7.6 Soil & Land Resources

No formal soil or land resources assessment has been prepared for the site in recognition of the fact that the subject land is already operating as an extractive industry and has done so for the past 45 years. Notwithstanding, an assessment of the land resources available on-site has previously been investigated, which has informed the preparation of the current application.

It is noted that the material that is extracted on site (granite) is not a prescribed mineral under the *Mining Act 1992* and the role of the Department of Resources and Geosciences is limited to its role under WHS laws with respect to the safe operation of mines and quarries. Notwithstanding, the subject application has been prepared to have regard to the requirements of this Authority.

It is confirmed that the extracted materials are privately owned and are not a Crown mineral.

7.6.1 Existing Conditions

As outlined in **Section 2.2.4** of this report, the subject land already operates as an existing extractive industry and undertakes works within two (2) existing quarry pits, being Pit 1 and Pit 3. An additional pit (Pit 2) previously existed on-site, but has since closed and been rehabilitated back to farmland.

The subject application seeks approval to undertake extractive industry works within Pit 1 and Pit 3 for a 30 year period. In addition, the application seeks approval for a maximum annual extraction of crushed rock on-site of 100,000m^3 per annum (currently 75,000m^2) and expand Pit 3 in a north easterly direction beyond its current footprint.

As outlined within **Sections 2.1.3** and **2.1.4** of this report, the subject land is mostly comprised of Jindera granite which typically occurs at the base of highly weathered granite at a depth of approximately 8 metres. In both the quarried and unquarried areas, the moderately to highly weathered granites are overlain by about 2 metres of extremely weathered granite and clayey gravel.

More specifically, Pit 1 contains granite gravel and granitic sands, known locally as “buckshot”, which is used in site works and road building activities or alternatively is used as an additive in the production of crushed rock at the site operator’s ‘Koowong’ Quarry. This material is currently excavated on a 3-4 metre face into the hillside using 30 and 40 tonne excavators.

In addition, Pit 3 comprises the harder diorite granites, which are overlain by 6 – 8 metres of moderately to highly weathered granites, which in turn are over lain by very highly weathered granite gravels and clay. The source rock material has been found to be very hard and durable and ideally suited to making high quality road base and fine crushed rock.

Also present on-site is a topsoil layer nominally 100mm thick that contains a layer of naturally occurring grasses and vegetation.

At present the land is not used for any productive agricultural purposes and given the topography of the land and its proximity to large heavy industrial areas, it is not suitable for industrial, commercial, residential or rural residential purposes.

7.6.2 Impacts of the Proposal

Notwithstanding the above, the development and use of the subject land as an extractive industry does have the potential to impact soil and land resources including:

- Loss of productive agricultural lands;
- Sterilisation of land for future development or land uses;
- Contamination of soil and groundwater; and
- Changes to landform and topography.

As outlined above, given that the subject land has been operating as an extractive industry for the past 45 years, the continued operation and use of this land as a quarry is considered appropriate in this instance. More specifically, the land is not considered suitable for productive agricultural purposes due to the topography of land and the rocky outcrop of the soil.

Furthermore, given the sites' proximity to large established and proposed industrial developments, as well as another existing quarry (Burgess' quarry), the land is not considered suitable for future residential or rural residential development nor will it sterilise the land for these purposes.

Matters regarding land contamination are also appropriate with the historical operations on-site not resulting in the contamination of land and soils. It is noted that no bulk storage of fuel occurs on-site with vehicle re-fuelling undertaken using mobile service trucks. Where vehicles are fuelled on site, this occurs within bunded areas to ensure that no fuel leaks into surrounding waterways and drainage lines.

Lastly, matters regarding changes to landform and topography are already appropriately managed via continual and staged rehabilitation works at the completion of each phase of the development. At the conclusion of works, the land will be rehabilitated back to its natural state (grazing lands) and the land will be reshaped and filled using virgin materials, stockpiles of topsoil and vegetation litter/tree litter, which will result in the regeneration of the land. Further details regarding rehabilitation are discussed in **Section 7.15.**

7.6.3 Resource Assessment

In accordance with the requirements of the SEARs a Resource Assessment has been undertaken

Regional and Local Geology

The regional geology consists of Palaeozoic bedrock which forms the local highlands. The stratigraphic history commences with thick sedimentary sequences of claystones and sandstones of Ordovician age. In the late Ordovician, these sedimentary rock formations were folded and deformed imposing strong axialplane slaty cleavage. Broad areas also were subjected to high grade metamorphism and recrystallised to form quartz-mica schists and gneisses.

During the late Ordovician and Silurian, granitic melts, intruded the meta-sedimentary rocks and crystallised as granite and granodiorite bodies that presently underlie much of the region. Acid volcanics were also extruded, probably later, in the Early Devonian. Subsequent uplift and erosion have occurred with the most recent deposition in Tertiary and Quaternary times as riverine sediments.

Delaney's quarry and the adjoining Norske Skog Paper Mill are underlain by the Jindera Granite, which locally is a fine-grained biotite granite. The fine grain size suggests that the local area is a chilled margin of the main body of granite. Delaney's quarry is sited on "The Rock" outcrop, a residual hill within the region. Elsewhere such as at Norske Skog, the depth of weathering of this granite is substantial and colluviums and alluvium along the major drainage systems are present (GHD, 1993).

More specifically and as outlined above, the land contains: very highly weathered granite gravels and clay, harder diorite granites and granite gravel and granitic sands, known locally as "buckshot".

A plan showing the regional geology of the area is provided in **Figure 37** below:

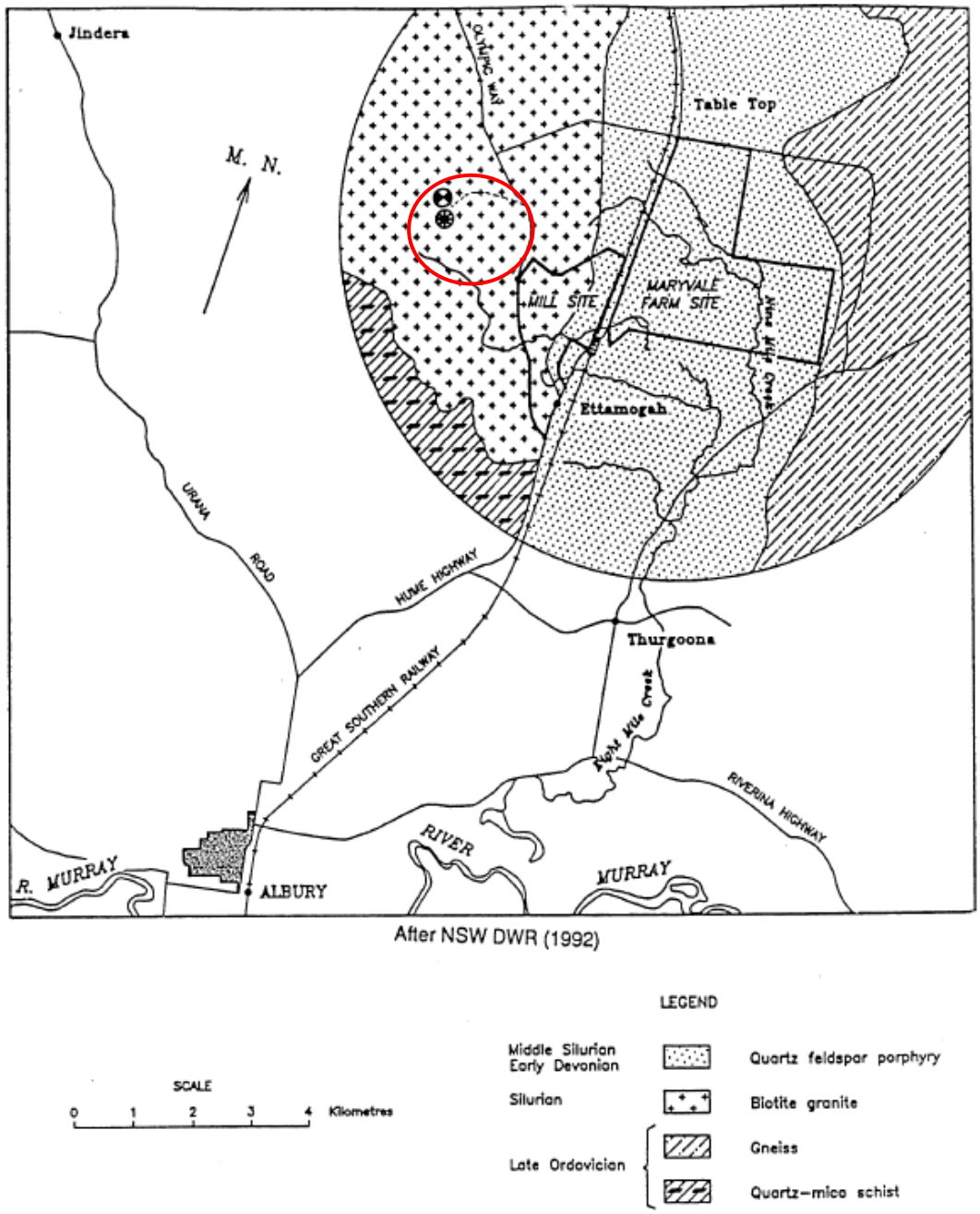

Figure 37: Regional Geology Plan indicating the subject land (red outline)
(Source: Australian Newsprint Mill Solid Waste Management Plan, GHD 1993

Material to be extracted

At present, the existing quarry has approval to extract up to a maximum of 75,000m^3 of material per annum with the subject proposal seeking to increase this total to a maximum of 100,000m^3 per annum. The extraction of this material will occur on an 'as needs' basis to satisfy the current operator's local road construction and earthmoving operations.

Based on a proposed lifespan of 30 years and assuming maximum production is achieved each year, the subject proposal will equate in the total extraction of 3,000,000m^3 worth of materials that could be excavated over the life of the quarry.

As outlined throughout this report, the subject land already operates as a quarry. Accordingly, previous investigations have already been undertaken to determine the availability of in-situ resources present on-site.

Investigations were undertaken via the drilling of a number of bores across the subject land at varying depths as part of the preparation of a hydrogeological assessment report for the disposal of biosolid waste on-site. The location of these bores was dug to the south west of Pit 3 in the existing waste disposal area, as well as in the south west corner of Pit 3 located adjacent to the current area of works. These bores were drilled at varying depths, with four (4) shallow bores drilled to a depth of 10 metres, one (1) drilled to a depth of 20 metres and two (2) bores drilled to a depth of 103 metres and 130 metres, respectively.

A plan identifying the bore locations, a cross section showing the in-situ materials present on site and copies of the bore hole logs are included as **Attachment L** to this report.

The lithological logs of the two deep bores confirm that the subject land is underlain by variably weathered granites up to a depth of 130 metres. This variation occurs across the site and at depth. The only exception is the uniform thickness of about 2 metres of gravelly clay found at the surface in both the quarried and non-quarried areas.

Below the surficial gravelly clays the granite is competent with only minor intersections of extremely weathered granite. As indicated by a lack of significant water intersections, no major clean fissures were intersected as part of the drilling process.

