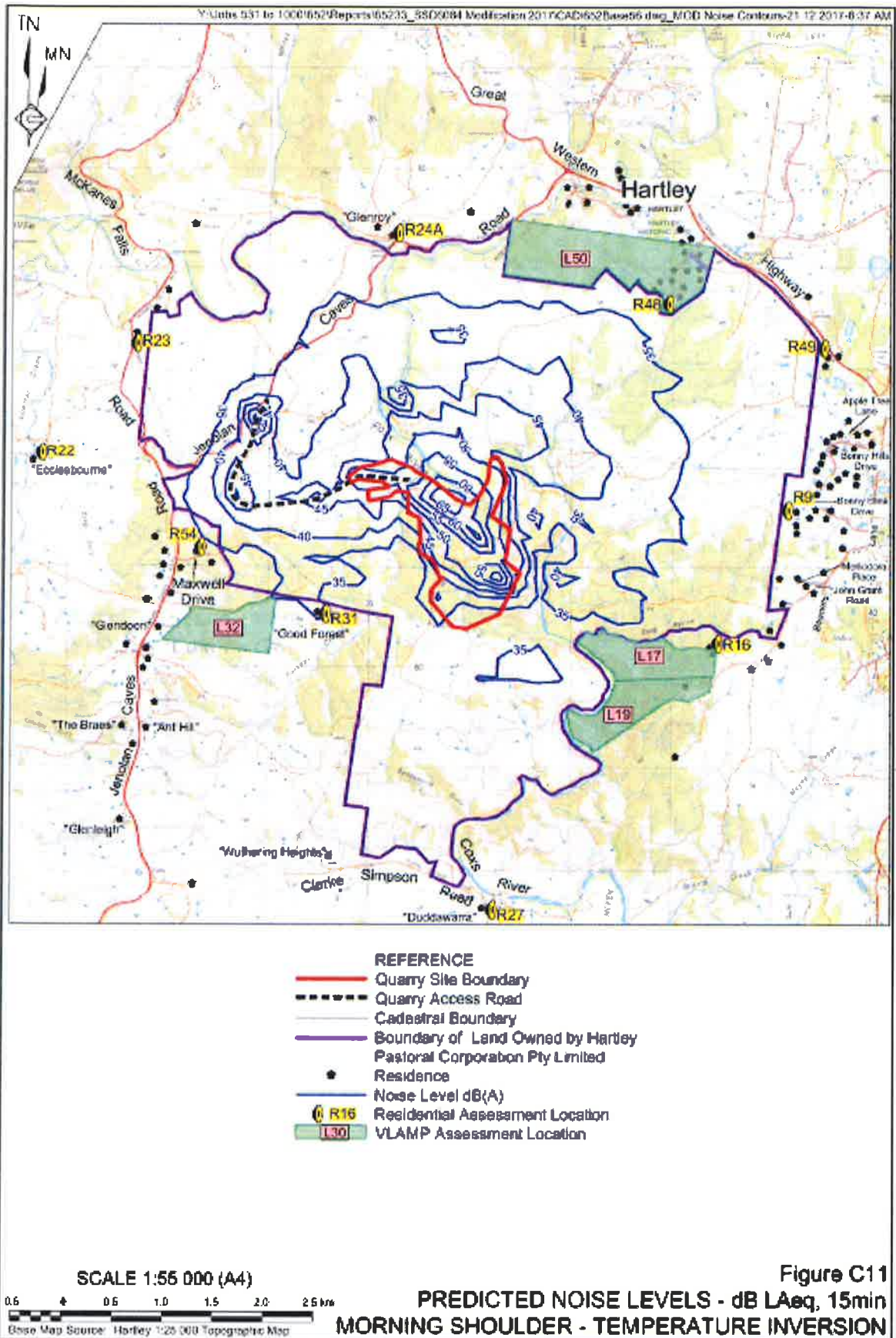


Figure 4: Predicted temperature inversion noise levels during the morning shoulder period

As the predicted noise levels in **Table 4** are below the assessment trigger levels, a detailed maximum noise level assessment under the NPI is not required.

The Department is satisfied that truck loading and dispatch would not result in sleep disturbance at privately-owned residences near the quarry, including rental accommodation. Nevertheless, the Department acknowledges the concerns from receiver R24A and the LCC regarding the potential for sleep disturbance during the morning shoulder period. Therefore, the Department recommends that the conditions include a LA_{max} noise criterion for truck loading and dispatch activities during the morning shoulder period.

5.1.3 Conclusion

The Department is satisfied that the proposed modification would not cause increased operational noise impacts at receivers above those already approved. The Department recommends the existing noise criteria are updated to include sleep disturbance noise criteria for the early morning shoulder period.

The Department is satisfied that traffic noise impacts would be limited, particularly as Hy-Tec has completed mitigation measures at the most sensitive receiver, R24A. The Department recommends that the existing Noise Management Plan condition is updated to require that Hy-Tec monitor noise at receiver R24A annually, for the life of the project. The Department also recommends the Transport Management Plan and Drivers' Code of Conduct are revised to include Hy-Tec's speed reduction commitments.

