6 March 2020

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Dear Tamai

Re: Dowe's Quarry Expansion Project – Response to Tenterfield Shire Council

This letter provides a response to the request for clarification and additional information provided by Tenterfield Shire Council (Council) on 20 December 2019 regarding the proposed expansion and continued operation of the Dowe's Quarry (the Project). This response has been prepared by R. W. Corkery & Co Pty Limited (RWC) and will be incorporated into a larger response to the submissions Council received following public exhibition of the Environmental Impact Statement for the Project. This information has been extracted and provided separately in order to assist with Council's assessment of the application.

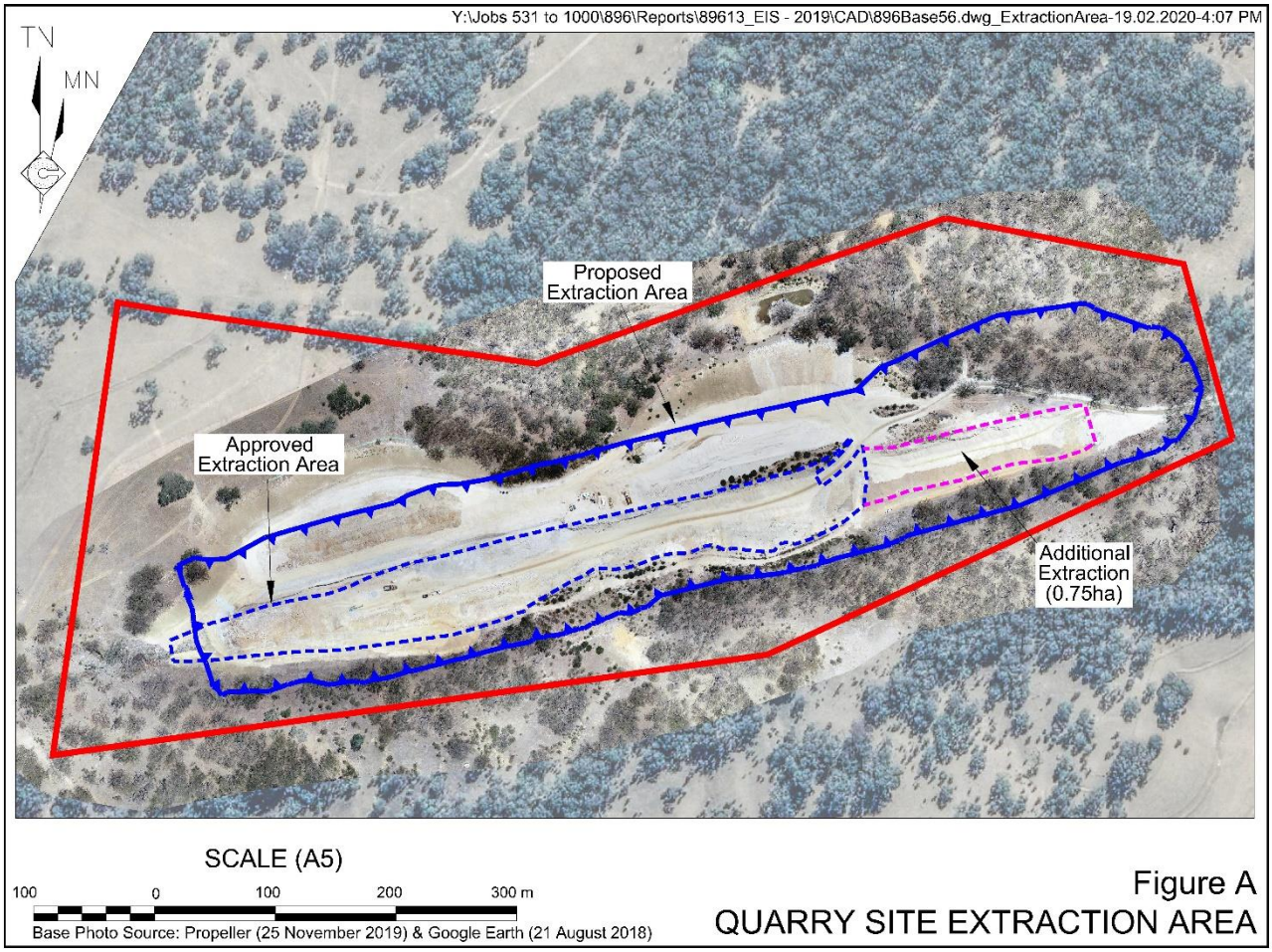
Each of the issues raised by Council is addressed in a separate subheading as follows, with the issues addressed in the order they were presented in the Council correspondence.

Identify where (on map) existing operations exceed approved (ref p1-8).

Response

DMcC has acknowledged that extraction activities under the existing approval (DA 2014.078/1) have exceeded the boundary of the extraction area. **Figure A** presents the area of additional extraction that covers approximately 0.75ha.

As is evident from **Figure A**, the additional area that has been extracted has since been backfilled with fines and overburden. Should the current development application not proceed this area would be revegetated and rehabilitated.



Details of complaints received as referred to in EIS? (p. 1-11)

Response

The comment in Section 1.10 of the EIS in relation to historical complaints made to the operator was acknowledgement that over the life of the operation there have been complaints made at times, although infrequently. It has only been in recent times that complaints have been formally recorded, however each complaint has in the past been investigated to establish the cause of the concern and where appropriate the outcome has been discussed with the complainant. Historical complaints have generally related to noise or dust generation and related to one-off events that were noticeable to the community rather than prolonged concerns.

Since the local community became aware of this development application and it was submitted to Council for public exhibition, there has been a rise in the number of complaints. This is a typical response to applications such as this, where community members become more aware of activities when they are notified of the application or through public consultation and in some cases wish to make a statement about the operation so that the complaint is considered in determination of the application. Recent complaints have related principally to dust and noise generation from blasting and from transport operations. Each complaint has been registered, investigated and a response provided to the complainant (if known).

EIS indicates it [processing area and bund] at an elevated site within quarry – 910m AHD – during site inspection Terry Woods indicated that this location is to be changed to the quarry floor – EIS

and Figures need to be amended to reflect proposed change – noise and air quality assessments adjusted accordingly.

Response

In response to the community feedback received on the Project, DMcC has investigated opportunities to minimise potential environmental impacts associated with the ongoing Quarry operation. This includes relocating processing activities to the Quarry floor. **Figure B** presents the updated layout of the Quarry with the mobile processing equipment located in the extraction area. It is predicted that the change in elevation to 905m AHD during Stage 1 and Stage 2 of operations and an elevation of 875m AHD during Stage 3 of operations would reduce the dust and noise levels experienced at the closest privately-owned residences.