Whilst it is acknowledged that a cross section of the subject land showing the in-situ resource material has not been provided, given that previous investigations on-site have confirmed that granite material is located to a depth of 130 metres and the development only proposes to undertake quarrying works to a depth of 6 metres (as it relates to Pit 1) and up to 30 metres (as it relates to Pit 3), there is ample resources available on-site to support the proposed development.

Characteristics and suitability of material produced

The existing quarry produces road base materials used in the construction of roads that meets Vicroads Class 2 and Class 3 specification for road making materials. The material also achieves NSW RTA classifications for Fine Crushed Rock.

The existing properties of this material including grainsize and weathering make it ideal for road construction purposes. At present, the existing quarry produces roadbase material from naturally occurring materials, as well as via recycled materials, namely concrete.

Section 812 of the Vic Roads Guideline – Crushed Road for Pavement Base and Sub Base covers the relevant requirements of crushed rock and plant mixed wet-mix crushed rock for 20 mm nominal size Class 1 and Class 2 base, 20 mm and 40 mm nominal size Class 3 subbase and Class 4 crushed rock subbase.

As outlined above, the material produced on site is defined as Class 2 and Class 3 material, which is defined as follows:

- ***Class 2*** *is a high quality pavement base material for unbound flexible pavements in locations where a very high standard of surface preparation may not be required. Class 2 crushed rock does not have a minimum Plasticity Index or a maximum permeability requirement.*
- ***Class 3*** *is a high quality upper subbase material for heavy duty unbound flexible pavements. It may have a minimum permeability requirement to provide positive drainage to the sub-surface drains. Where specified, Class 3 may be used as base for lightly trafficked pavements provided the material produces sufficient cohesive fines during compaction.*

More specifically, sub-base course materials shall consist of crushed rock or gravel, natural gravels or uniformly blended natural gravels, free of clay lumps, organic matter or other deleterious substances. Specific classifications that this material must achieve for a Class 2 road pavement and Class 3 road pavement are outlined below in **Table 19**:

Table 19: Sub-base course materials

AS Sieve Size (mm)	Percentage Passing before Compaction (Vic Roads Table 812.082)
26.5	100
19.0	95-100
13.2	75-95
9.5	60-90
4.75	42-76
2.36	28-60
0.524	10-28
0.075	4-10

Source: Vic Road Guideline Section 812

In addition to the grading specified above the material shall have the following additional characteristics:

Liquid limit shall not exceed:	35%
Plasticity Index shall not exceed:	10%
Linear shrinkage shall not exceed:	4%
The Los Angeles abrasion loss shall not exceed:	45%

The Californian Bearing Ratio value shall not be less than 60%. The value is applicable to material passing 19.0mm sieve, originally at a dry density equal to 95% of maximum dry density obtained in the Modified compaction test and remoulded at Optimum Moisture Content.

Similarly, basecourse material shall consist of hard and durable crushed rock or gravel, free of clay lumps. Organic matter or other deleterious substances. The particle size distribution shall comply with the grading shown below in **Table 20**:

Table 20: Basecourse materials

AS Sieve Size (mm)	Percentage Passing before Compaction (Vic Roads Table 812.072)
26.5	100
19.0	95-100
13.2	78-92
9.5	63-83
4.75	44-64
2.36	30-48
0.524	13-21
0.075	5-9

Source: Vic Road Guideline Section 812

In addition to the grading specified above the material shall have the following additional characteristics:

Liquid limit shall not exceed:	30%
Plasticity Index shall not exceed:	6%
Linear shrinkage shall not exceed:	3%
The Los Angeles abrasion loss shall not exceed:	40%

If non-plastic, the material shall have a maximum dry compressive strength of not less than 1.7 MPa. The proportion of misshapen particles in the fraction retained on the 9.5mm sieve shall not exceed 20% using a 3:1 ratio.

The California Bearing Ratio value shall be not less than 120%. The value is applicable to material passing 19.0mm sieve, originally at a dry density equal to 100% of maximum dry density obtained in Modified compaction test and at Optimum Moisture Content.

To ensure compliance with relevant specifications, the material is subject to independent testing at a NATA registered testing laboratory to ensure it is appropriate for its current application.

Copies of relevant product testing results prepared by Coffey's and Civil Test Albury Wodonga are provided at **Attachment O** confirming that the subject material extracted and produced currently on-site complies with the relevant VicRoads and NSW road construction requirements.

Quantity of material

As outlined in **Section 3.4** of this report, the development seeks approval to extract a total maximum of 100,000m^3 per annum, however it is likely that the development will not achieve this maximum and will operate on an as needs basis to satisfy the site operators local road construction business.

Given the amount of total material proposed to be excavated and the size of the proposed development footprint, works will be staged commensurate with demand, which will ensure that the area of site disturbance is minimised.

A staging plan has been prepared for the development (see **Figure 23**), which identifies that the quarry will be developed generally northwards (Stages 2 & 3) and will then continue east and north-easterly (Stages 4-6). In accordance with best practice requirements, rehabilitation works will also be staged commensurate with site activities to ensure that those areas no longer required for extractive industry purposes are rehabilitated and returned to former grazing land.

The quarry will operate for at least the next 30 years, depending on the amount of in-situ resources that remain on-site.

Existing quarrying activities

As outlined throughout this report, the subject land already operates as a quarry ('Rockwood Quarry'). **Section 1.2** and **Table 2** of this report provides details of the background and site history of this property, whilst **Section 2.2** provides details of current production methods and extraction rates.

Alternative extractive material sources

There are a number of alternative sources of road base material available from other quarries located within the Albury/Wodonga area and surrounds that can produce quarry material including:

- Begley Brothers Quarry, Wodonga;
- Burgess' Quarry, which is located immediately to the south west of the subject land;
- Walsh's Quarries at Table Top and Holbrook;
- Nordcon's Quarry, Wodonga;
- Cartright Earthmoving, Wodonga;
- Gordon Douglas, Wodonga; and
- Readymix Quarry.

It is noted however that of the above quarries, the only quarry that provides the same granite source material is Burgess' Quarry, which is located on the adjoining hill to the south west. Whilst the other quarries do produce crushed rock, these are from river gravels, which produce a slightly different product.

In addition, it is also noted that the current site operator also operates several other quarries including: 'Koowong', which is located 5 kilometres east of Albury along the Riverina Highway, Albury and 'Bankview', which is located 18 kilometres west of Albury. Both of these quarries are river gravel and sand quarries and do not produce any granite material, which is produced at Rockwood.

Details regarding the impacts of not proceeding with the proposal are discussed in **Section 1.7** of this report.

Justification for the proposal

Details regarding the justification for the proposal in terms of the local and regional context are discussed in **Section 1.8** of this report. In summary, the proposed development is considered justified in this instance.

Location and size of markets for material

The existing and proposed quarry will supply the local road construction and development industry of Albury/Wodonga and its surrounds and will support the existing site operator's local road construction business.

All materials that are excavated on site will be excavated on an as needs basis and it is clarified that the existing quarry does not operate as a commercial quarry and only serves the needs of the existing site operator. Notwithstanding, should the quarry be operated as a commercial quarry, there are ample resources available to service the local markets and development industry.

Transport Routes

Primary vehicular access to the subject land (Pit 3) is derived from the existing unsealed Winchester Lane, which intersects with the adjoining sealed Gerogery Road located to the east. A secondary unsealed access road also exists approximately 1.2 kilometres further south towards the Nexus industrial estate via an existing Travelling Stock Reserve (TSR) that will be used to access Pit 1.

Local roads will be used to transport materials extracted and processed on-site. Primary vehicle access routes will occur via Winchester Lane, which connects with Gerogery Road. The majority of vehicles leaving the site for local markets will exit the site and head south along Gerogery Road and Wagga Road towards the full diamond interchange at Thurgoona Drive where it will be transported to local markets, including the residential growth areas in Thurgoona to the east and Wodonga to the south.

Further details regarding traffic and site access are discussed in **Section 7.9** of this report and a Traffic Impact Assessment has been prepared as part of the development and is included as **Attachment F** to this report.

Waste Disposal and Stockpiles

The existing and proposed quarry does not generate any wastes during the extraction and crushing process as all excavated materials can be used to suit market demand. Topsoil is stockpiled adjacent to works areas for later use in the rehabilitation process and wastes on-site are generally limited to wastes from staff amenities buildings (packaging and food scraps).

Other wastes associated with the crushing of concrete include scrap metal and steel, which are separated out during the crushing process. These materials are separated out during the screening process via several rotating magnets, which will be attached to the conveyor belts and used to remove any residue or scrap metal contained within the crushed material (particularly reinforcing from recycled crushed concrete). These metal wastes will then be stockpiled and loaded into containers where they will be later transferred to a metal recycler once they are full.

It is also noted that a small amount (approximately 20-30m^3) of inert pieces of hard and soft plastics, as well as timber are removed from crushed concrete products and are collected and disposed off of-site. A septic disposal area is also located to the south of the existing staff amenities building.

As outlined above, the subject land is also currently used to dispose of waste water generated from the adjoining Norske Skog Newsprint Mill during times of wet weather. Consideration of the environmental impacts of the disposal of this waste has already been considered and is controlled and managed in accordance with an existing development consent and EPA license.

The development utilises a number of stockpiles for the storing of materials. Rockwood Quarry utilises a number of stockpiles for the storage of materials, which are later transported off-site. Pit 1 currently contains two stockpiles of material, whilst Pit 3 contains four stockpiles of materials and a concrete storage area (stockpile).

These stockpiles generally range in size from 100m^3 to 5,000m^3 and are approximately 15 metres in height depending on the amount of material that is stockpiled at any given period. These stockpiles will gradually (or rapidly) depending on demand be reduced and once almost exhausted, will trigger a need for further extraction and stockpiling for use.

The two stockpiles contained within Pit 1 are generally comprised of naturally occurring (unscreened) granite gravel and screened granite gravel whilst the stockpiles contained within Pit 3 are generally comprised of Class 2 Fine Crushed Rock (FCR) and processed recycled crushed concrete. An additional concrete storage area (stockpile) is also contained within Pit 3, which is used to store concrete waste materials that are waiting to be separated and processed.

Noise, Vibrations, Dust and Visual Impacts

Matters regarding noise and vibrations have been considered and a separate Noise Impact Assessment has been prepared for the site by Ray Walsh Acoustics (see **Attachment G**). Further details regarding noise and vibrations are discussed in **Section 7.3** of this report.

In summary, the proposed development complies with relevant EPA guidelines.

Matters regarding air quality have also been assessed and a separate Air Quality Impact Assessment has been prepared for the site by GHD (see **Attachment H**). Further details regarding air quality are discussed in **Section 7.7** of this report.

In summary, the proposed development achieves relevant air quality requirements.

Lastly, matters regarding visual impacts have also been assessed and are considered appropriate in this instance. More specifically, due to the terrain and topography of the subject land and the location of current and proposed quarrying activities on-site, the area of extraction is shielded from adjoining sensitive receptors by the existing ridgeline of Nine Mile Hill and the landscape plantings currently present on-site. In response to previous concerns raised by adjoining neighbours, the current operator has relocated a number of activities and ensured that all works are now conducted below the ridgeline and screened away from view.

Whilst it is acknowledged that the existing quarry will be visible from adjoining industrial developments and another existing operating quarry (Burgess' Quarry), these are not 'sensitive receptors' and the impacts upon them will be low.