5.2 Traffic and Transport

Hy-Tec's SEE included a Traffic Impact Assessment (TIA), prepared by The Transport Planning Partnership, to assess potential traffic impacts on the quarry's haulage route. The quarry's haulage route consists of a 3 km access road that is accessed from the Great Western Highway via Jenolan Caves Road.

The existing conditions of consent impose limits on the maximum number of trucks that can be dispatched from the quarry per day, and also per operating day when averaged over a calendar month. The proposed modification seeks to increase these limits by 20% and 33%, respectively (see **Table 5**). It is not proposed to increase the maximum hourly dispatch rate of 20 laden trucks per hour.

Table 5: Existing vs proposed truck dispatch rates

	Approved	Proposed
Maximum daily dispatch rate	250	300
Daily dispatch rate, averaged over the total number of dispatch days in any calendar month	150	200

Hy-Tec advised that the increased dispatch rates would only be required under high product demand scenarios. Modelling in the TIA is based on these scenarios, which include the:

- Maximum Operations Scenario – up to 300 laden trucks per day; and
- Peak Operations Scenario – up to 240 laden trucks per day on weekdays and up to 130 laden trucks on Saturdays.

The use of the Maximum Operations Scenario reflects the maximum daily dispatch limit, which the TIA estimates is likely to be needed on approximately five days per calendar year. The Peak Operations Scenario is estimated to occur on approximately ten days per calendar year and reflects the limits on daily truck dispatches when averaged over a calendar month.

5.2.1 Traffic Generation

The TIA used RMS's annual average daily traffic data for the Great Western Highway and data collected from a traffic survey conducted in February 2017 on Jenolan Caves Road and the quarry access road to quantify existing traffic levels. This latter survey collected vehicle type and volume data at hourly intervals over a 14-day period. The Department considers that the results of this survey provide an appropriate representation of traffic levels along the quarry's haulage route.

Table 6 identifies the proposed maximum change to existing traffic generation based on the Maximum Operating Scenario.

Table 6: Proposed changes to daily traffic generation - weekdays (total movements, maximum dispatch)

Road	Total Traffic (including Austen)	Background Traffic (Total traffic excluding Austen**)	Approved Truck movements	Approved relative to background (%)	Proposed truck movements	Proposed relative to background (%)	% increase
GWH (east)*	11,337	11,045	450	4%	540	5%	0.7%
GWH (west)*	8,687	8,655	50	<1%	60	<1%	0.1%
Jenolan Caves Road	1,490	1,165	500	30%	600	34%	4.0%
Quarry access road	371	46	500	92%	600	93%	1.3%

*90% of truck movements go east on Great Western Highway and 10% go west

** 325 based on 2017 surveyed traffic count

In its submission, BMCC raised concerns that the proposed increased truck movements could pose additional safety risks for road users in the Blue Mountains (see **Section 4.2**). Total traffic is predicted to increase on the Great Western Highway by less than 1%. The Department considers that the proposed minor increase in heavy vehicle movements would have a very small impact on traffic and safety on this road.

On Jenolan Caves Road, traffic would increase by approximately 4%. Jenolan Caves Road is a State-classified road that is frequently used by tourists. Traffic generation data indicates a higher number of vehicles use this road on Saturdays (approximately 1,648) than on weekdays, which reaffirms the likely significant use of the road by tourists. The Department notes that Jenolan Caves Road is an approved B-Double Route, constructed to accommodate articulated vehicles of up to 19 m. On this basis, and in light of existing traffic patterns, the Department accepts that this road has the capacity to accommodate the proposed additional truck movements.

The Peak Operations Scenario predicts 130 truck dispatches on Saturdays, however the SEE does not specify whether the quarry ever intends to dispatch its maximum allowable rate (300 laden trucks) on Saturdays. The Department notes that, on Saturdays, the quarry would not be able to dispatch more than 200 trucks based on a maximum truck dispatch rate of 20 per hour over 10 operating hours. Due to the increased number of road users and tourists in the Blue Mountains on weekends, the Department considers that the Maximum Operations Scenario should be limited to weekdays only and Saturdays should have a separate but proportional maximum dispatch limit. The Department has recommended a condition of consent to this effect.

Most vehicles using the quarry access road are quarry-related vehicles (93%). However, a small number of vehicles use the road to access neighbouring properties. Based on the quarry's approved trucking limits, the proposed modification would result in a 1.3% increase in traffic on this road (see **Table 6**). The quarry access road is a two-way single lane sealed road with a width of 10 m. This road is a private road which is maintained by Hy-Tec under its lease agreement. The Department is satisfied that the quarry access road could readily accommodate the proposed additional truck movements.

Earlier dispatch

The proposed modification seeks to permit product dispatch from 4 am. This is an hour earlier than currently permitted under the quarry's consent. The SEE identifies that traffic volumes along the haulage route, between 4 am and 5 am, are substantially less than volumes during the peak period. On this basis, the Department considers that the quarry's haulage route could readily accommodate the

proposed additional truck movements during this hour. Potential road noise impacts that may occur during this earlier morning shoulder period have been discussed in **Section 5.1**.