The noise and air quality assessments have been updated to reflect this change with the outcomes of assessment predicting compliance with all relevant noise and air quality-related criteria. Figures presented in this document may be relied upon for any development consent and therefore the EIS will not be updated unless requested by Council following determination of the application.

On site buildings proposed – floor plan and elevations, diesel tank location

Response

An indicative plan for the on-site demountable building is attached with this letter (**Attachment 1**). This building would be a standard demountable and provide a crib room, ablution facilities and any administrative facilities required for the ongoing Quarry operation.

The mobile diesel fuel tank would be located within the product stockpiling area.

Processing area and bund as identified on Indicative Quarry Site plan - already constructed? Referenced as future works? Was any clearing undertaken in the areas as identified on Figure 2.8 to create this area?

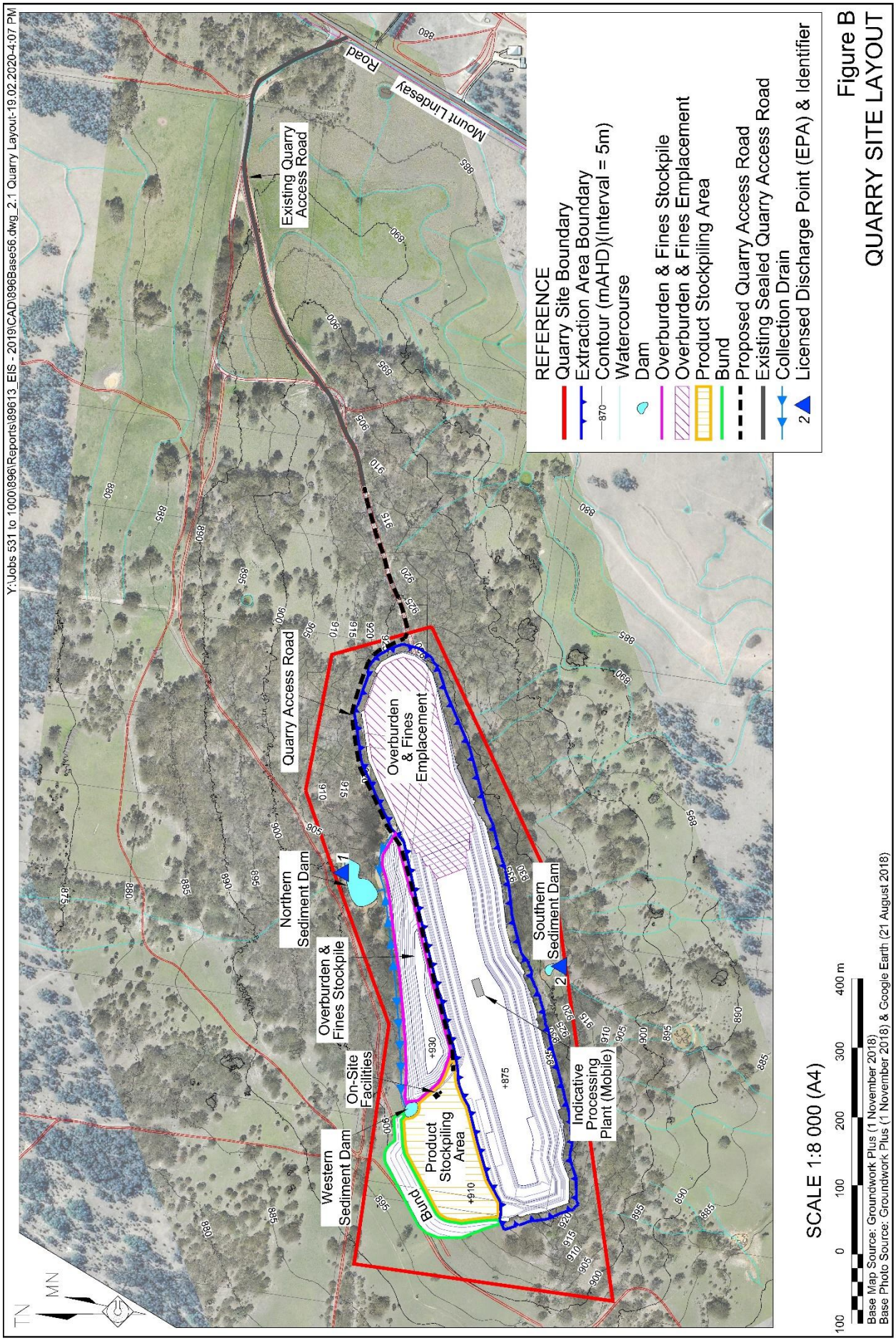
Response

Figure C presents the areas proposed for clearing superimposed on aerial photography dated 25 November 2019. This figure shows where a level area has been developed by on-site earthworks. It is acknowledged that the area has extended outside the boundary at the edges (it is estimated that this area covers approximately 2,000m^2). DMcC has not cleared vegetation for the development of this area. The vegetation in this location was cleared by the landowner under separate permit. However, it is acknowledged that DMcC has pre-emptively undertaken works to level this area. This has not included extracting material for sale.

Various figures make reference to "proposed quarry access road" – clarification as to the existing road and proposed.

Response

Figure D presents the alternative, existing and the proposed Quarry Access Road. The development application originally identified the alternative quarry access road following the northern edge of the Overburden and Fines Stockpile. However, the alternative quarry access road alignment was abandoned to avoid vegetation clearing impacts. As shown on **Figure D**, the Quarry will rely on the existing Quarry Access Road (which consists of approximately 785m of sealed road commencing


Y:\Jobs 531 to 1000\896\Reports\89613_EIS - 2019\CAD\896Base56.dwg_2.1 Quarry Layout-19.02.2020-4:07 PM
REFERENCE
Quarry Site Boundary
Extraction Area Boundary
Contour (mAHD)(Interval = 5m)
870
Watercourse
Dam
Overburden & Fines Stockpile
Overburden & Fines Emplacement
Product Stockpiling Area
Bund
Proposed Quarry Access Road
Existing Sealed Quarry Access Road
Collection Drain
2
Licensed Discharge Point (EPA) & Identifier
Mount Lindesay Road
Existing Quarry Access Road
Quarry Access Road
Northern Sediment Dam
Overburden & Fines Stockpile
On-Site Facilities
Western Sediment Dam
Product Stockpiling Area
Bund
Overburden & Fines Emplacement
Southern Sediment Dam
Indicative Processing Plant (Mobile)
+930
+875
+910
TN
MN
SCALE 1:8 000 (A4)
100 0 100 200 300 400 m
Base Map Source: Groundwork Plus (1 November 2018)
Base Photo Source: Groundwork Plus (1 November 2018) & Google Earth (21 August 2018)
Figure B
QUARRY SITE LAYOUT