Similarly, the impacts on adjoining public roads will also be low given the location and extent of the proposed works. In particular, the area of extraction will be largely screened from the adjoining Gerogery Road due to dense roadside vegetation present along this roadway, the large distance from this roadway, as well as the natural terrain of the land which screens the area of works.

Further details regarding visual amenity are discussed in **Section 7.11** of this report.

Rehabilitation

The site operator is committed to the effective rehabilitation and eventual closure of Rockwood Quarry once all resources have been exhausted from the site. This will be achieved through progressive and staged rehabilitation works to work progressively towards the eventual final rehabilitation and closure of the site.

At the completion of extraction works on-site, AP Delaney & Co proposes to rehabilitate the entire site back to its natural state and pre-development conditions, being rural paddocks and grasslands consistent with a number of adjoining lands. Given the proximity of the subject land to adjoining industrial developments and larger extractive industries, the land will most likely remain rural in nature and will serve as a transition or buffer between adjoining industrial lands to the south and rural residential dwellings to the north.

Closure and rehabilitation objectives have been established for the project and a rehabilitation methodology has been established. Further details regarding rehabilitation and future land uses are discussed in **Section 7.15** of this report.

Ecological Sustainability

Matters regarding ecological sustainability have been addressed throughout this EIS report and are considered satisfactory in this instance. More specifically, the development has considered matters regarding biodiversity, water, heritage, erosion and sediment control, soil and land resources, air quality, waste management and rehabilitation and future land uses.

In summary, the proposed development is considered to be ecologically sustainable as it seeks to avoid areas of ecological sustainability and maintains and proposes a number of environmental protection measures as recommended by accompanying specialist reports.

Conclusion

The existing quarry currently provides an important local resource that represents a locally important source of hard rock aggregate for the Greater Albury area.

Given that the current quarry has operated for the past 45 years without failure or incident, there is confidence that the continuation and expansion of this quarry will not create any operational problems and/or failure.

7.6.4 Mitigation and Monitoring Measures

A number of mitigation and monitoring measures are recommended as part of the Project including:

- Continue to test the quality of the excavated material to ensure it is appropriate for its intended application;

- Undertake appropriate work, health and safety requirements during all site activities;
- Erosion and sediment controls to be implemented and maintained continuously throughout the period of operation of the quarry and maintained until a rehabilitation program is completed; and
- Site remediation/rehabilitation works to be undertaken to restore the land back to its natural state at the completion of works as per **Section 7.15**.

7.7 Air Quality

An Air Quality Impact Assessment (AQIA) has been prepared by GHD in accordance with the EPA's *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (DECC, 2005).

The AQIA assessed the operational air quality impacts likely to result from the increase in extraction rate, compared the predicted impacts to relevant legislative criteria and provides mitigation recommendations to ensure that the quarry will operate within criteria guidelines.

The following section provides a summary of the AQIA and a full copy of this report is available in **Attachment H**.

7.7.1 Existing Air Quality and Receiving Environment

As discussed in **Section 2.2** of this EIS, the receiving environment of surrounding lands is mixed with land to the south, east and west comprising environmental lands, heavy industrial development, another existing extractive industry and agricultural lands.

Sensitive receptors are scattered to the north of the site, the closest of which is approximately 550 meters from the centre of the quarry (Pit 3). The closest receptors in every direction and their distance from the closest site boundary are summarised in **Table 21**. The location of the subject land in relation to these sensitive receptors is shown in **Figure 38**.

Table 21: Identified sensitive receptors

Receiver ID	X Coordinate	Y Coordinate	Receiver Address	Receiver Type	Approx. distance to boundary, m
R01	496083	6018219	13 Everest Lane	Residential	530
R02	496079	6018353	171 Everest Lane	Residential	540
R03	496322	6018357	48 Bridle Lane	Residential	310
R04	496477	6018548	40 Bridle Lane	Residential	320
R05	496618	6018682	34 Brindle Lane	Residential	360
R06	496712	6018713	23 Mountainpeak Lane	Residential	340
R07	496945	6018710	22 Mountainpeak Lane	Residential	320
R08	497140	6018512	96 Winchester Lane	Residential	150
R09	497693	6018680	26 Lauren Court	Residential	430
R10	497784	6018559	27 Lauren Court	Residential	320
R11	497873	6018429	25 Lauren Court	Residential	210
R12	498069	6018328	394 Gerogery Road	Residential	185
C01	496063	6017856	End of Winchester Lane	Commercial	600

Source: Rockwood Quarry Air Quality Assessment (GHD, June 2018)

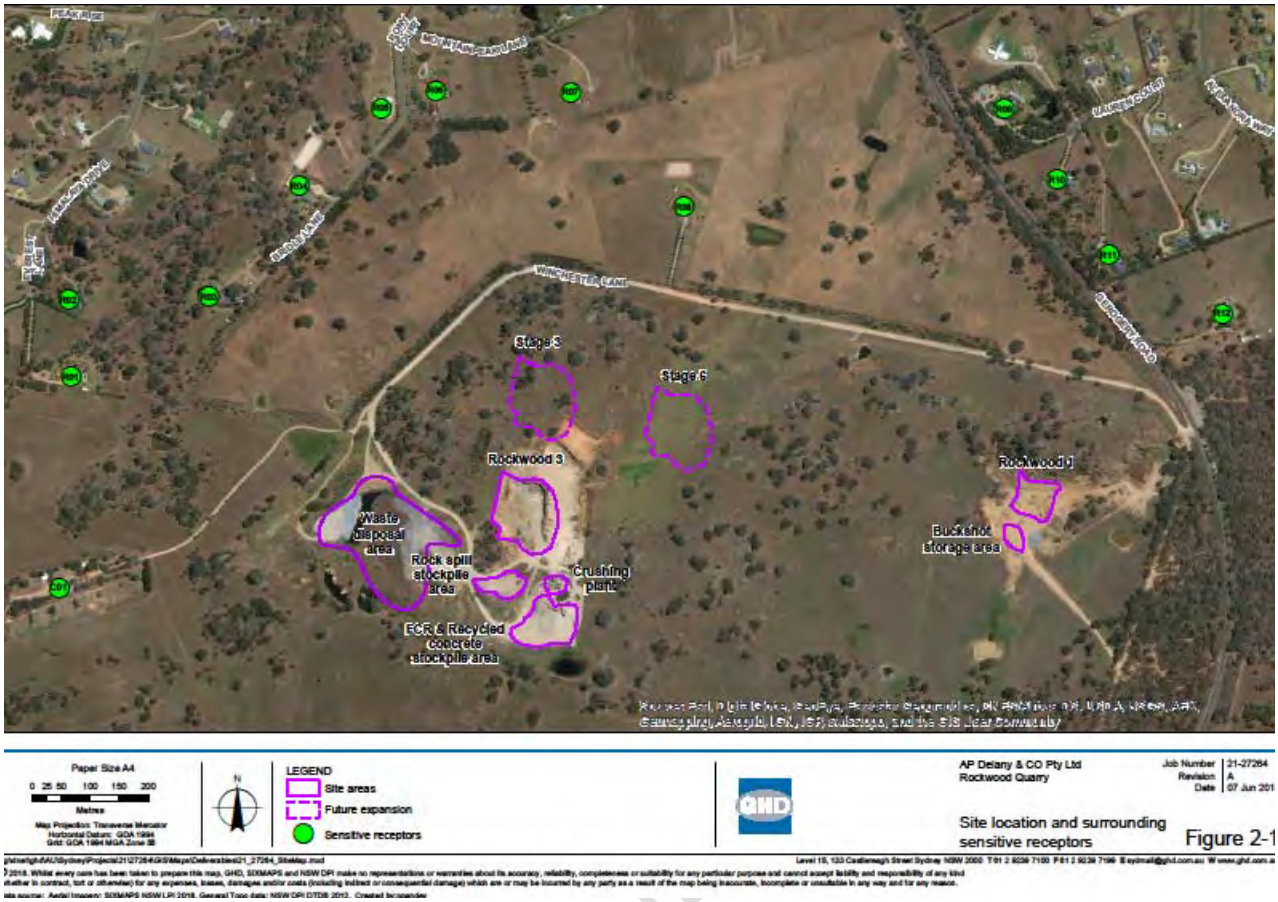

Figure 38: Sensitive Receptors Map (Source: Rockwood Quarry Air Quality Assessment, GHD, June 2018)

7.7.2 Air Quality Impacts

The operation and use of the subject land as a quarry and associated works, including the crushing of concrete and disposal of biosolid waste (covered via a separate approval) has the potential to generate issues of air quality including:

- Emissions generated during blasting and excavation associated with clearing, stockpiling topsoil and fill;
- Airborne dust generated from the processing and crushing of raw materials, particularly if machinery is not well maintained or the works are undertaken during drier periods;
- Excavators loading trucks and vehicle movements to and from the site, particularly where transported loads are uncovered;
- Generation of dust from haulage vehicles travelling along unsealed roads (Winchester Lane) and within the local area, particularly during drier periods;
- Dust generated from disturbed/exposed areas of the site, as well as from uncovered or unwatered stockpiles;
- Exhaust emissions generated from machinery and transport vehicles; and
- Odours associated with the disposal of biosolid waste on-site (already approved via an existing development consent and EPA license).

In addition to those specific issues associated with the site, consideration needs to be given to the cumulative air quality impacts of surrounding land uses and developments including;

- Existing larger scale operating extractive industries (Burgess' quarry);
- Norske Skog Newsprint Mill and Overall Forge;
- Nexus industrial estate;
- Vehicle emissions from both domestic vehicles and heavy vehicles;
- Proximity of the subject land to the main Melbourne-Sydney railway line and the Hume Highway;
- Dust and vehicle emissions from surrounding agricultural issues;
- Wood fire smoke from domestic wood heaters and smoke from back-burning;
- Natural hydrocarbon and particulate emissions from the surrounding vegetation (Sinclair Knight Merz 1999); and
- Climatic conditions can also influence the impact of dust in the vicinity, particularly in dry and windy conditions.

Many of these impacts already exist courtesy of the existing quarry operation and have been managed and controlled over time so as to limit complaint.

7.7.3 Air Quality Assessment

The AQIA was undertaken to assess potential impacts on surrounding sensitive receivers based on the assumption that the quarry will operate at its maximum extraction rate, being 100,000m^3 per annum. The key emissions sources were concluded to be Rockwood 1 pit, Rockwood 3 pit, screening and crushing plant, access tracks and stockpiles. Particulate emissions (TSP, PM10 and PM2.5) were estimated based on the project description and expected equipment to be used throughout operation.

The assessment also considered the impacts of odour as the site is also approved to receive up to a maximum of 10,000 tonnes of biosolid waste from the adjoining Norske Skog Paper Mill. The biosolid waste has been accepted intermittently from the mill since 1983 and has received no complaints due to the relatively inert nature of the waste, the low levels of waste received on-site and the setbacks of the waste disposal area from surrounding sensitive uses. No other odour sources associated with the increased production of the quarry were identified and odour impacts were considered negligible and not further assessed in the AQIA.