Light vehicles

The proposed modification would result in up to 20 additional light vehicle movements to and from the site per day. The arrival and departure of these vehicles would be spread over the day to accommodate the day and night shifts. The Department considers that these proposed additional light vehicle movements would have a negligible impact on traffic and safety along the quarry's haulage route.

5.2.3 Intersections

The proposed modification would increase the number of vehicles using the intersections of Jenolan Caves Road and the quarry access road, and the Great Western Highway and Jenolan Caves Road. The TIA provided an assessment of how the proposed additional truck movements would impact the performance and safety of these intersections, over the life of quarrying operations.

Intersection of Great Western Highway and Jenolan Caves Road

This intersection is a four-way priority-controlled intersection that is used by over 1,200 vehicles during peak hour. Drivers exiting Jenolan Caves Road on to the Great Western Highway have good sight distances of approximately 200 m to the south and 400 m to the north.

Based on the quarry's existing maximum dispatch levels and forecast traffic growth, this intersection is predicted to experience a declining Level of Service (LoS). Hy-Tec is already required to start biannual monitoring of this intersection from 2022 and maintain it to an acceptable LoS. Hy-Tec confirmed its commitment to monitor this intersection in 2022 and would also ensure that an acceptable LoS is maintained by adjusting or restricting the number of trucks leaving the quarry.

Table 7 summarises the predicted LoS for the intersection under both the Maximum and Peak Operation Scenarios. Currently, the intersection operates at LoS B with an average delay of 25 seconds.

Table 7: Predicted LoS for Great Western Highway/Jenolan Caves Road intersection, maximum and peak scenarios

Year	Peak Operations (240 laden trucks)		Max Operations (300 laden trucks)	
	2022	2035	2022	2035
Level of Service	C	D	C	F
Average Delay	33 seconds	50 seconds	34 seconds	84

Under the Peak Operations Scenario, the intersection is predicted to operate at a declining but acceptable LoS. By 2035, the intersection is predicted to operate at LoS D with an average delay of 50 seconds.

Under the Maximum Operations Scenario, by 2035 the intersection is predicted to have declined to an unacceptable LoS F. Hy-Tec acknowledged the unacceptable LoS predicted under the Maximum Operations Scenario, but emphasised that it would only occur for five calendar days per year. Hy-Tec undertook additional modelling of the Maximum Operations Scenario to better understand when the intersection would begin to operate inadequately (ie LoS D to LoS E). It was predicted that this change would occur around 2025.

To mitigate adverse intersection performance, Hy-Tec committed to ongoing monitoring of this intersection and to continued discussions with RMS about maintaining an acceptable LoS. Hy-Tec also drew attention to RMS's 2013 concept plan for the upgrade of this intersection, which would potentially include an underpass to relieve the key delay point within the intersection.

RMS raised no concern over the proposed impacts on this intersection. On this basis, and considering Hy-Tec's commitment to maintain a satisfactory LoS, the Department considers that it is not necessary to require Hy-Tec to upgrade the intersection, either now or in the future. However, appropriate mitigation measures must be in place to avoid poor intersection performance, particularly if RMS upgrades are delayed.

The Department considers that monitoring of the intersection should be undertaken from 2022 onwards, as planned. If monitoring indicates that the intersection would operate inadequately under the quarry's

Maximum Operations Scenario, then Hy-Tec must adjust or restrict the number of trucks that may be dispatched to ensure an acceptable LoS is achieved. The Department has recommended a condition of consent to this effect.

Intersection of Jenolan Caves Road and quarry access road

This intersection is a priority-controlled intersection with sight distance of approximately 200 m (left and right) when exiting from the quarry access road. Currently, the intersection operates at LoS A with an average delay of 12 seconds.

Under the Peak and Maximum Operations scenarios, this intersection is predicted to experience LoS B in 2035 with an average delay of 16 seconds. The Department considers that this intersection could readily accommodate the proposed additional truck movements without adversely affecting the overall intersection performance.

5.2.4 Conclusion

The TIA advises that the Maximum Operations Scenario would likely only be required for up to five days per year, and similarly, the Peak Operations Scenario would likely only be required for up to 10 days per year. On this basis, it can be assumed that, on the remaining days of the year, the quarry would dispatch at a rate less than the Maximum Operations Scenario.

The Department considers that the application of the Maximum Operations Scenario, would allow for the desired flexibility in product dispatch to reflect fluctuation in customer demand, whilst providing more certainty on the maximum level of daily truck movements.

As discussed, the Department considers it would only be possible for Hy-Tec to operate at the Maximum Operations Scenario on weekdays, and recommends that conditions reflect this limitation. While Hy-Tec has shorter operating hours on Saturdays, the Department notes that tourist traffic is more frequent at this time and recommends a Saturday dispatch limit of 167.