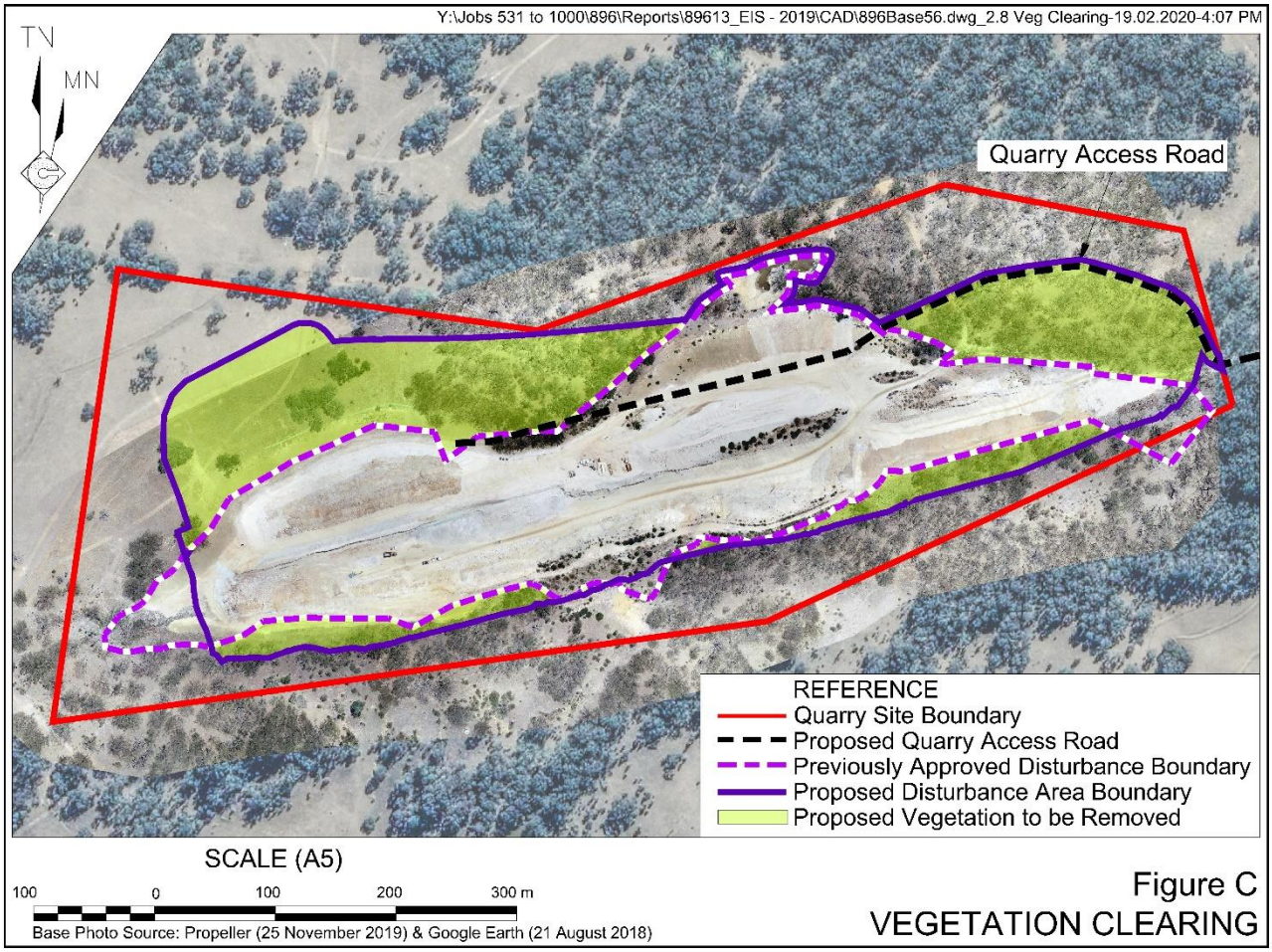


Figure C
VEGETATION CLEARING

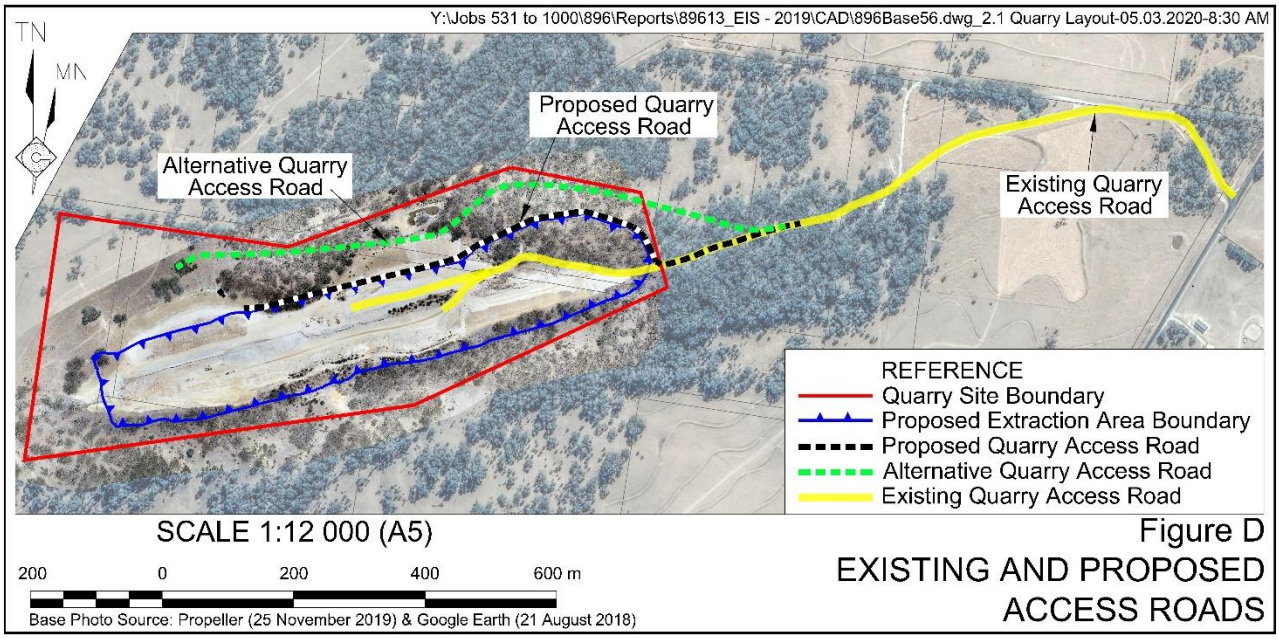


Figure D
EXISTING AND PROPOSED ACCESS ROADS

sealed road commencing from the intersection with the Mount Lindesay Highway) until it connects to the proposed quarry access road. The 785m sealed section of the existing quarry access road reduces dust generation for privately-owned properties to the east of the Quarry.