Similarly, whilst other air emissions such as combustion products (e.g. vehicle exhaust) will also be present within the quarry, due to the relatively small number of vehicles associated with the development, the potential for impact from these emissions is negligible. Therefore, vehicle exhaust emissions were also not considered any further in the assessment.

In order to consider the impacts of air quality, an Air Quality Dispersion Model was prepared, as well as a meteorological model. Local meteorological data was utilised to inform these models from the Albury Airport located approximately 9 kilometres south east of the subject land.

A number of different scenarios were established and a model was prepared based on a 'worst-case' scenario, which included the relocation of the Pit 3 extraction site in a north easterly direction (classified as 'Stage 6').

Particulate emissions rates were conservatively calculated using worst case (100,000 m^3 per year) extraction rates and provided haul truck movement counts. It is not expected that the quarry would typically reach this extraction rate, however this assessment conservatively accounts for that unlikely scenario.

The following modelling assumptions were made:

- Operations are conducted between 7am and 6pm each working day.
- Operational plant and equipment only produce emissions while they are in use (during working hours). Stockpiles continually produce emissions (24 hours a day, 7 days a week)
- Peak operations (150 days per year) consist of work on Monday to Saturday each week. The model assumes operations from Monday to Saturday inclusive for every week of the year. This equates to more than 150 operational days, however it results in a more robust assessment that predicts the worst case impact for any potential operational period
- Haul trucks are approximately 3 m wide by 3 m high; and
- Stockpiles were modelled at a height of 15 m.

Based on the assumptions and scenarios outlined in the AQIA and assessment, predicted TSP, PM_{10} and $PM_{2.5}$ emissions are expected to comply with the relevant criteria when assessed in accordance with the Approved Methods. Predicted cumulative particulate concentrations are composed of relatively high background particulate concentrations and low incremental concentrations suggesting the proposed quarry expansion will have minimal impact of the surrounding air quality.

7.7.4 Greenhouse Gas Emissions

Matters regarding greenhouses gases have also been considered with regards to the subject proposal. Greenhouse gases include water vapour, carbon dioxide, methane, nitrous oxide, ozone, and the chlorofluorocarbons (CFC's). The emission of those 'natural' gases from the site will not change as a result of the development as the development will continue to operate as it has done so for the past 45 years. The activities proposed to be undertaken on the site will not emit any of the 'unnatural' greenhouse gases.

Consequently, the extent of greenhouse gas emissions from the proposed activity will not change from current operations and will be minimised following the implementation of ongoing mitigation measures and the long-term rehabilitation of the site.

7.7.5 Mitigation and Monitoring Measures

Air quality and dust control measures available for quarrying operations are generally a combination of engineering controls, operational controls and planning controls.

The current dust control measures implemented on-site will continue to be maintained as part of the Project in accordance with a number of previous development consents issued for the subject land (see **Attachment C**).

These controls include:

- Regular watering of unsealed haulage roads, working areas and stockpiles, particularly on dry, hot windy days;
- Water sprays on conveyors, stockpiles and areas of disturbance or loose soil;
- Progressive stabilisation/rehabilitation of exposed areas no longer needed for operational purposes;
- Covering of all laden trucks leaving the site when transporting materials, particularly on public roads; and
- Regular machinery maintenance to ensure that machinery is working efficiently.

In addition to the above existing controls, AP Delaney & Co will continue to implement the following controls as part of the Project:

- Maintain and manage existing landscape screen plantings along the existing accessway and boundaries of the site;
- Maintain and locate existing quarrying activities below ridgelines, which will screen adjoining residential dwellings to the north;
- Application of fine water sprays and implementation of adequate dust control mechanisms on mobile crushing and screening plant;
- Imposition of speed limits on all internal roads;
- Minimisation of the total disturbed/working area at any one time;
- Designing of blasts to minimise dust (underground blasting);
- Consideration of current weather conditions prior to blasting. This includes visual observations of wind speed and wind direction to determine whether any dust emissions from the blast will be carried in the direction of nearest sensitive receptors;
- Awareness training regarding air quality management for employees and contractors, where relevant;
- Generally undertake crushing works after watering down of raw materials to be processed;
- Ongoing management and monitoring of deposition dust in the area surrounding the quarry;
- Continued rehabilitation and backfilling of waste disposal areas with clean virgin fill.

Matters regarding exhaust emissions and diesel fumes from excavation equipment and transport vehicles will be minimal as the quarry is located in an open rural environment so any fumes are likely to be easily dispersed without impact on the surrounding area. Nonetheless, ongoing routine and regular maintenance of machinery and equipment will be undertaken to ensure that machinery is working at optimal efficiency.

More specifically, the AQIA recommended that to reduce dust generation from haul vehicles on Winchester lane, level 1 watering (2 L/m2/hr sprayed on unsealed road) should be undertaken. In addition, extracted material should be sprayed with water before being crushed to ensure the material retains a high moisture content and water sprays should be maintained at the screening plant to reduce dust dispersion.

It is noted however that the assessment concluded that specific dust mitigation for crushing and screening is only needed when dust from operations are visibly observed to be dispersing towards nearby sensitive receptors.

In addition to the specific site mitigation measures outlined above, the following general dust mitigation measures are recommended for the quarry to reduce dust generation as much as reasonably possible:

- Water material prior to it being loaded for on-site haulage, where appropriate;
- Aim to minimise the size of storage stockpiles where possible;
- Limit cleared areas of land and clear only when necessary to reduce fugitive dust emissions;
- Control on-site traffic by designating specific routes for haulage and access and limiting vehicle speeds to below 40 km/hr;
- All trucks hauling material should be covered on the way to the site and should maintain a reasonable amount of vertical space between the top of the load and top of the trailer; and
- Operations conducted in areas of low moisture content material should be suspended during high wind speed events or water sprays should be used.

7.8 Waste Management and Disposal

Consideration of the generation, storage and disposal of wastes has been assessed as part of the subject proposal in accordance with the requirements of the SEARs. Such considerations include; an estimate of the quantity and nature of the waste streams that would be generated or received by the development and any measures that would be implemented to minimise, manage or dispose of these waste streams.

As outlined previously within this report, it is noted that the subject land currently has approval for the disposal of up to 10,000 tonnes of biosolid waste on-site from the nearby Norske Skog Paper Mill, which is currently covered by a separate development consent and EPA licence.

Therefore, further consideration of the environmental impacts of the disposal of biosolid waste is not required in this instance and the site has continued to operate in accordance with previous approvals and EPA licenses without environmental harm or incident since initial disposal in 1983.

7.8.1 Existing Waste Management Operations

The subject land primarily operates for the purposes of an extractive industry as a hard rock quarry. Wastes associated with the use of this land as a quarry are limited due to the small number of staff (3) present on site at any period of time and the nature of the production process, which produces limited residual wastes such as tailings or overburden.

More specifically, the existing quarry generates limited wastes on-site as all excavated material is extracted, crushed and processed to suit its proposed application. The crushing plant contains a number of conveyor belts that continually crush and screen the excavated granite material to ensure that there are limited wastes. No other production or processing of this excavated material occurs, which limits the amount of waste generated on-site.

Rotating magnets are fitted to the conveyor belts, which separate out any residue or scrap metal contained within the crushed material (particularly reinforcing from recycled crushed concrete). These materials are stockpiled adjacent to the crushing plant and loaded into containers where they are transferred to a metal recycler once they are full.

In addition, a small amount (approximately 20-30m^3) of inert pieces of hard and soft plastics, as well as timber is removed from crushed concrete products and are collected and recycled off-site.

Similarly, top soil and overburden is ripped and stockpiled on-site adjacent to the proposed work area where it is later used as part of the rehabilitation process. This material is clean virgin material that can be used for land application and rehabilitation purposes.

Effluent waste is also collected and disposed of on-site via an existing approved septic tank and seepage line located approximately 40 metres south of the existing staff amenities building, which was approved by the former Hume Shire Council. The size and location of this septic system has been designed to accommodate the existing development and ensures that effluent does not contaminate the land or any nearby watercourses.

Accordingly, matters regarding waste generation, storage and collection associated with the use of the site as a quarry are already appropriately managed and controlled with wastes to be

appropriately stored, recycled, reused or disposed off to the Albury Regional Waste Management Centre.

As outlined throughout this report, the development also currently has approval to dispose of up to 10,000 tonnes of biosolid wastes from the nearby Norske Skog Paper Mill where wet weather precludes it being disposed of to farmlands as part of a resource recovery exemption. This waste is currently disposed of on-site in a retired quarry pit located to the south west of Pit 3 and is used as part of site rehabilitation and land application works.

A hydrogeological study was previously prepared with regards to the disposal of this waste and the following environmental protection measures have been established and maintained:

- Construction of cut off drains and diversion banks to redirect 'clean' stormwater runoff around waste disposal areas;
- Construction of clay-lined leachate dams to collect and hold leachate run-off, where it is later used to irrigate open paddock lands located to the north west of the waste disposal area; and
- Installation of monitoring bores and piezometers (shallow and deep) to monitor changes in water table levels and chemical composition of the soil;

The receipt and disposal of this waste on-site is currently undertaken in accordance with the conditions of a separate development consent and an EPA Licence, which includes amongst other things, annual monitoring and independent environmental audits. It is noted that since initial disposal of biosolid waste on-site in 1983, there have been no recorded incidents of environmental harm resulting from the disposal of waste on-site.

7.8.2 Impacts of the Proposal

Wastes that will require management in association with the quarrying activities include:

- Construction waste;
- Workshop wastes, including waste oil, grease cartridges, oily rags and scrap metal;
- Silt (from aggregate washing);
- General rubbish;
- Tyres; and
- Effluent.

As outlined above, the subject quarry already exists and has been operating for the past 45 years without incident or harm. It is expected that any wastes generated as a result of the proposed quarry extension and expansion will be comparable to current rates and can continue to be appropriately managed on-site. It is reiterated that the proposed quarry expansion does not propose to increase the number of staff or daily output of the quarry, but rather seeks to operate on a larger number of days (up to 150).

Accordingly, matters regarding waste management and disposal can be appropriately managed ongoing and are not expected to increase significantly beyond current rates.

7.8.3 Mitigation and Monitoring Measures

In response to the likely impacts of the continued operation of the quarry, a number of mitigation and monitoring measures are recommended as part of the Project including:

- Ensure that all work areas are maintained in a neat and tidy manner and prevent the accumulation of waste on-site including; recycling most materials and disposal of waste as appropriate to the Albury Regional Waste Management Centre;
- All waste oil will be collected and stored in containers within a covered and bunded area and will be removed from the site by an appropriately licensed contractor including any EPA requirements with respect to the tracking of waste;
- All refueling on-site will be undertaken via off-site storage vehicles in bunded areas;
- All oil filters will be separately stored and returned to the manufacturer for re-use;
- Silt will be periodically removed from the various silt control structures and placed/stored in the product stockpiles or overburden materials for use in progressive rehabilitation;
- Waste water from amenities buildings will be treated and disposed of via an on-site septic disposal system;
- All waste tyres will be removed by the supplier of replacement tyres;
- Disposal of biosolid wastes on-site shall continue to occur in accordance with previously issued development consents and EPA licenses, including the requirement for any monitoring and environmental audits;
- Rehabilitated areas to be top dressed, re-vegetated and screened off from access by stock.