The lower number of truck dispatches on Saturdays would significantly reduce daily dispatches when averaged over all operating days in a calendar month. The Department therefore recommends that the calendar month average is limited to weekdays (ie averaged over 20 weekdays per month, rather than 24 operating days).

The Department also recommends a condition to require Hy-Tec to start monitoring the Great Western Highway and Jenolan Caves Road intersection from 2022, in consultation with RMS.

The Department is satisfied that traffic impacts associated with the proposed modification can be effectively managed under recommended conditions of consent. These include:

- the restriction on use of the Maximum Operations Scenario to weekdays, subject to inclusion of a proportional Saturday dispatch limit;
- modifying the basis of calculating monthly average dispatches to cover weekdays only; and
- regular monitoring of the Great Western Highway and Jenolan Caves intersection from 2022 and the application of management measures to maintain an acceptable LoS at that intersection.

5.3 Biodiversity

Hy-Tec is already required to secure biodiversity offsets under existing conditions and a proposal to secure an offset area by 15 September 2018 under a Nature Conservation Trust Agreement has already been approved under the existing Landscape and Rehabilitation Management Plan. As discussed in **Section 4.2**, on 25 August 2017 the BC Act and *Biodiversity Conservation Regulation 2017* commenced and the *Nature Conservation Trust Act 2001* was repealed. As a result of these legislative changes, securing an offset under a Nature Conservation Trust Agreement is no longer a viable option.

As described in **Section 2**, Hy-Tec proposes to realign the boundaries of both the extraction area and overburden emplacement area, resulting in a net reduction of 4.6 ha of vegetation disturbance and an associated reduction in biodiversity credit requirements. Consequently, Hy-Tec has recalculated its biodiversity credits under the *Framework for Biodiversity Assessment (FBA)* to reflect this reduction in disturbance.

There is a substantial population of Silver-leaved Mountain Gum, a listed species under the EPBC Act, within the quarry area. The local importance of this species was recognised in the previous Council consent for the site (DA 103/94). Condition 7 of that consent required Hy-Tec to pursue a conservation agreement over suitable habitat for the species, which led to the establishment of a 2.2 ha conservation area to the northeast of the site, known as Conservation Area H.

This conservation area is managed as part of a conservation agreement between HPC and OEH's National Parks and Wildlife Service for the protection and conservation of habitat for this species. Condition 7 also required Hy-Tec to undertake a propagation program for this species. Over 3,000 individuals have been successfully grown, with approximately 1,400 of these planted on site as part of Hy-Tec's regeneration efforts.

5.3.1 Biodiversity Credits Required

Hy-Tec estimates that the proposed realigned extraction area would result in additional disturbance of approximately:

- 1.0 ha of Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion; and
- 0.1 ha of the Forest Red Gum - Yellow Box woodland of dry gorge slopes, southern Sydney Basin and South Eastern Highlands Bioregion.

Conversely, the proposed changes to the overburden emplacement area would result in a reduced disturbance of approximately:

- 1.3 ha of Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion;
- 2.3 ha of Forest Red Gum - Yellow Box woodland of dry gorge slopes, southern Sydney Basin and South-Eastern Highlands Bioregion; and
- 0.7 ha of Apple Box - Broad-leaved Peppermint dry open forest of the Abercrombie-Tarlo area, South Eastern Highlands Bioregion.

The proposed changes to vegetation impacts and NSW ecosystem credits are summarised in **Table 8**.

Table 8: Comparison of approved and proposed vegetation impacts and associated NSW ecosystem credits

Vegetation Community	Approved			Proposed		
	Direct Impact (ha)	Indirect Impact (ha)	Credits Required	Direct Impact (ha)	Indirect Impact (ha)	Credits Required
Brittle Gum – Broad-leaved Peppermint open forest	17.3	1.3	620	18.1	1.4	649
Forest Red Gum grassy open forest	4.4	0.8	134	1.9	0.6	60
Stringybark – Apple Box open forest	4.8	0.4	148	4.2	0.5	131
Total	26.5	2.5	902	24.2	2.5	840

Under its current consent and Commonwealth approval, Hy-Tec is approved to disturb 721 Silver-leaved Mountain Gum individuals, of which 631 were planted by Hy-Tec, and 90 were naturally occurring. A 1.2 ha rehabilitated area, revegetated with Silver-leaved Mountain Gum and originally approved for extraction under SSD 6084, would no longer be disturbed. The number of Silver-leaved Mountain Gum plants to be removed would be reduced from 721 to 701.

The proposed change to Commonwealth species credits is summarised in **Table 9**.

Table 9: Commonwealth species credit requirement

	Silver-leaved Mountain Gum Core Population	Silver-leaved Mountain Gum - non-core population (naturally occurring)	Silver-leaved Mountain Gum - planted	Total number of individuals	Credits required for planted Silver-leaved Mountain Gum	Total Species Credits required
Approved	0	90	631	721	9,705	11,092

Proposed	0	90	611	701	9,397	10,784
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5.3.2 Credit Retirement

Hy-Tec has recalculated the ecosystem credits required to offset the impacts of the modification (see **Table 8**). While OEH accepts the proposed biodiversity offset calculation, it notes that the original credit obligations were determined under the FBA and were not retired prior to 25 February 2018 (see **Table 8**). As a result, these credits require conversion to credits under the new framework.