Crown lands clarification of legal status of road corridor (p. 2-17).

Response

It is considered that the previous construction of the Quarry Access Road and its ongoing use is permitted in accordance with Section 75 of the *Local Land Services Act 2014* that describes the rights of certain occupiers of land to right of way over travelling stock reserves. Right of way applies in the situation where it provides access to the road nearest to the land where no other access to and from the land by means of an established road or track is available. This would have been the case when the road was originally constructed (in accordance with Section 98 of the now repealed *Rural Lands Act 1998*).

The Quarry has been operating since 1987 with access to the public road network via Mount Lindesay Highway (the closest road to the land on which the Quarry is situated). The road was originally constructed to follow the Crown road that splits Travelling Stock Reserve 1149 (Lot 245 DP 751540) but the alignment was amended approximately 150m from the Mount Lindesay Highway so that access to the highway was at a 90-degree angle. This was considered important to preserve the safety of Quarry vehicles using the intersection and public road users. Furthermore, the *Environmental Impact Statement* prepared in 2015 to support the application for ongoing operation of the Quarry (RWC, 2015) noted the status of the access and that this was legal. There was no question of the legality of this access at that time and DMcC undertook an expensive upgrade of the intersection as a commitment under DA 2014.078/1.

Consultation with Crown lands regarding the Quarry Access Road (Rodney O'Brien pers. comm. 17/02/2020) indicated that DMcC may continue to rely upon Section 75 of the *Local Land Services Act 2014* for access to the Quarry. However, it is possible for Crown lands to dedicate the final section of the road corridor to Council and for Council to realign the road corridor and assume responsibility for that section of the road. If this was to be Council's preference, DMcC would continue to fund maintenance of this Section of the road for the duration of Quarry operations.

Council engineering assessment as below;

- *The limitation on truck movements should be clarified if it is to be allowed to be 'averaged over four weeks' so that it is still based on five days as mentioned further in the TIA.*
- *TIA 4.3.3 indicates the Nass St / N.E Hwy is adequate which it may be for SISD, however the trucks currently using it take an exaggerated swept turn path to negotiate the right turn. The existing intersection should be modified with a new traffic island created allowing a more appropriate turn to allow the vehicle to clear the intersection more efficiently. This pavement has shown much further surface defect deterioration in recent months since the larger vehicles have been using this path.*
- *TIA 4.3.4 indicates the Nass St / Logan St intersection has deteriorated linemarking. This will be an ongoing issue with the additional traffic turn movements of trucks. Rather than make the drivers aware, the existing intersection should be modified with a new traffic island to control*

vehicles within lanes and created allowing a more appropriate turn with less deterioration of the pavement and markings.

- *The intersection of Washpool Creek Road and Old Ballandean Road has substandard sight distance the equivalent to only 50km/h. Given the risks with ongoing increased heavy vehicles, the level of risk for local traffic is increased. The applicant should review intersections such as this where sight distances are less than the 80km/h advisory speed they will conform to and provide proposed solutions to improve the safety at these intersections. Such measures need to be physical improvements to obtain a clear benefit improvement rather than simply suggesting warning signs.*
- *The Section 94 contributions at $0.04/tonne/km will contribute at maximum $ 144,440 per annum. This is for maintenance of roads and safety improvements should be required in addition to this contribution to offset the community impact of extending the development capability.*
- *Old Ballandean Road is used by the unladen trucks returning to the Quarry. While turn movements and sight distances for this route are generally acceptable, the formation of Old Ballandean Road is narrower than the required width under the Road Network Management Plan with both width and seal generally 600mm short of the required width. Any deficiencies along Old Ballandean Road should be widened by the applicant to provide the pavement and seal width required for a Class B road as identified under the Road Network Management Plan.*
- *Old Ballandean Road has a causeway crossing of Tenterfield Creek which is suffering from deterioration of the concrete structure. This structure should be repaired at the cost of the applicant in order that the structure can cater for the ongoing increased loading over the development period.*
- *An alternative to undertaking works along Old Ballandean Road will be for unladen trucks to use Mt Lindesay Highway from Nass Street to return back to the Quarry along the same route used by laden trucks.*
- *Mt Lindesay Road is used by trucks fully loaded travelling from the Quarry to the processing plant. Mt Lindesay Road generally has a pavement at the minimum required, however the seal width is narrower than that required under the Road Network Management Plan in some sections and suffering from edge breaks. Any deficiencies along Mt Lindesay Road should be widened by the applicant to provide the seal width required for a Class A road as identified under the Road Network Management Plan.*
- *Winter weather conditions often see the presence of heavy fog in the area, especially in the vicinity of low lying creek areas. It is recommended that where sight distance forward along the road is reduced below 250metres, that haulage cease until sight over that distance is available to any vehicles entering the path of the trucks from side roads or access points.*

Response

The proposed limitation of truck movements is described in Section 2.9.3 of the EIS and may be reviewed alongside Section 2.13 that describes the proposed hours of operation. Traffic levels would be limited to 28 laden loads (56 movements) per day and no more than 120 laden loads (240 movements) per week, averaged over a 4-week calendar period. The worst-case impact would be 28 loads per day with the 120 laden load average limiting this peak level from occurring every day.

Transport operations would occur between 7:00am and 5:00pm Monday to Saturday. However, as noted in the EIS, operations on a Saturday would only be required in response to demand from clients or where wet weather has impacted operations mid-week. The Traffic Impact Assessment considered the peak level in determining the worst-case potential impact.