7.9 Transport & Access

An assessment of the potential impacts on the capacity, condition, efficiency and safety of the local road network has been investigated by Peter Meredith Consulting as part of the preparation of a Traffic Impact Assessment (TIA) completed for the site.

A copy of the TIA is included as **Attachment F** and a summary of the key findings is provided below.

7.9.1 Existing Conditions

Gerogery Road forms the western boundary of the site. It runs north from Wagga Road to the township of Gerogery. It provides access for local traffic from farms, large lot rural residential development and the Nexus industrial complex. Gerogery Road is classified as a local road and is under the management of Albury City Council. Gerogery Road is also an RMS heavy vehicle incident management bypass route for the Hume Highway. This road currently has a posted speed limit of 100km/h.

Adjacent to the intersection of Gerogery Road consists of the following characteristics:

- An undivided two-way road with a sealed carriageway width of 8.6m;
- Two traffic lanes of 3.5m and gravel shoulder at 2.1m on the east side and 2.6 on the west side shoulder;
- Formed table drains and grass verges
- Line marked centre and edge lines with guide post delineation
- 'Truck' entering symbolic warning signage on both approaches to intersection of Gerogery Road and Winchester Lane.

Winchester Lane forms the northern boundary of Pit 3. Winchester Lane connects to Gerogery Road as a T-junction intersection and allows two-way access from Gerogery Road. This road is classified as a property access road and provides access to the Rockwood Quarry, the Albury Wodonga Clay Target Gun Club and the residence at 96 Winchester Lane and is under the management of the property owners who have access. This road has a speed limit of 60km/h.

Winchester Lane consists of the following characteristics:

- An undivided two-way 6m wide gravel access road;
- Table drains; and
- Give-way signs at the entrance to the quarry site.

During June 2018 Albury City Council conducted classifier traffic counts on Gerogery Road between Hub Road/Winchester Lane and Tynan Road/Winchester Lane. The results of the traffic counts are shown in **Attachment F**. A summary of the June 2018 ADT, AM and PM weekday peak hour traffic volumes (vph) for Gerogery Road are shown below in the **Table 22**.

Traffic volumes on Winchester Lane were also conducted and are primarily generated from AP Delaney & Co and the Albury Wodonga Clay Target Club (see **Table 23**). It is noted that the majority of traffic accessing Winchester Lane enters north bound turning left into Winchester Lane from Gerogery Road and exits south bound by turning right from Winchester Lane into Gerogery Road given the destination of source materials (see **Figure 39**).

Table 22: Average Daily Traffic, AM and PM Peak hour traffic volumes for Gerogery Road, June 2018

June 2018 Location/Direction	ADT weekday	AM	PM	85th % speed Km/h
Gerogery Road between Hub Road and Winchester Lane (Classifier set up approximately 200m south of Winchester Lane)				
Gerogery Road north bound Lane (Uphill travel lane)	660	33 (11 to 12am)	85 (4 to 5pm)	91.1 (uphill)
Gerogery Road south bound Lane (Downhill travel lane)	575	82 (8 to 9am)	46 (2 to 3pm)	108.7 (downhill)
Gerogery Road between Tynan Road and Winchester Lane (Classifier set up approximately 180m north of Winchester Lane)				
Gerogery Road north bound Lane (Downhill travel lane)	643	35 (11 to 12am)	88 (4 to 5pm)	99.3 (downhill)
Gerogery Road south bound Lane (Uphill travel lane)	654	94 (8 to 9am)	47 (2 to 3pm)	99.5 (uphill)

Source: Traffic Impact Assessment, Rockwood Quarry Winchester Lane, Peter Meredith Consulting, 2018

Table 23: Estimated Existing Daily Traffic and direction, AM and PM Peak hour traffic volumes for Winchester Lane

Location / Direction	ADT 5-day week	AM peak 8.00-9.00	PM peak 5.00-6.00
Winchester Lane North bound left-turn-in	**56** Worst case scenario	2 trucks + 1 car = **3vph**	**4vph** (cars)
Winchester Lane South bound right-turn-in		**0 vph**	**1 vph** (car)
Winchester Lane South bound right-turn-out		**2 vph** (trucks)	**4 vph** (cars)
Winchester Lane North bound left-turn-out		**0 vph**	**1vph** (car)

Source: Traffic Impact Assessment, Rockwood Quarry Winchester Lane, Peter Meredith Consulting, 2018

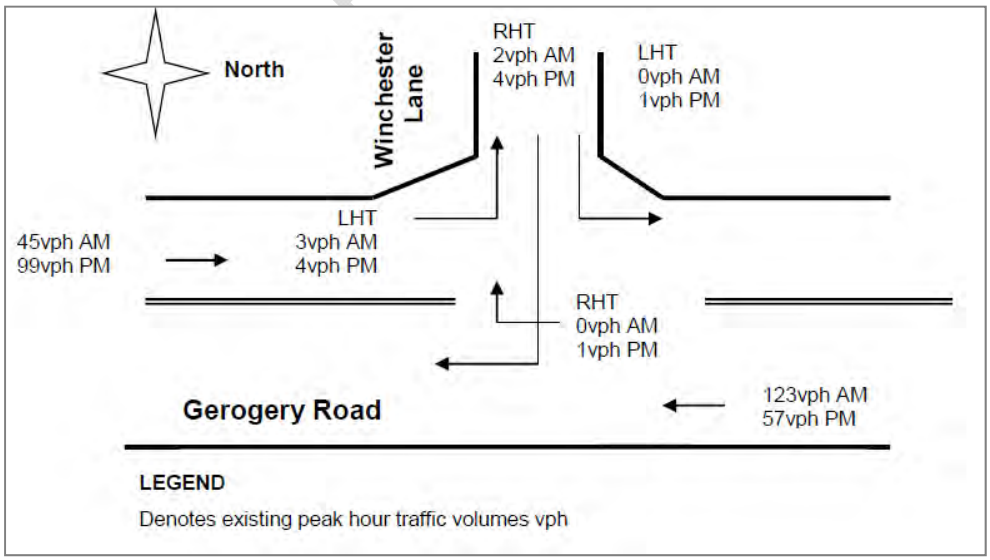

Figure 39: Existing and estimated AM and PM peak traffic flows at the intersection of Gerogery Road and Winchester Lane
(Source: Traffic Impact Assessment, Rockwood Quarry Winchester Lane, Peter Meredith Consulting, 2018)

The intersection was modelled to determine the Level of Service (LOS) using the intersection analysis program *SIDRA Intersection 7.0*. Upon investigation, it was confirmed that Gerogery Road and Winchester Lane operate well within capacity in both the AM and PM peak periods with a LOS 'A' (see **Table 24**) for all movements. Minimal delays are experienced, with the worst being on the south bound right-turn into Winchester Lane (average 5.6 seconds AM and 5.7 seconds PM).

Table 24: Level of Service (LoS) for capacity and operational analysis for all types of road facilities

Level of service A	A condition of free-flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.
Level of service B	In the zone of stable flow where drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is a little less than with level of service A.
Level of service C	Also in the zone of stable flow, but most drivers are restricted to some extent in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience declines noticeably at this level.
Level of service D	Close to the limit of stable flow and approaching unstable flow. All drivers are severely restricted in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is poor, and small increases in traffic flow will generally cause operational problems.
Level of service E	Traffic volumes are at or close to capacity, and there is virtually no freedom to select desired speeds or to manoeuvre within the traffic stream. Flow is unstable and minor disturbances within the traffic stream will cause breakdown.
Level of service F	In the zone of forced flow, where the amount of traffic approaching the point under consideration exceeds that which can pass it. Flow breakdown occurs, and queuing and delays result.

Source: Traffic Impact Assessment, Rockwood Quarry Winchester Lane, Peter Meredith Consulting, 2018

In addition, the subject land has operated as an extractive industry for over 45 years without any traffic incidents/crashes or injury resulting from traffic movements from the quarry site. The Albury City Council Road Safety Officer advises that the RMS crash data base also confirms that there have been no crashes at or near the intersection of Gerogery Road and Winchester Lane in the past five years.

7.9.2 Impacts of the Proposal

The proposed development seeks approval to operate an extractive industry from the subject land, which is currently being used for this purpose. Existing access to the quarry will remain from Winchester Lane via Gerogery Road, but the development seeks approval to increase the maximum annual production from 75,000m^3 to 100,000m^3 per annum.

Accordingly, some of the likely impacts associated with the continued use of this land as an extractive industry could create the following transport and access impacts:

- Traffic safety concerns and road damage associated with heavy vehicles utilising the local road network;
- Traffic safety concerns for local road users utilising Gerogery Road from vehicles exiting the subject land turning right due to the existing configuration and condition of this intersection (i.e. poor visibility, sight distances etc);
- Generation of dust from the use of unsealed roads by heavy vehicles and the impacts that this could create on adjoining land uses and sensitive receptors; and
- Noise associated with loading activities, vehicle movements and truck braking.

In order to determine future traffic conditions, a standard 2% per annum traffic growth rate has been applied to the existing volumes on Gerogery Road to allow for the increase in background traffic volumes arising from general increases across the network. There is no expected percentage increase in background traffic volumes arising from general increases across the network on Winchester Lane from the Albury Wodonga Clay Target Club.

The subject proposal is seeking to raise the possible maximum production of the existing Rockwood Quarry to 100,000m^3. Historically maximum production allowable at the quarry has fallen well below this figure (see **Table 8**), but for the purpose of traffic calculations it has been assumed that full production of 100,000m^3 could occur by 2038, but this will be subject to demand.

By applying the above rates to a production of 100,000m^3 of quarry rock per annum the quarry activity could potentially generate:

- 100,000m^3 x 2.2 = 220,000 tonnes p.a.
- Daily truck trips = 220,000 / 33 truck loads / 312 days = **21.4 loads per day (increase of 5.4vph)**
- Weekday average peak hour vehicle trips = 21.4 / 8 hours = **2.7 rounded up to 3vph (increase of 1vph)**

Traffic generated by the quarry development will be distributed throughout the network depending on origin/destination and route choices. This can be estimated by assessing likely origins and destinations based on existing traffic flows. It is assumed the majority of all quarry traffic accessing the quarry site will enter north bound turning left into Winchester Lane from Gerogery Road and exit south bound by turning right from Winchester Lane into Gerogery Road. Traffic generated by the quarry has south bound origin/destination generators and it is rare that vehicles need to head north bound.

These assumptions have been used to determine the additional traffic likely to be generated at the key intersection of Gerogery Road and Winchester Lane. A summary of the additional turning movements for the intersection of Gerogery Road and Winchester Lane are shown in **Figure 40**.

The impacts of the proposed development on through-traffic on Gerogery Road are primarily related to the low speed turning manouvres at the T-junction intersection of Gerogery Road and Winchester Lane.

More specifically, these impacts are quantified below (see overleaf) and appropriate mitigating works are recommended, if required.