The Department notes that it is not necessary for the credit conversion to be calculated prior to determining this modification. However, the conversion would be required prior to Hy-Tec fully or partially retiring credits via payments to the NSW Biodiversity Conservation Fund.

DoEE accepts the revised species credit calculation for the Silver-leaved Mountain Gum (see **Table 9** and **Section 4.2**). However, DoEE has not endorsed the NSW Biodiversity Offset Scheme (including the NSW Biodiversity Conservation Fund) for offsetting relevant matters protected under the EPBC Act. As such, the Commonwealth Silver-leaved Mountain Gum offset obligation may not be able to be discharged through payments into the Fund.

Conservation Area H

OEH recommended revisions to the Biodiversity Offset Strategy (condition 25 of Schedule 3) and the Security of Offsets (condition 26 of Schedule 3), advising that these conditions should not be linked and should ensure the continued management of Conservation Area H.

As discussed above, Conservation Area H is managed for the protection and conservation of habitat for the Silver-leaved Mountain Gum. The area is used as a source of local seed for the propagation of the species for planting at the quarry and is managed through access restrictions, weed management and feral animal and herbivore controls.

Hy-Tec acknowledges that ongoing management of Conservation Area H is an existing obligation that should continue in addition to the offsetting arrangements required under SSD 6084. This area is already addressed in the existing approved Landscape and Rehabilitation Management Plan, Biodiversity Offset Management Plan and Silver-leaved Mountain Gum Management Plan.

5.3.3 Conclusion

The Department notes that the modification would result in an overall reduction in vegetation disturbance at the quarry site and is satisfied that the revised ecosystem and species credits are appropriate to offset the residual impacts of vegetation clearance. The Department recommends that the conditions of consent are updated to reflect the changes in legislation and the reduction in credits resulting from the modification and that they specify the ecosystem and species credits now required.

The Department notes that, under the BC Act, offset obligations may be met by retiring biodiversity credits (from the market or the Applicant's own offset site), paying into the NSW Biodiversity Conservation Fund or by a combination of these options. The Department considers that updating the existing biodiversity offset conditions would not contradict DoEE's advice and the option to retire both NSW ecosystem or Commonwealth species credits via a land based offset remains open. It is the Department's understanding that retiring the Commonwealth species credits via a land-based offset would remain necessary under the EPBC approval.

The Department agrees with OEH that the management of Conservation Area H should be a continued requirement and has included this in the revised conditions of consent. The Department also recommends that the Landscape and Rehabilitation Management Plan is updated to reflect the modification.

5.4 Final Landform and Rehabilitation

Hy-Tec has proposed a redesigned final landform to account for the changes to the extraction and overburden emplacement areas, described in **Section 2.1**.

The proposed modification would result in a slightly narrower final void as a result of the realignment (see **Figure 5** and **6**). Hy-Tec considers that the proposed final void would not require different erosion