The feedback from the Council traffic engineer suggests upgrades that may be undertaken at the expense of DMcC. The suggestions from the Council traffic engineer appear to be unsupported by any quantitative assessment, traffic data or consideration of the historic use of the roads and apparently without regard or knowledge of the conditions determined by Council for the existing Quarry operations in 2015 and as modified in 2016. As such, the suggestions are unreasonable and unsubstantiated. As noted in Section 5.1.3 of the EIS, if the Project is approved, DMcC would continue paying contributions in accordance with the Tenterfield Shire Council *Section 94 Development Contributions Plan 2013*. The current contribution level includes a contribution rate of $0.04 per tonne per kilometre of materials transported. This is considered fair given the relatively low traffic levels proposed.

Further it is noted that DMcC have planned the ongoing operations with an objective of minimal change from the existing approved transport operations. The Project does not seek to change the current weekly limit on traffic levels (120 laden loads per week) or the duration of the approval (until 2045) and therefore the change in impact from traffic volume is negligible. It is acknowledged that DMcC are proposing to use larger vehicles for ongoing operations. This is intended to ensure operations are efficient and minimise the number of heavy vehicle loads required. The subsequent increase in the volume of material that may be transported would be reflected in contributions paid, therefore providing additional funding for Council-managed works.

There are a number of concerns listed that should reasonably be undertaken by Council under general road maintenance works including line marking, general road repair and maintenance and resurfacing at the end of the design life of the road in question.

For example, requests to upgrade the intersection of Washpool Creek Road and Old Ballandeen Road on account of road users entering Old Ballandean Road are unreasonable. Council would be aware that quarry vehicles have right of way on this road. If Council is concerned that road users on Washpool Creek Road do not have sufficient sight distance for the posted 80km/hr speed limit, then Council and the relevant authorities should review the speed limit. This issue would remain with or without the ongoing Quarry operations. The causeway at Tenterfield Creek is only subject to unladen heavy vehicles associated with the Proposal, therefore the axle loadings on the concrete pavement whilst unladen would be negligible. It is not fair or reasonable to expect DMcC to upgrade the intersection when no significant change to traffic movements is proposed, particularly when DMcC has paid s94 contributions for many years without evidence of those monies being spent to maintain the approved haulage route.

Finally, it is noted that the majority of the transport route is approved for 25m/26m B-Double use with only the section of Mount Lindesay Road between Old Ballandean Road and the Quarry not currently approved for this configuration. DMcC has sought and received approval for higher mass limit transportation on the transport route for a similar truck configuration as the existing operations (that is truck and quad dog) that permits a gross combined mass of 57.45 tonne (load of 40t). The requests from Council are not consistent with these approvals.

Overall, the proportion of heavy vehicles travelling to and from Dowe's Quarry is likely to remain comparable to existing levels and therefore maintain a comparable proportion of total heavy vehicle traffic. It is considered that the existing process of paying contributions directly to Council (as is

currently approved) is adequate to account for the impacts associated with transport activities. DMcC and community can reasonably expect Council to be accountable and transparent to use s94 contributions to maintain the approved haul route rather than the general local road network.

To be addressed during consideration of the EPA request and in response to the community consultation and receipt of objections. Council acknowledges evidence available indicating that silica dust is an occupational hazard for those working with the material, however, there appears to be limited data relating to travel distance, off-site dispersion and broader impacts relating to silica dust. In the absence of any evidence to indicate that airborne silica dust will not reach nearby residents it is assumed that it will and those persons would be subject to a level of exposure risk. The level of exposure and risk should be assessed as part of the proposal.

Response

Risks associated with long term inhalation of respirable crystalline silica have been a component of occupational health and safety management in NSW for many years. DMcC is well aware of these risks through the long history of operations, due diligence investigations for the recent change of ownership and consultation with the NSW Resources Regulator. The issue of occupational exposure to fine particles of respirable crystalline silica has also been given more public attention recently due to cases of silicosis recorded in workers in the benchtop manufacturing industry. It should be noted that although there is a recognised risk from the processing of quartzose at the Quarry, the risk is not comparable to workers in the benchtop manufacturing industry who were reportedly working in an uncontrolled environment.

To be clear, in the history of 30+ years of operations at the Quarry and the Sunnyside Processing Facility there has been no record, complaint or case of silicosis or respiratory disease amongst staff or the local community that was attributed to the DMcC operations.

In response to the request for more information from Council and the concerns expressed by the local community, the following presents an overview of the assessed risk, management and monitoring of respirable crystalline silica that would be implemented for the Project. The response is presented under the following subsections.

1. RCS risks in the natural environment and from quarrying activities
2. NSW legislative and regulatory guidance and management requirements.
3. Assessment of RCS-related risks including predicted exposure and human health risks.
4. Management and monitoring under the Project.

Potential Risks from RCS

Crystalline silica dust is common in the natural environment, particularly in areas such as Tenterfield where weathering of granite outcrops would produce dust that would contain a proportion of crystalline silica. Silica in the form of quartz is one of the most commonly occurring minerals on the Earth's surface, with over 95% of the earth's crust made of minerals containing silica.

Silica is naturally released into the environment through the weathering of rocks, volcanic activity and biogenic sources. Hence, background exposures may occur through air, indoor dust, food, water, soil and various consumer products.

Crystalline silica is found in rock, sand, gravel and clay materials as well as products made from these materials such as bricks, tiles, concrete, manufactured stone benchtops and some plastic materials[1][2]. Activities that involve cutting, grinding or breaking of materials can result in the liberation of particles. Workers can be exposed to crystalline silica in a variety of industries, including quarrying. A health hazard occurs when very fine particles are produced that may be inhaled (respirable dust). The respirable fraction of dust is generally considered to be that which is less than 10 microns in size with finer particles (for example 2.5 microns) more likely to reach the alveoli in the lungs and cause damage.

Long term inhalation of silica dust may lead to the formation of scar tissue in the lungs, which can result in the serious lung disease silicosis. Safework NSW guidance on health risks associated with crystalline silica define silicosis as follows[2].

Silicosis is a fibrosis (scarring) of the lung resulting in loss of lung function. This fibrosis is incurable and continues to develop after exposure has stopped. Persons with advanced silicosis suffer severe shortness of breath and may suffer complications such as heart failure.

Associated health risks include lung cancer, kidney disease and chronic obstructive pulmonary disease (COPD)[2].