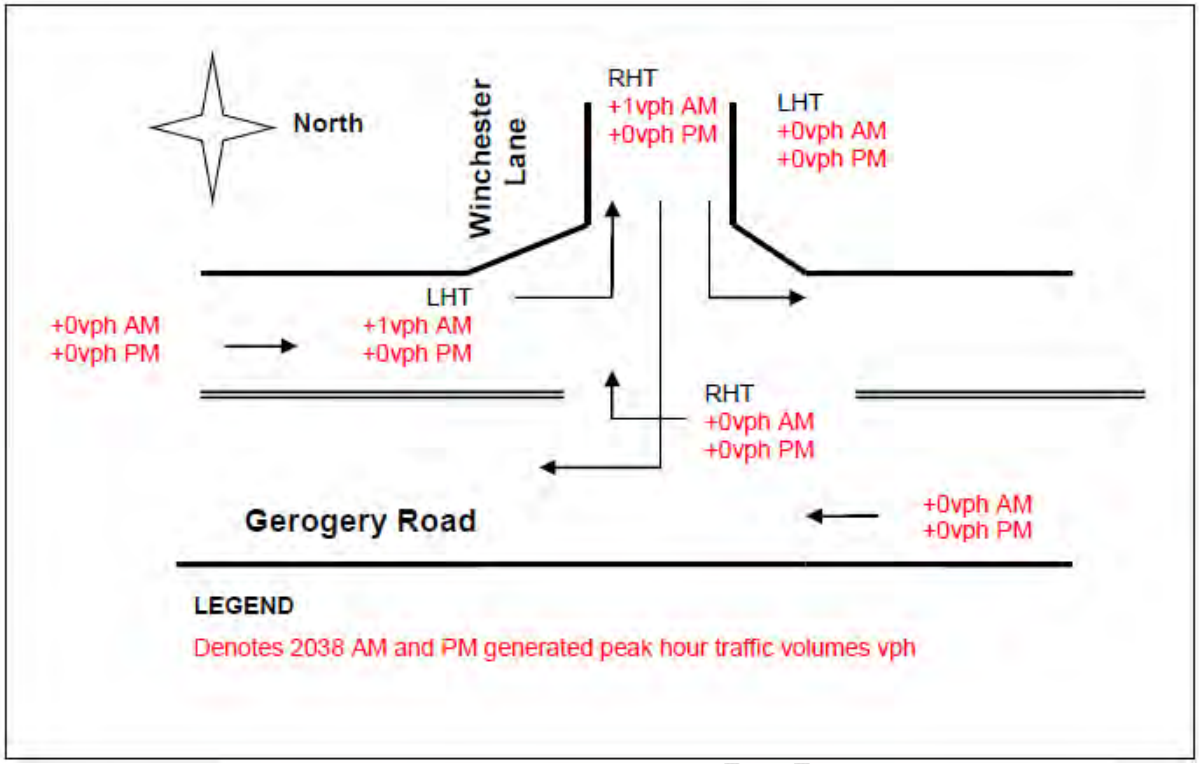

Figure 40: Future 2038 AM and PM peak traffic flows at the intersection of Gerogery Road and Winchester Lane (Source: Traffic Impact Assessment, Rockwood Quarry Winchester Lane, Peter Meredith Consulting, 2017)

Intersection Performance of Gerogery Road and Winchester Lane

A SIDRA analysis of the operation of the existing T-Junction intersection of Gerogery Road and Winchester Lane was undertaken for the forecast and generated future quarry traffic flows for both AM and PM up to year 2038. The key outcome of this analysis confirms that Gerogery Road and Winchester Lane intersection continues to operate well within capacity at a Level of Service of A in both the AM and PM peak periods at 2038. Minimal delays are experienced; with the worst being still Gerogery Road south bound right-turn into Winchester Lane (average 5.6 seconds AM and 5.9 seconds PM).

Sight Distances and Design Speed

The existing speed limit for Gerogery Road at the intersection of Winchester Lane is 100km/h.

The operational speed or 85th percentile speed for Gerogery Road on both the north and south bound approaches to the intersection of Gerogery Road and Winchester Lane has been determined using traffic classifiers. Results indicate that the 85th percentile speed for Gregory Road for both the uphill north and south bound approaches to the intersection of Gerogery Road and Winchester Lane are **91.1 km/h** and **99.5 km/h** respectively.

The above 85th percentile speed results indicate it would be appropriate to adopt a 100km/h design speed for calculations of sight distance for the Safe Intersection Sight Distance and the Minimum Gap Sight Distance requirements for the existing intersection of Gerogery Road and Winchester Lane.

Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) as set out in the *Austroads Guide to Road Design Part 4A: Section 3 Sight Distance, Table 3.2* for a design speed of 100km/h is 262m for a reaction time of 2.5 seconds (trucks) and is reduced to 251 metres with an 11 metre reduction for an average 4% uphill grade in accordance with Table 3.4: Grade corrections to ASD and SISD (cars).

Gerogery Road North Bound Approach SISD

An inter-visible SISD of **251m** for Gerogery Road on the north bound approach to the intersection of Gerogery Road and Winchester Lane was measured in accordance with *AGRD Part 4A: Section 3 Sight Distance, Figure 3.2 with a 5m offset.*

The results indicate that the measured SISD of 251m for the north bound approach is considered to be within acceptable practical limits and meets the AGRD Part 4A requirements of SISD for a design speed of 100km/h. In addition, the sight lines at the intersection of north bound traffic have not been maintained and sucker trees (15 less than 100mm diameter) and small trees (8 up to 200mm diameter) and low branches (3 lots) that have been allowed to grow uncontrolled on the road verge are restricting SISD sight lines. The smaller sucker trees and branches are a pre-existing condition and their removal by Albury City Council, the responsible road authority would provide clear sight lines (see **Figure 41**).

It is also noted that observations and measurements indicate that a SISD of 287m for a design speed of 110km/h would be very difficult to achieve because of the topography and a large number of trees on the western road verge (environmental zone) blocks sight lines. Extensive earthworks to remove a small knoll and tree removal on the road verge would be required to achieve SISD of 287m for a 110km/h design speed.

Figure 41: Gerogery Road north bound at 287m from Winchester Lane
(Source: Traffic Impact Assessment, Rockwood Quarry Winchester Lane, Peter Meredith Consulting, 2018)

Gerogery Road North Bound Approach SISD

An inter-visible SISD of **180m** for Gerogery Road on the south bound approach to the intersection of Gerogery Road and Winchester Lane was measured in accordance with AGRD Part 4A: Section 3 Sight Distance, Figure 3.2 with a 5m offset.

The results indicate that the measured 180m SISD for a design speeds of 100km/h on the south bound approach does not meet AGRD Part 4A requirements.

However, preliminary designs prepared by AP Delaney indicate that the existing cutting embankment on the western side of Gerogery Road can be excavated to achieve an inter-visible SISD of over 250m for Gerogery Road on the south bound approach to the intersection of Gerogery Road and Winchester Lane. Refer to **Figure 41** for details of the preliminary designs of sight improvements.

The intersection of Gerogery Road and Winchester Lane has a historical deficiency in the SISD on the south bound approach. There is evidence of old survey/construction set out pegs along the existing cutting embankment that would indicate that improvements to the SISD were investigated by previous road authorities (RMS, Hume Shire Council or Greater Hume Council). Both Gerogery Road and Winchester Lane are classified as local roads and the intersection connection to Winchester Lane is currently used by AP Delaney and Albury Wodonga Clay Target Club.

Minimum Gap Sight Distance

Minimum Gap Sight Distance (MGSD) is based on distances corresponding to the critical acceptance gap that drivers are prepared to accept when undertaking a crossing or turning manoeuvres at intersections. The MGSD as set out in the AGRD Part 4A: Section 3 Sight Distance, Table 3.6 for 85th Percentile speeds of 100km/h has been calculated as **139m** for a critical gap acceptance time *(ta) of 5 seconds for all movements of two lane /two-way traffic with the approaching vehicle required to slow if necessary.

Gerogery Road North Bound Approach MGSD

A MGSD of **160m** for Gerogery Road on the north bound approach to the intersection of Gerogery Road and Winchester Lane was measured in accordance with the possible conflict movements. The results indicate that the measured MGSD of 160m for the north bound approached is considered to be acceptable and meets the AGRD Part 4A requirements of MGSD for a speed of 100km/h.

Gerogery Road South Bound Approach MGSD

A MGSD of **170m** for Gerogery Road on the south bound approach to the intersection of Gerogery Road and Winchester Lane was measured in accordance with the possible conflict movements. The results indicate that the measured MGSD of 170m for the south bound approached is considered to be acceptable and meets the AGRD Part 4A requirements of MGSD for a speed of 100km/h.

Speed Limits

The speed limit on Gerogery Road between the Gerogery Road/Hub Road roundabout and Wagga Road was recently reduced from 100km/h to 80km/h. The speed limit was reduced to improve traffic safety along this section of Gerogery Road and to reduce the approach speed at the new roundabout.

Similar traffic safety benefits could also be achieved by reducing the speed limit to 80km/h on the section of Gerogery Road between the Hub Road roundabout and Himalaya Drive. The traffic safety issues identified for this section of Gerogery Road are listed below:

- School bus zone with shelter on Gerogery Road adjacent to the Himalaya Drive T-junction. Morning and afternoon pick-up and drop-off. Parent parking and children close to edge of road;
- School bus zone with shelter on the south east side of Gerogery Road at Tynan Road T-junction. Morning and afternoon pick-up and drop-off. Parent parking and children close to edge of road;
- Property entrance on eastern side of Gerogery Road close to top of crest of Nine Mile Hill has restricted sight distance of north bound traffic;
- The intersection of Gerogery Road and Winchester Lane has restricted sight distance of south bound traffic. The reduction in speed limit to 80km/h would allow the required SISD 181m to be achieved. This would also eliminate the need to remove the cutting embankment to achieve a SISD for 100km/h;
- Recreational and service access to reserve on east side of Gerogery Road has restricted sight distance for both north and south bound traffic;
- Property access on west side of Gerogery Road near southern end of Nine Mile Hill has restricted sight distance; and
- Straight section of Gerogery Road with a high speed downhill approach to Gerogery Road/Hub Road roundabout. A reduction in speed limit would improve motorist's ability to identify the roundabout hazard.

Winchester Lane Bitumen Apron

The existing bitumen apron in Winchester Lane connecting to Gerogery Road is severely pot holed and damaged with loose gravel covering most of the apron. Vehicles (particularly cars) entering onto Gerogery Road are losing traction in the loose gravel and losing critical manoeuvring time when turning onto Gerogery Road. The loose gravel should be swept off the bitumen and the pot holes filled to improve the safety of the intersection.

7.9.3 Mitigation and Monitoring Measures

In response to the likely impacts of the proposal, a number of mitigation and monitoring measures are recommended as part of the Project including:

- Maintain the entrance to the property from Gerogery Road to ensure traffic safety and function is not compromised;
- Remove several small trees and branches on the Gerogery Road road verge to improve existing sight line issues looking south;
- Investigate future options to improve existing sight lines for northbound traffic, including undertaken road embankment works;
- Avoid movement of heavy vehicles on wet unsealed roads;
- Heavy vehicles shall be driven at moderate to low speeds in accordance with existing self-imposed speed restrictions;

- Maintain existing warning signals and communication methods for both heavy vehicles and domestic vehicles utilising Winchester Lane;
- Avoid the trafficking of mud and other spoil by heavy vehicles onto sealed roads;
- Liaise with Council and/or the RMS in regards to traffic management; and
- Reinstate any road surfaces damage by the movement of heavy vehicles and/or machinery associated with the proposed works.