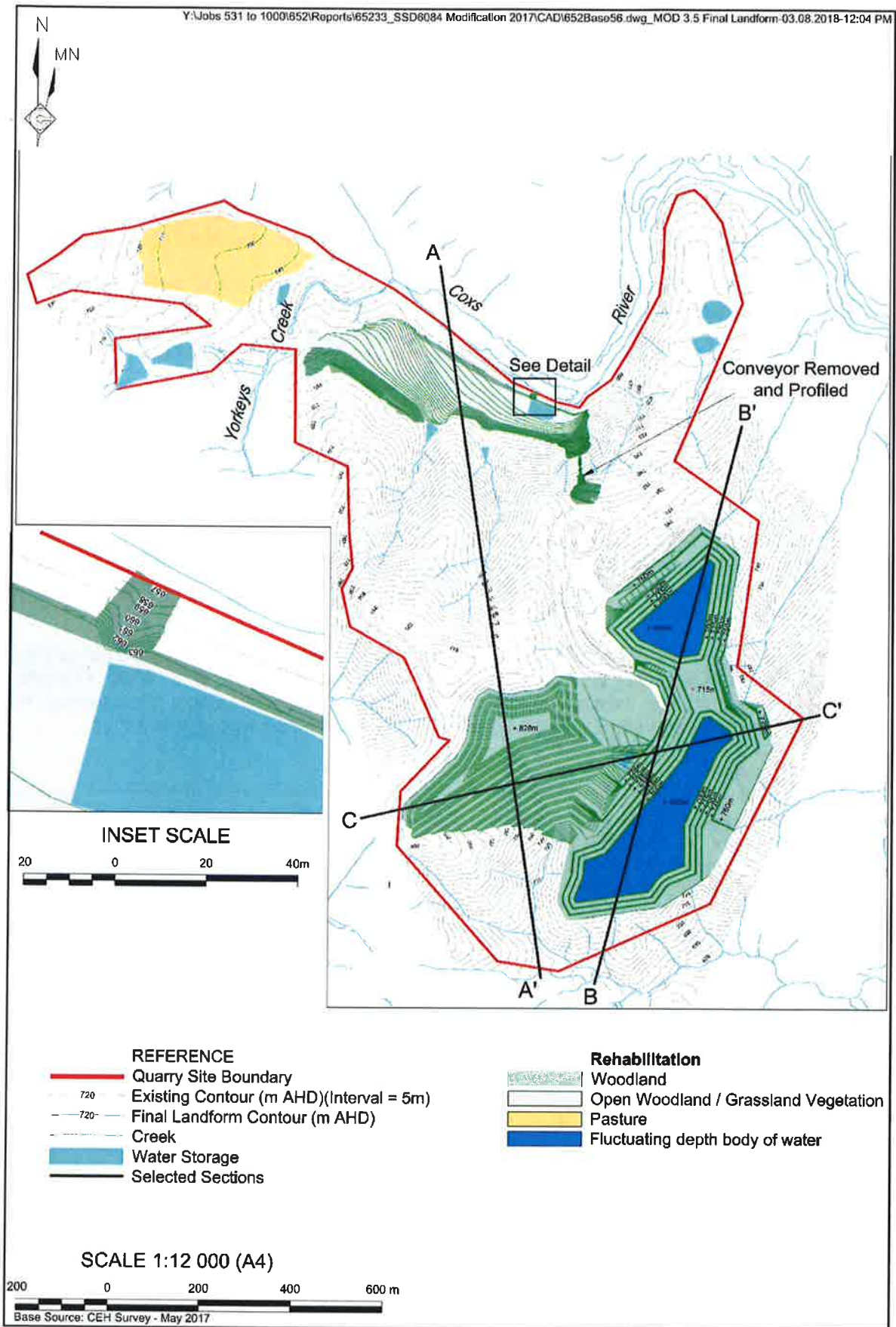


Figure 5: Proposed final landform

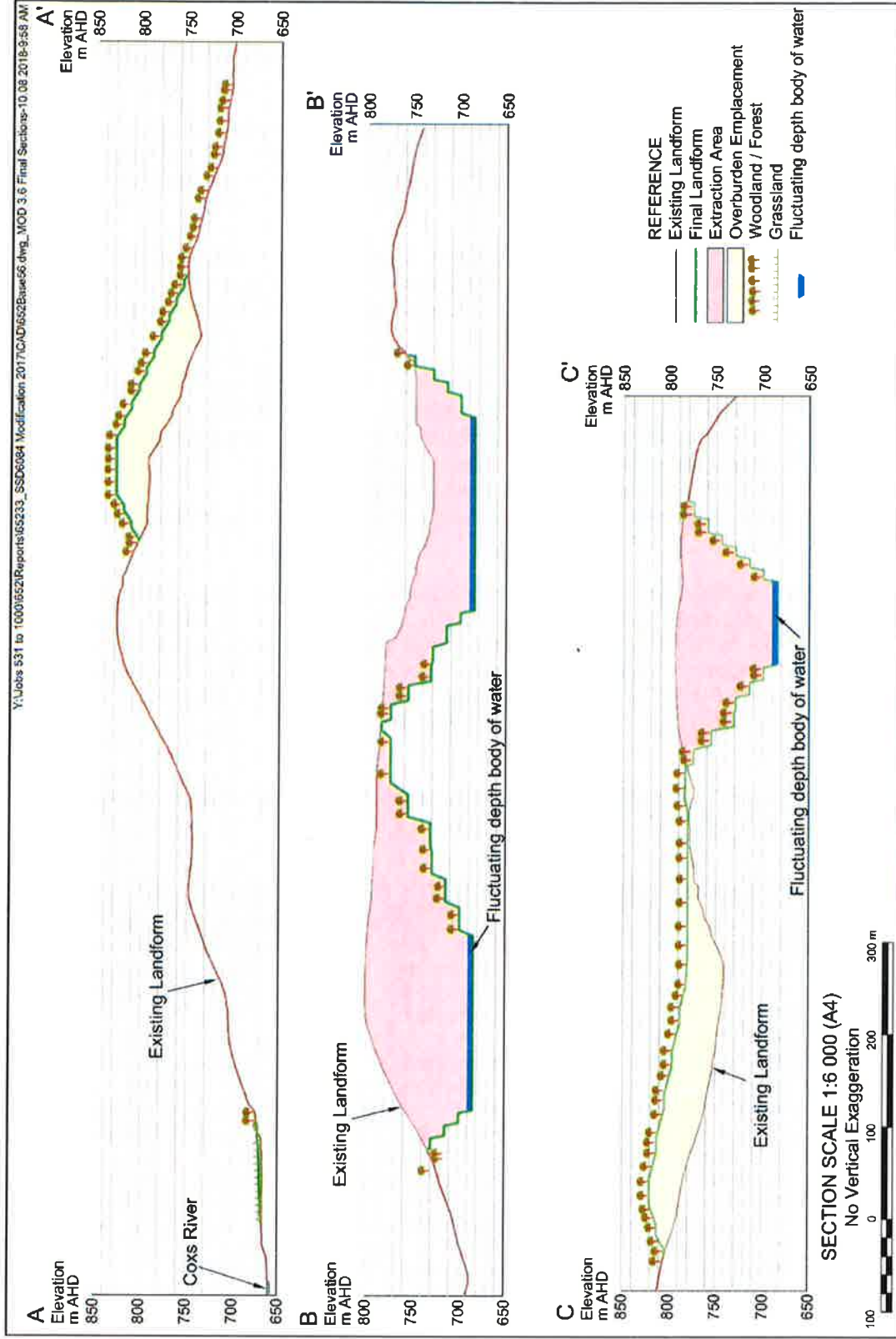


Figure 6: Cross-sections of proposed final landform

and sediment control strategies than currently approved. The benches would continue to be designed to reduce sediment movement, and all water would be diverted to sumps within the quarry floor.

Given existing climate patterns and low yields recorded in groundwater monitoring bores, Hy-Tec predicts that it would be unlikely for a permanent water feature to develop in the quarry floor, as evaporation is greater than the inputs from groundwater and rainfall. However, at times (ie following heavy rain) the water level may fluctuate as rainfall runoff and groundwater seepage is captured, before evaporating.

The modification would also change the approved final overburden emplacement area with a proposed elevation of approximately 830m AHD, approximately 20 m higher than that currently approved (see **Figure 6**). Hy-Tec considers this elevation is consistent with the nearby ridge and therefore would effectively blend in with the surrounding landscape.

As currently approved under SSD 6084, the terminal faces of the extraction area would be retained at 70° to 80° and coated with a bitumen spray over faces visible from vantage points to the north and northeast. This would act as a short-term measure to reduce adverse visual impacts from the pale rock faces until vegetation is established (see **Section 5.2**).

The Department notes that DRG did not raise any concerns over the proposed changes to the final landform (see **Section 4**). The quarry's long-term rehabilitation objectives are to:

- blend the created landforms and revegetation with those in the surrounding topography;
- provide a low maintenance, geotechnically stable and safe landform with minimal erosion, particularly within the extraction area and overburden emplacement; and
- re-instate the pre-disturbance soil and land capability in the areas used for secondary processing and stockpiling.