Quartz is the most common form of crystalline silica. X-ray diffraction (XRD) analysis of the raw material at the Quarry was undertaken by the QUT Central Analytical Research Facility in November 2019 and identified that the raw materials produced at the Quarry are 99.5% quartz (crystalline silica) and confirms the presence of trace impurities. The results of the XRD analysis is presented in **Attachment B**. A separate analysis was undertaken by Southern Cross Geoscience in December 2019 (from a sample provided to the laboratory by Mr Martin L'Ons without the knowledge of DMcC) and confirms the analysis provided by the QUT Central Analytical Research Facility. The Southern Cross Geoscience outcome cannot be verified by DMcC as the sample was not sent to the laboratory by DMcC, but the Company is comfortable to accept the word of Mr L'Ons in this matter given the similarity in the two results. The Southern Cross Geoscience results are not as technically accurate but do note the presence of interspersed clay materials, confirming the conclusion that the material being extracted is quartzose.

Non-occupational or environmental exposure to RCS can be expected given the abundance of the material in the Earth's crust. There are no reports of silicosis resulting from environmental exposure in Australia or NSW. The Human Health Risk Assessment prepared by Environmental Risk Sciences (ENRiskS) (**Attachment C**) noted that there is very little published research on environmental exposures to RCS. Exposure risks to RCS are primarily occupational in nature, however given the materials that would be processed at the Quarry are 99.5% crystalline silica, there is a risk that exposure may affect the local community.

Various submissions on the Project quoted non-occupational risks from an article in the Indian Journal of Occupational and Environmental Medicine[3]. The authors considered three cases of non-occupational exposure.

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[1] Cancer Council Silica Dust Fact Sheet: https://www.cancer.org.au/content/Preventing%20cancer/workplace/2017/SilicaDust_03112017_V6.pdf ,

[2] Safework NSW Technical Fact Sheet on Crystalline Silica https://www.safework.nsw.gov.au/resource-library/hazardous-chemicals/crystalline-silica-technical-fact-sheet

[3] Bhagia L. J. (2012). Non-occupational exposure to silica dust. Indian journal of occupational and environmental medicine, 16(3), 95–100. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3683189/

- A sand quarry in California for which there were no cases of silica-related diseases reported.
- A small and unorganised slate pencil industry in Mandsaur, Madhya Pradesh, India at which 54.6% of workers had contracted silicosis and local non-occupational silicosis was reported in 12.6% of the local population.
- A cottage agate industry located in and around Khambhat, Gujarat, India at which 40.7% of workers had contracted silicosis and local non-occupational silicosis was reported in 5.8% of the local population.

In both cases of occupational and non-occupational exposure above, dust was reported to have been poorly managed. It is therefore considered that these examples of non-occupational exposure are extreme in nature and occurred in an environment where occupational exposure was high and poorly managed.

ENRiskS reviewed case studies of RCS monitoring in proximity to industrial activity in Queensland and the Hunter Valley and noted that in all cases the RCS levels were very low.

Legislative and Regulatory Context

The legislative and regulatory framework for the management of RCS in NSW principally involves occupational regulation through the following legislation.

- *Work Health and Safety Act 2011* and associated regulation.
- *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and associated regulation.

It is noted that there are currently no statutory limits that apply to environmental exposure to crystalline silica in NSW. The closest approximation is found in work health and safety legislation reflecting the known occupational risk and regulation. Section 39 of the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014* describes the NSW Government requirements for operators to ensure exposure standards for dust and diesel particulate matter are not exceeded at a site (that is, not environmental exposure). The following limits are established in the legislation.

> *39 (1) The operator of a mine or petroleum site must, so far as is reasonably practicable, minimise the exposure of persons at the mine or petroleum site to dust and diesel particulate matter and must ensure that no person at the mine or petroleum site is exposed to 8-hour time-weighted average atmospheric concentrations of airborne dust and diesel particulate matter that exceed—*
>
> *(a) for respirable dust—3 milligrams per cubic metre of air, or in the case of a coal mine, 2.5 milligrams per cubic metre of air, or*
>
> *(b) for inhalable dust—10 milligrams per cubic metre of air, or*
>
> *(c) for diesel particulate matter—0.1 milligram per cubic metre (measured as sub-micron elemental carbon).*

However, it is noted that from 1 July 2020, the legislation will be amended to align with the *Safework Australia Workplace Exposure Standards for Airborne Contaminants* as amended in December 2019 to establish a limit for respirable crystalline silica of 0.05 milligrams per cubic metre of air (mg/m^3).

Exposure outside the workplace (environmental exposure) is regulated as pollution under the *Protection of the Environment (Operations) Act 1994* and associated regulation. *The Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* is published by the EPA (2017) to provide statutory methods that are to be used to model and assess emissions of air pollutants from stationary sources in NSW. The guideline provides the impact assessment criteria for the assessment and compliance of the Project.

It is noted that assessment of RCS was not a requirement of the SEARs for the Project and there are no specific criteria that apply to environmental exposure to RCS in NSW. This is assumed to be due to the lack of reported cases of impacts in the environmental surrounding workplaces where exposure is a managed risk.

Assessment of RCS-related risks

The assessment of potential risks to the local community has been undertaken from two different perspectives.

- Northstar Pty Ltd have been commissioned to update predictive modelling of particulate matter from the Quarry under the Project. The assessment has assumed that 100% of the particulate matter generated is RCS.
- ENRiskS has been commissioned to consider the human health risks associated with the Project. This assessment considers general health risks and recommendations for avoidance, mitigation and management as well as the exposure predictions provided by Northstar in the Air Quality Impact Assessment.

ENRiskS (2020) reviewed available literature to determine a suitable estimate of background RCS that might be expected in the local environment of Tenterfield. The Texas Commission on Environmental Quality (TCEQ) have estimated an annual average background level of 1.9µg/m^3 as $PM_{2.5}$. This level is considered appropriate for Tenterfield as it is based on research outcomes and correlates well with background levels reported in the Darlington Range in Queensland and average values reported in Brisbane and the Hunter Valley.

ENRiskS (2020) and Northstar (2020) adopted the health-based guideline level of 3µg/m^3 of RCS as annual average $PM_{2.5}$ provided by the Victorian EPA in its *Protocol for Environmental Management: State Environment Protection Policy (Air Quality Management) - Mining and Extractive Industries* (VIC EPA, 2007). This guideline level is considered justified through its alignment with the California OEHHA guidelines that were based on review of epidemiological studies. It also provides a level that is directly comparable to air quality predictive dispersion modelling as it refers to a cumulative (total) outcome rather then average levels applied for occupational exposure.