7.10 Social & Economic Impact

No formal social or economic impact analysis has been undertaken as the site is already operating for the purposes of an extractive industry and associated works including; the crushing of recycled concrete and disposal of biosolid wastes.

Nonetheless, consideration of the proposed extension and expansion of this quarry facility needs to be undertaken with regards to the social and economic impacts of the proposal.

7.10.1 Existing Conditions

The current quarry has operated for more than 45 years with little to no complaint or incident from surrounding or adjoining neighbours due to the current operations conducted on-site and the management and mitigation measures implemented by the current site operator. This is evidenced by the fact that only two (2) enquiries were received from adjoining owners as part of the initial neighbour notification phase of the development and none during the initial neighbour notification period.

The social impacts of the development have been appropriately managed as excavation/extraction works are located approximately 500 metres away from the nearest residents in Himalaya estate. Furthermore, work areas are limited to below the ridgeline and are screened from surrounding nearby sensitive receptors (residential dwellings) thereby limiting the visual appearance of the development and minimising issues of noise.

The current quarry also crushes and processes recycled concrete as part of general site operations within the central portions of the site, which has continued to operate without incident or complaint. Similarly, the subject land accepts up to 10,000 tonnes of biosolid waste, where wet weather precludes its disposal to nearby farmlands, which is subject to an existing valid development consent and EPA license.

These works occur to the south west of Pit 3 in a retired portion of the quarry and are used as part of the overall site rehabilitation process. Due to the nature and chemical composition of the waste, the waste is relatively inert in nature and does not create any issues of odour. The waste also appears for all intents and purposes to be recycled mulch material and matted soil with the exception of a slightly blue colouring as a result of the de-inking process.

Notwithstanding the above, in response to a number of previous concerns raised by both adjoining residents and council, the landowner undertook significant landscape planting works along the existing accessway, as well as around the perimeter of the site. The purpose of this landscaping was to soften the appearance of the development and reduce impacts of noise and dust from the use of heavy vehicles using haulage routes. This landscaping was installed approximately 10 years ago and has now become well established.

The existing quarry provides a number of positive economic impacts as it satisfies the strong ongoing demand for quarry resources as part of local road construction and earthmoving operations conducted by the current owner and operator of the land. It support economic growth and development and the current materials extracted on-site provide valuable resources to the local construction industry, which avoids the need to have to source resources from outside of the local area, which will lead to higher construction costs.

Furthermore, the development supports the recycling of residual concrete wastes, as well as the recycling of scrap metal and other materials that would otherwise be disposed of to landfill.

7.10.2 Impacts of the Proposal

The social and economic impacts of the proposal are considered appropriate in this instance and are not expected to change from current day operations as all existing operations and processes to remain unchanged.

It is noted however, that the current proposal does seek to increase the annual rate of extraction from 75,000m^3 to 100,000m^3 and expand the current footprint of Pit 3. The social and economic impacts of this are considered appropriate however and will not create any adverse off-site impacts as the works will continue to be screened from view and will operate within relevant environmental (air quality, noise, traffic) thresholds. This will ensure that adjoining neighbours are protected on-going and will not be adversely affected as a result of the development.

As outlined above, even at maximum capacity, the quarry will only operate approximately 133 days per year or 11 days per month and will therefore not operate full time, but rather on an as needs basis to cater for the demands of the existing site operator. This will ensure that any impacts on neighbours associated with the development will be limited.

Furthermore, matters regarding public health and safety have also been considered and are appropriate in this instance. More specifically, access to the site is restricted via fencing and access gates. In addition, infrared security cameras have been positioned and installed at site entrance points and general public access is prevented.

Accordingly, the proposed development will continue to support the local construction industry and will continue to provide local employment generated during the duration of the quarry operations.

7.10.3 Mitigation and Monitoring Measures

Although the subject land has generally continued to operate without incident or complaint for over 45 years, it is still considered necessary that a number of mitigation and monitoring measures be implemented as part of the Project including:

- Maintain and improve, where necessary, existing site access points with Gerogery Road from a traffic safety and efficiency perspective;
- Implement dust suppression measures as outlined under the air quality section of this report;
- Implement noise reduction measures as outlined under the noise, blasting and vibrations section of this report;
- Implement and maintain existing environment protection measures for the disposal of waste;
- Maintain existing landscape screenings to haulage roads and property boundaries;
- Hours of operation to be limited to 7am to 6pm Monday to Saturday with no activities to occur on Sundays or public holidays outside of the intermittent disposal of biosolids;
- Areas of extraction shall continue to be located below the ridgeline and screened from adjoining residential neighbours;
- Undertake staged and ongoing site rehabilitation works ('retreat method') once an area has been exhausted in accordance with a rehabilitation management plan; and

- Upon exhaustion of all extractive materials, rehabilitate the entire site back to pre-development conditions (i.e. rural paddocks and grasslands).

7.11 Visual Amenity

A visual inspection and assessment has been undertaken to assess the visual amenity of the existing and proposed quarry on surrounding lands. The assessment consisted of a review of existing information about the site and topographical mapping to identify potential viewing locations from which the quarry extension area would potentially be visible from.

Following which a field visit to these locations was undertaken to determine the likelihood of any visual amenity impacts from the extension and continued operation of the quarry.

7.11.1 Existing Visual Amenity

As outlined above, the subject land has already been developed for the purposes of an extractive industry and therefore the visual impacts of the proposal already exist.

It is noted that since the quarry was originally established, a large number of rural lifestyle dwellings have been constructed to the north and north west of the subject land in both the Himalaya and Claremont Estates. Similarly, land to the south is currently being developed for large scale industrial purposes.

Accordingly, the number of 'receivers' has increased significantly from the time of the original approval.

Notwithstanding, due to the terrain and topography of the subject land and the location of current and proposed quarrying activities on-site, the area of extraction is shielded from adjoining sensitive receptors by the existing ridgeline of Nine Mile Hill and the landscape plantings undertaken by the site operator. In response to previous concerns raised by adjoining neighbours, the operator has amended current site practices to ensure that all works are now conducted below the ridgeline and screened away from view.

7.11.2 Impacts of the Proposal

Although the subject land has continued to operate for over 45 years with generally little to no objection, it is acknowledged however that both the landowner and Council did receive several objections from adjoining owners in the Himalaya estate in circa 2007 at the time of a previous modification request in regards to the visual appearance of the quarry and associated waste disposal area.

In response, the owner agreed to relocate all areas of works below the existing ridgeline and undertake extensive landscape screen plantings along the property boundary and along Winchester Lane as a means of reducing the visual impact of this development.

Since these works have been undertaken no objections have been received from adjoining neighbours and the development has remained generally screened from adjoining residential neighbours. Consistent with current day work practices, the subject development does not propose to undertake any quarrying activities that will be visible from adjoining or nearby and will continue to undertake these works below the existing ridgeline.

Whilst it is acknowledged that the existing and future quarry will be visible from adjoining industrial developments and another existing operating quarry (Burgess' Quarry), these are not 'sensitive receptors' and the impacts upon them will be low.

Similarly, the impacts on adjoining public roads will also be low given the location and extent of the works proposed. In particular, the areas of extraction will be largely screened from the adjoining Gerogery Road due to dense roadside vegetation present along this roadway, the large distance from this roadway, as well as the natural terrain of the land which screens the area of works.

7.11.3 Mitigation and Monitoring Measures

In response to the likely impacts of the proposal, a number of mitigation and monitoring measures are recommended as part of the Project including:

- Locate and position future works below the existing ridgeline of Nine Mile Hill to screen areas of extraction and waste disposal away from sensitive receptors (rural residential dwellings);
- Undertake ongoing rehabilitation works on site to minimise the area of disturbance and maintain the natural setting of the land;
- Maintain existing landscape screen plantings and where appropriate, undertake additional landscape plantings; and
- Upon exhaustion of all extractive materials, rehabilitate the entire site back to pre-development conditions (i.e. rural paddocks and grasslands).

7.12 Surrounding Land Uses

Consideration of the context and setting of the subject land with regards to surrounding land uses is critical to the ongoing operation and use of the land as a quarry and associated works (recycling of concrete and disposal of biosolid waste).

7.12.1 Existing Conditions

The surrounding area is mixed in nature and adjoins a variety of different land uses.

To the north, north-east and north-west of the subject land are a number of rural residential lifestyle properties contained within the 'Himalaya' and 'Claremont' residential Estates. Of these, approximately 75 dwellings are located within a 1.5km radius of the existing quarrying site. These properties are zoned R5 Large Lot residential under the LEP and generally range in size from 2 hectares to 4 hectares and contain residential dwellings and associated shedding and ancillary structures.

The subject land adjoins Gerogery Road to the east, as well as the remainder of the Nile Mile Hill ridgeline, which is a Crown Land owned environmental reserve. This area is heavily vegetated and is a bushfire source.

To the south and south-east is industrially zoned land, which forms part of the NEXUS Industrial Hub. Contained within this industrial area are a number of large-scale industrial operators including the Norske Skog Newsprint Mill, Overall Forge, as well as, the Ettamogah Intermodal Hub given the areas' location alongside the Hume Highway and the main Melbourne-Sydney railway line. Land located immediately to the south is currently under construction for a council-owned industrial subdivision ('NEXUS').

Land to the south-west is currently being used by the Twin Cities Model Aero Club for recreational activities, whilst land further to the south-west is also being used for the purposes of an extractive industry (Burgess' Quarry).

It is noted that this extractive industry is operating at a much more intensive scale as compared to the current operations being undertaken on the subject land and is used in association with another similar operation in Wagga Wagga, which has an average approximate output of 400,000 tonnes per annum.

Products produced from this site include aggregate suitable for concrete sealing applications, as well as roadbase material for road and bridge constructions. At present, this quarry supplies quarry products to Wagga Wagga City Council, Albury City Council, Lockhart Shire Council, Greater Hume Shire Council, Indigo Shire Council and Corowa Shire Council.

Land to the west of the subject land is rural-zoned and generally limited to the broadacre grazing of cattle. Notwithstanding, a small parcel of land located only approximately 500m to the west of current quarrying operations (Pit 3) is used by the Albury Wodonga Clay Target Club for recreational activities.

It is noted that this facility is accessed via a Right of Way over the subject land and shares the same internal driveway accessway used by the existing quarry. This facility has been operating from this location for over 10 years with little to no incidents of conflicts with the existing operating quarry.

7.12.2 Impacts of the Proposal

The operation and use of the subject land as a quarry and associated works, including the crushing of recycled concrete has the potential to create a number of impacts for surrounding land uses including:

- Noise and vibrations from blasting, material extraction, vehicles and machinery;
- Traffic and road safety as a result of large heavy vehicles utilising public roads;
- Visual impacts associated with extraction areas on surrounding land;
- Air quality impacts including dust generation from quarrying activities, road haulage and odour impacts; and
- Environmental impacts on local flora and fauna.

Notwithstanding the above, it is reiterated that the subject land has continued to operate for the purposes of an extractive industry and associated works, including the crushing of recycled concrete and disposal of biosolid waste for over 45 years with little or no complaint.