The Department notes that these objectives are consistent with existing conditions of consent and the changes would reduce the overall area to be rehabilitated. The Department is satisfied that the final landform and rehabilitation would not result in any additional impacts above those already approved. Existing conditions of consent require Hy-Tec to develop and implement a Landscape and Rehabilitation Management Plan. The Department recommends that Hy-Tec update the Landscape and Rehabilitation Management Plan to reflect the proposed modification.

5.5 Other Impacts

The Department is satisfied that the other impacts of the proposal are likely to be minor. Assessment of these other impacts is summarised in **Table 10** below.

Table 10: Other Impacts

Issue	Impact and Consideration	Recommendation
Air Quality	<ul style="list-style-type: none"> • The new <i>Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales</i> require more stringent PM₁₀ criteria reducing from 30 µg/m³ to 25 µg/m³ and includes new criteria for PM_{2.5}. • Hy-Tec assessed the potential to increase particulate emissions around the quarry in accordance with this document. • The modelling predicts that while the modification would result in a minor increase in emissions, there would be no exceedance of the criteria for PM_{2.5}, PM₁₀, TSP or dust deposition at any privately-owned residence. • Modelling also predicts the annual cumulative PM_{2.5}, PM₁₀, TSP and dust deposition levels would be below the 	<ul style="list-style-type: none"> • The Department is satisfied that the modification would not cause any material change to local air quality, and would in fact be subject to more stringent criteria. • The Department has recommended revised air quality criteria, which reflect the updated <i>Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales</i>. • The Department also recommends that Hy-Tec revise its Air Quality Management Plan to reflect the modification.

Table 10: Other Impacts (contin)