Northstar (2020) predicted annual average $PM_{2.5}$ levels at residences closest to the Quarry using air dispersion modelling that simulated prevailing meteorological conditions, dust sources and intensity as well as mitigating factors such as the use of a water truck to dampen roads during dry conditions. The dispersion modelling assessment was undertaken using the NSW EPA approved CALPUFF atmospheric dispersion model. The modelling predicted that the highest incremental (Project-alone) outcome for annual average $PM_{2.5}$ would be 0.2µg/m^3 at Residence 3A to the west of the Quarry. When considered with the assumed background of 1.9µg/m^3, a cumulative (total) concentration of 2.1µg/m^3 of RCS is predicted. This is within the adopted guideline level of 3µg/m^3, demonstrating that no impact from environmental exposure is expected. It should be noted that the predicted dust

levels generated by the Quarry are predicted to consist of only 9.5% of total exposure at Residence 3A, given the assumed background level.

ENRiskS (2020) has concluded that the health risks associated with environmental exposure to RCS are low and acceptable.

Management and Monitoring

As noted in Section 5.2.6 of the EIS, the following management and mitigation measures would be implemented to minimise environmental exposures by reducing dust generation and limiting dust dispersion from the Quarry.

- The dust collection system on the drill rig would be regularly serviced to ensure it remains effective.
- Misting water sprays that include chemical suppressants (Polo Citrus) would be used on the mobile crushing and screening plant.
- Blasting and secondary rock breakage would be limited during periods of high winds or extremely dry weather, when it is practical to do so.
- All unsealed internal roads would be surfaced with appropriate materials to limit dust lift-off and graded, when necessary.
- Road watering would be undertaken on unsealed roads, if dust becomes a nuisance during periods of westerly winds.
- Appropriate care would be taken to avoid spillage during loading.
- Load size would be limited, as appropriate, to ensure materials do not extend above truck sidewalls.
- Each truck cover would be fully extended on laden vehicles before each truck leaves the Quarry Site.
- All vehicles travelling on the Quarry access road would be limited to a speed no greater than 30km/hr.
- All vehicles travelling on internal unsealed roads within the Quarry Site would be limited to a speed no greater than 10km/hr.

In addition to these measures, DMcC has installed three deposited dust monitoring gauges on the boundaries of the Quarry to provide an indication of environmental dust levels in the vicinity of the Quarry. Two continuous particulate matter monitoring units would be installed at the Quarry at locations to be determined. The equipment being considered is a nephelometer (e.g. an E-Sampler or Dusttrak). These units use a solar power supply which would allow the equipment to be deployed at various locations to, for example, respond to any community complaints, monitor potential impacts from blasting at nearby residences, or provide ongoing information on any changes to the environment resulting from Quarry operations.

The continuous air quality monitor would provide a range of useful information and would be set up to provide triggers to alert site personnel should particulate concentrations be approaching pre-determined levels at identified locations. These data would assist with the management of site activities to ensure that particulate generating activities are modified or ceased in a hierarchical and responsive manner should high levels of particulate matter be experienced, however it is noted that

this is not predicted in the vicinity of the Quarry under worst case operating scenarios Air quality monitoring data would be published to DMcC's website.

Bulk of clearing on the northern extent of the site appears to be for overburden and fines stockpile – are alternatives available?

Response

DMcC has reviewed the proposed layout of the Quarry with an aim to reduce vegetation clearing. In fact, as previously discussed the alternative quarry access road was abandoned to reduce vegetation clearing. A careful campaign of backfilling within the extraction area has been proposed, however it is not possible to reduce this in size any further without making stockpiles higher. This would increase the dust lift-off from these areas and may also be visible from public vantage points. DMcC considers that an acceptable balance has been reached between the extent of on-site components and the vegetation clearing required.

It should also be noted that the clearing of native vegetation must be offset under the NSW Biodiversity Offset Scheme. A 25ha area on the northern section of Mr Rodney Dowe's property is proposed to be dedicated to the Bald Rock National Park in lieu of establishing a Biodiversity Stewardship Agreement over the land. DMcC would maintain responsibility for fencing and management of this land for the duration of operations at the Quarry, after which time responsibility would be passed to the National Parks and Wildlife Service.

Targeted survey results undertaken in November? Subsequent updates to species credits (p2-28)

Response

DMcC and its consultants are currently liaising with the Biodiversity Conservation Division concerning the outcomes of targeted ecological survey. This process is expected to be resolved shortly.

Clarification of crusher location

Response

As noted in Section 3.2, the mobile processing facilities would be located within the extraction area to mitigate noise and dust generation. **Figure B** presents an indicative location for this equipment, noting that as it is mobile it may be relocated on the extraction area floor to ensure it is not impacted by blasting activities.

Operating times proposed Saturday – not considered appropriate (processing operations) p2-21

Response

Council's position on this matter is acknowledged, however the assessments undertaken (noise, dust and traffic) do not predict that weekend activities will result in environmental impacts. Furthermore, Council will recall that the existing approved hours of operation include on-site operations between 7:00am and 5:00pm Monday to Saturday.

It is noted that there is community concern in relation to the proposed processing activities. In acknowledgement of this DMcC propose to restrict processing activities to between 7:00am and 1:00pm on a Saturday. It should be noted that there may be periods when material is required for road

maintenance or construction on a weekend. This is becoming more common as works are targeted to weekends to avoid busier midweek periods when more people are using local roads.

Table A presents the proposed operating hours for the Quarry.

Table A
Proposed Hours of Operation

Activity	Monday to Friday	Saturdays	Sundays or Public Holidays
Site establishment and construction	7:00am – 5:00pm	7:00am – 5:00pm	Nil
Extraction operations	7:00am – 5:00pm	7:00am – 5:00pm	Nil
Blasting operations	10:00am – 3:00pm	Nil	Nil
Processing operations	7:00am – 5:00pm	7:00am – 1:00pm	Nil
Product despatch	7:00am – 5:00pm	7:00am – 5:00pm (as required)	Nil
Maintenance	24 hours / day	24 hours / day	Nil

Representative Comment(s)

Biodiversity compliance with existing consent.

Tenterfield Shire Council

Response

As noted in Section 2.15.5 of the EIS, DMcC has previously committed to securing a 6.4ha offset area to the north of the Quarry Site under existing operations that are subject to DA 2014.078/1. It is acknowledged that while the 6.4ha area required to be offset for DA 2014.078/1 has been set aside from any grazing activity or physical disturbance, it is yet to be formally dedicated to Bald Rock National Park. **Figure E** identifies the 6.4ha offset area for DA2014.078/1 as well as the 25ha offset area required to offset vegetation clearing for the Project.

This matter is addressed in more detail in Section 3.4.4, noting that the assessed offsetting obligations for the Project would need to be satisfied regardless of the location of the offset area. This may require DMcC to purchase offsetting credits or find alternative land if the offset area is not suitable. Preliminary ecological surveys of the area indicate it is suitable, however the area was impacted by bush fire and is currently regenerating. As a result, more detailed ecological surveys have been delayed until such time as the necessary data can be collected for the area.

In any event, if the offset area is determined to satisfy the offset requirements of the Project, an agreement would be sought with the National Parks and Wildlife Service for the area to be dedicated to the national park and for DMcC to manage the land for the duration of operations. Management would include weed and feral animal controls and the establishment and maintenance of fencing.

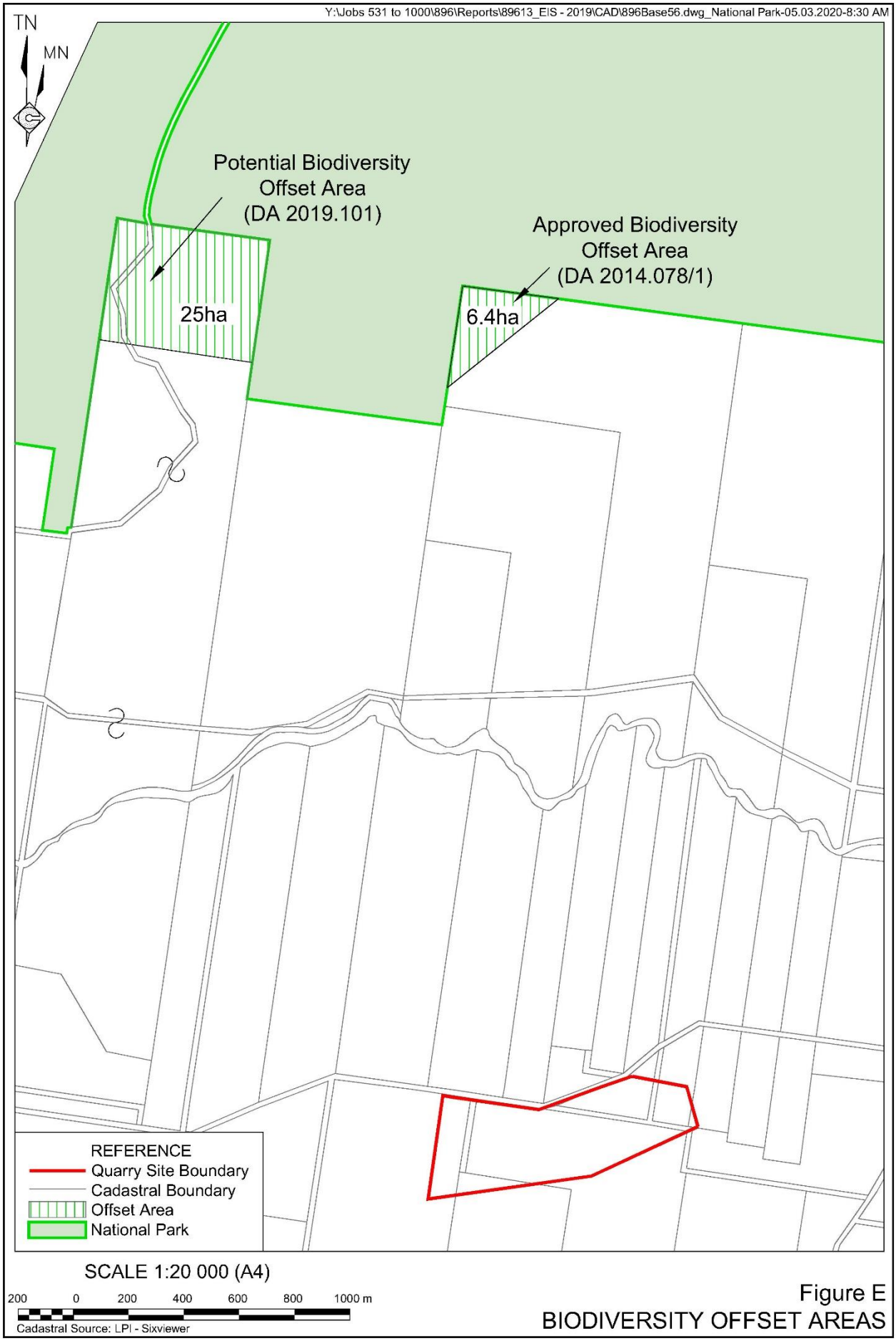

Figure E
BIODIVERSITY OFFSET AREAS

Representative Comment(s)

Access point at Sunnyside in compliance with existing consent.

Tenterfield Shire Council

Response

It is noted that Condition 26 of DA 2014.078/1 refers to the condition of the entrance intersections of the Sunnyside Processing and Screening Facility with the New England Highway. If Council are uncertain about compliance with conditions of development consent for the Sunnyside Facility then those matters should be investigated separately to the assessment of the Project.

Nevertheless, to ensure Council is aware, the following activities have occurred since DA 2014.078/1 was granted.

- The shoulder of the New England Highway has been widened in the vicinity of the Southern Entrance to provide space for vehicles heading north to pass heavy vehicles that have slowed to turn right into the Facility.
- Access to the Facility via the Northern Entrance is limited to southbound vehicles only due to the angle of the intersection with the New England Highway.
- Each week a road sweeper is commissioned to sweep the New England Highway in the vicinity of the Facility to remove any coarse materials that may have been tracked from the Facility on to the highway.

The works on the New England Highway were initiated by DMcC and completed by RMS to the satisfaction of RMS and all works and maintenance bonds were return to DMcC.It is therefore considered that DMcC has satisfied requirements relating to maintaining and upgrading the access arrangements for the Facility.

The Project does not include the Sunnyside Facility. It is well established that conditions of consent can only relate to the Project and cannot regulate other land or development not forming part of the Project. Therefore, any conditions of consent for the Project should not include obligations on or regulation of the existing Sunnyside Facility.

I trust that the above suitably addresses the queries from Council on the Project. Should you or Council have any queries on these outcomes, please feel free to contact me.

Yours sincerely

Nick Warren
Principal Environmental Consultant

Encls: Attachment A – Site Office Plans
Attachment B – QUT Central Analytical Research Facility (XRD Analysis) – November 2019
Attachment C – Human Health Risk Assessment for Respirable Crystalline Silica: Expansion of Dowe's Quarry- ENRiskS March 2020