Issue	Impact and Consideration	Recommendation
Air Quality	<ul style="list-style-type: none"> relevant criteria at privately owned residences. The EPA did not raise any concerns over air quality impacts, but advised that the existing EPL would require a variation. 	
Heritage	<ul style="list-style-type: none"> Hy-Tec considers that there would be no change in environmental impacts to Aboriginal or non-Aboriginal heritage as a result of the modification. The Department notes that no sites of Aboriginal or non-Aboriginal heritage significance were previously identified on the site. Hy-Tec previously committed to suspend works in the event that undiscovered items of Aboriginal or non-Aboriginal heritage significance are identified. It considers that this remains an appropriate management measure. 	<ul style="list-style-type: none"> The Department considers that impacts to Aboriginal and non-Aboriginal heritage are unlikely. It is satisfied that any heritage impacts would be suitably managed under existing conditions of consent.
Water Resources	<ul style="list-style-type: none"> To manage groundwater drawdown existing conditions of consent limit extraction to 685 m AHD. Hy-Tec considers groundwater drawdown would remain substantially the same as currently approved. The Department notes that Hy-Tec is not proposing to change the depth of extraction or configuration or management of existing sediment basins, drains and diversions. Changing the overburden emplacement area would likely reduce run-off to sediment basin SB3 and subsequently reduce the discharge frequency and volume. The Department notes that neither WaterNSW, Dol or EPA raised any concerns over the modification. WaterNSW and Dol recommended configuration of water monitoring and that the Water Management Plan is updated. The Department is satisfied that these recommendations would be addressed by existing conditions of consent. 	<ul style="list-style-type: none"> No changes to conditions are recommended.
Visual	<ul style="list-style-type: none"> The proposed changes to the overburden emplacement area would result in an elevation of approximately 830m AHD, which is 20 m higher than currently approved (810m AHD). Hy-Tec notes that this higher elevation would be consistent with the nearby ridge and would effectively blend with the surrounding landscape. As discussed in Section 4, BMCC, noted that proposed road workson the Great Western Highway between Mount Victoria and Katoomba, will involve removal of trees which currently provide screening of the quarry. Hy-Tec noted that while this is not related to the modification it would discuss providing BMCC with a contribution towards its replanting costs. 	<ul style="list-style-type: none"> The Department is satisfied that visual impacts of the proposed modification would be negligible. The Department considers that existing conditions would continue to adequately manage potential visual impacts and recommends that the Landscape and Rehabilitation Management Plan is updated to reflect the modification.

	<ul style="list-style-type: none"> Hy-Tec considers the long-term visual impact of the terminal quarry faces would be progressively reduced by the establishment of vegetation on the final benches (see Figure 5). Hy-Tec also considers the realigned extraction area and overburden emplacement area would not result in significant changes to the outlook from nearby vantage points. The existing Landscape and Rehabilitation Management Plan requires that vegetation screens are established to minimise visual impacts, and that the effectiveness of these measures are monitored. The Department notes that recent (May 2018) planting of native seedlings on the northern ridge, overburden site and quarry highwall would eventually provide visual screening. 	
<i>Social and Economic Impacts</i>	<ul style="list-style-type: none"> The proposed modification would result in employment of an additional 15 full-time transport contractors. The majority of these contractors live close by and therefore some employment benefits would be experienced locally. Hy-Tec notes potential for an additional nine quarry employees, based on delivery timing and customer demand. The increased despatch limit would also increase annual contributions paid to LCC. 	<ul style="list-style-type: none"> The Department acknowledges the significant mitigation measures undertaken by Hy-Tec to address the amenity issues raised by R24A. The Department is satisfied that there would be negligible adverse social impacts resulting from the proposed modification and considers there is likely to be local benefit from increased employment.

6. RECOMMENDED CONDITIONS

The Department has drafted a recommended Notice of Modification (see **Appendix D**) and a consolidated version of the approval as it is proposed to be modified (see **Appendix E**). The Department considers that the environmental impacts of the proposal can otherwise continue to be managed through existing conditions approval.

The Department has also taken the opportunity to recommend some minor administrative changes to update existing conditions and reflect the Department's current drafting standards.

Hy-Tec has considered the recommended conditions and did not raise any objections.

7. CONCLUSION

The Department has assessed the merits of the proposed modification, the SEE and RTS in accordance with the requirements of the EP&A Act. In doing so the Department has carefully considered the proposal's potential impacts on the natural and cultural environment and on nearby residents.

This assessment has shown that, with the implementation of minor amendments to existing conditions, coupled with Hy-Tec's proposed mitigation measures and required amendments to existing management plans, the modification can be carried out with limited and acceptable social and environmental impacts.

Following on from its assessment of the project, the Department considers that the project is approvable, subject to the proposed conditions of approval (see **Appendix D**).

8. RECOMMENDATION

It is recommended that the Director, Resource Assessments, as delegate of the Minister:

- **considers** the findings and recommendations of this report;
- **determines** that the modifications are within the scope of section 4.55(2) of the EP&A Act;
- **approves** the modification of the existing development consent under section 4.55(2), subject to conditions; and
- **signs** the attached notice of modification (**Appendix D**).

Recommended by:

Recommended by:

M Hollis 15/08/2018

J Evans 15/08/2018

Melanie Hollis
Senior Planning Officer

Jessie Evans
Team Leader

9. DECISION

Approved by:

Howard Reed

Howard Reed
Director
Resource Assessments
15.8.18

APPENDIX A: STATEMENT OF ENVIRONMENTAL EFFECTS (SEE)

The SEE is available at

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9059

APPENDIX B: SUBMISSIONS

The submissions are available at

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9059

APPENDIX C: RESPONSE TO SUBMISSIONS (RTS)

The RTS and additional information is available at

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9059

APPENDIX D: NOTICE OF MODIFICATION

APPENDIX E: CONSOLIDATED PROJECT APPROVAL