Accordingly, the continued operation of the subject land as a quarry and associated works will not adversely affect the surrounding land uses and will act as an appropriate transition/buffer between proposed large scale heavy industrial developments located to the south and large lot residential properties located to the north.

7.12.3 Mitigation and Monitoring Measures

Although the subject land has continued to operate generally without incident or complaint for over 45 years, it is still considered necessary that a number of mitigation and monitoring measures be implemented as part of the Project including:

- Maintain and improve the entrance to the property from Gerogery Road to ensure traffic safety and function is not compromised;
- Implement dust suppression measures as outlined under the air quality section;
- Implement noise reduction measures as outlined under the noise, blasting and vibrations section of this report;
- Implement and maintain existing environment protection measures for the disposal of waste;
- Maintain existing landscape screenings to road access areas;
- Hours of operation to be limited to 7am to 6pm Monday to Saturday with no activities to occur on Sundays or public holidays outside of the intermittent disposal of biosolids;
- Areas of extraction shall continue to be located below the ridgeline and screened from adjoining residential neighbours;
- Revegetate the site with local indigenous plant species during the rehabilitation stages of the project. This includes planting overstorey, understorey and ground-layer species;
- Undertake staged and ongoing site rehabilitation works ('retreat method') once an area has been exhausted in accordance with a rehabilitation management plan; and
- Upon exhaustion of all extractive materials, rehabilitate the entire site back to pre-development conditions (i.e. rural paddocks and grasslands).

7.13 Work, Health and Safety

The operation and use of the subject land as an extractive industry and associated works including; the crushing of recycled concrete and disposal of biosolid waste has the potential to create a public safety risk for adjoining neighbours and road users and therefore consideration of the public safety risk must be undertaken as part of this EIS.

7.13.1 Existing Public Safety Conditions

It is reiterated that the subject land has continued to operate for the purposes of an extractive industry and associated works including the crushing of concrete and disposal of biosolid waste for over 45 years with little or no incident or complaint.

There are a number of factors that have contributed to this level of compliance including;

- the generally isolated location of the proposed works and setbacks from adjoining land uses;
- the relatively small-scale nature and operation of the quarry;
- the fact that the site is secured via fences and gates ensuring that the site is not publicly accessible;
- matters regarding noise and dust generation have been appropriately monitored and mitigated so as to minimise any impacts on public health;
- implementation and maintenance of existing environmental protection measures associated with existing quarrying activities, recycling of concrete and disposal of biosolid waste;
- the development does not store any hazardous chemicals; and
- appropriate site management, work, health and safety practices have been implemented including a requirement for at least 3 staff to be present on-site at all times when undertaking quarrying activities.

Consequently, the existing quarry does not currently pose a significant public health or safety risk.

7.13.2 Impacts of the Proposal

Despite the general lack of incidents or public and worker safety concerns that have occurred on site, the use and operation of the subject land as a quarry and associated works, does still have the potential to create public safety risks, including road safety issues, work, health and safety risks, as well as environmental health issues (odour, noise, dust).

Whilst this has the potential to create public/worker health and safety concerns, this is considered satisfactory in this instance as:

- The current operations are already subject to a number of existing environmental protection measures to ensure the development operates without any public safety risks or environmental harm;
- The subject land is not publicly accessible and is secured via fencing and access gates. In addition the main access gates have been fitted with a motion-censored infra-red security camera that monitors people entering and exiting the site;

- The development does not involve the storage, handling or transport of any hazardous or dangerous goods that require waste tracking, which is classified as special or hazardous waste;
- Public safety measures and operational management measures have been established and implemented over the life of the quarry, including a requirement for a minimum of three (3) staff to be present on-site at all times and the installation of security cameras on screening and crushing plant to monitor quarrying operations;
- Current and proposed activities, including blasting works will be undertaken in accordance with relevant work, health and safety requirements, including the requirements of:
    - Work Health and Safety Act 2011;
    - Work Health and Safety Regulation 2011;
    - Work Health and Safety (Mine and Petroleum Sites) Act 2013;
    - Work Health and Safety (Mine and Petroleum Sites) Regulation 2014
    - Explosives Act 2003; and
    - Explosives Regulation 2013.

Furthermore, matters regarding public safety associated with existing bushfire risks have also been assessed in accordance with the requirements of the NSW Rural Fire Services (RFS) Guideline *Planning for Bush Fire Protection, 2006* (PBP) as the property is partly classified as bush fire prone.

In accordance with the SEARs an assessment against the general aims and objectives contained within Clause 1.2 of PBP has been undertaken, which outlines:

> *The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including fire-fighters) and to minimise impacts on property from the threat of bush fire, while having due regard to development potential, on-site amenity and protection of the environment.*
>
> *More specifically, the objectives are to:*
>
> *(i) Afford occupants of nay building adequate protection from exposure to a bush fire;*
>
> *(ii) Provide for a defendable space to be located around buildings;*
>
> *(iii) Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*
>
> *(iv) Ensure that safe operational access and egress for emergency service personnel and residents is available;*
>
> *(v) Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ); and*
>
> *(vi) Ensure that utility services are adequate to meet the needs of fire fighters (and other assisting in bush fire fighting).*

Following a review of the subject land, the proposed development does not depart from the aims or objectives of PBP. In particular, it is noted that the proposed development does not involve a habitable building or use and will continue to be used for extractive industry purposes.

Furthermore, only a very small portion of the subject land is actually classified as being bushfire prone and the development site is well separated from surrounding and adjoining land uses and already has access to two access points that could be accessed and utilised during times of a fire.

The development is also not classified as a 'Special Fire Protection Purpose' as per Section 100B of the *Rural Fires Act 1993.*

7.13.3 Mitigation and Monitoring Measures

Notwithstanding the above, it is still considered necessary to implement a number of mitigation and monitoring measures as part of the Project including:

- Maintain and monitor existing environmental protection measures around quarrying areas and waste disposal areas (in accordance with a previously issued development consent and EPA license);
- Maintain and where necessary, undertake improvement works to the intersection of Gerogery Road and Winchester Lane to ensure traffic safety and function is not compromised;
- Maintain existing speed restrictions, warning signals and communication methods for both heavy vehicles and domestic vehicles utilising Winchester Lane;
- Continue to restrict and limit the amount of biosolid waste that is received and disposed of on-site;
- Undertake blasting and site operation works in accordance with relevant works health and safety guidelines, Work Cover and Australian Standards.

7.14 Utilities & Services

An assessment of the proposed demands on utilities and services from the continuation and expansion of the subject land as an extractive industry and associated works has been undertaken as part of the preparation of this EIS.

7.14.1 Existing Conditions

The subject land is located on the fringe of the urban area of Albury and is currently used for the purposes of an extractive industry, crushing of concrete and disposal of biosolid waste from the adjoining Norske Skog Paper Mill.

Accordingly, the subject land is connected to the existing road network and reticulated water (not for drinking purposes). No other services are currently provided to the subject land given its use as an extractive industry and associated works.

In addition, a number of easements currently traverse the subject land including:

- Right of Carriageway – 20m wide.

  This easement currently protects Winchester Lane and provides legal access to the residential dwelling at 96 Winchester Lane, as well as the Albury Wodonga Clay Target Club. Pit 3 is also accessed via this existing Right of Way.

- Electricity – 20m wide

  An electricity easement currently traverses the subject land in a general north-east and south-west direction and provides an electrical supply to the residential dwelling at 96 Winchester Lane, as well as the crushing plant contained in Pit 3; and

- Water supply – variable and 4m wide.

  An easement for water supply currently exists within the subject land and is generally located on the northern side of Winchester Lane, which services the residential dwelling at 96 Winchester Lane. A second easement for water supply is also provided over the subject land as it applies to an existing farm dam, which also benefits this residential dwelling.

Sewerage generated from the staff amenities building is disposed of onsite via a septic tank, which is located approximately 40 metres south of this existing building.

7.14.2 Impacts of the Proposal

The proposed ongoing use and expansion of the subject land as an extractive industry is not expected to generate any additional demands for infrastructure and services over and above the existing operations on-site.

Furthermore, the proposed development will not adversely affect the existing right of carriageway and water supply easements that currently traverse the subject land.

It is noted however, that the existing electrical easement that traverses the site will need to be realigned as this easement is located within the proposed quarry expansion area (stages 4-6). In response, this infrastructure will be relocated prior to development occurring in stages 4-6 of the

quarry expansion area and will be realigned through the current extraction pit and proposed stage 2-3 expansion areas, which will have been exhausted and rehabilitated back to its natural state.

A site plan showing the current and proposed realignment of this electrical easement is provided in **Attachment B**.

Matters regarding on-site effluent disposal have also been considered and are appropriate in this instance as there is ample capacity within the current septic disposal system to accommodate the ongoing use of this site.

7.14.3 Mitigation and Monitoring Measures

A number of mitigation and monitoring measures in relation to utilities and services are recommended as part of the Project including:

- Protect existing easements and infrastructure that currently traverse the subject land from works;
- Realign the existing electrical easement prior to works commencing on Stages 4-6 of the development in consultation with the responsible electricity provider;
- Undertaken routine monitoring and maintenance of the existing septic tank system to ensure that it is operating efficiently and not causing any environmental harm;
- Maintain and where necessary, improve the entrance to the property from Gerogery Road to ensure traffic safety and function is no compromised; and
- Reinstate road surfaces damage by the movement of heavy vehicles and/or machinery associated with the proposed works.

7.15 Rehabilitation & Future Land Use

AP Delaney & Co are committed to the effective rehabilitation and eventual closure of Rockwood Quarry once all resources have been exhausted from the site. This will be achieved through progressive rehabilitation and management of the quarry operations to work progressively towards the eventual final rehabilitation and closure of the site.

The following sections discuss AP Delaney & Co's approach to rehabilitation of the site and approach to quarry closure, as well as a summary of key recommendations and actions as part of the long-term rehabilitation of this site. Further details regarding rehabilitation works are contained in a Quarry Closure and Rehabilitation Plan (see **Attachment K**), which has been prepared for the site.

7.15.1 Proposed Final Land Use

At the completion of extraction works on-site, AP Delaney & Co proposes to rehabilitate the entire site back to its natural state and pre-development conditions, being rural paddocks and grasslands consistent with a number of adjoining lands.

Given the proximity of the subject land to adjoining industrial developments and larger extractive industries, the land will most likely remain rural in nature and will serve as a transition or buffer between adjoining industrial lands to the south and rural residential dwellings to the north.

It is noted however that the southern portion of the subject land adjacent to Gerogery Road has been identified in the Albury Industrial Hub Master Plan for future industrial purposes (see **Figure 22**); however this will need to be further investigated to determine whether it is appropriate.

7.15.2 Closure and Rehabilitation Objectives

Rehabilitation of the existing quarry pit and proposed pit extension will be undertaken in accordance with the following objectives:

- Undertake ongoing and staged rehabilitation works to limit the area of disturbance at any given time;
- Establish a sustainable native ecosystem, commensurate with adjacent land use types;
- Provide a safe and stable landform compatible with the intended final use;
- Re-establish habitat for local flora and fauna;
- Comply with relevant regulatory requirements and attain regulatory consensus on the successful closure and rehabilitation of the Project area;
- Reduce the need for long term monitoring and maintenance by achieving effective rehabilitation;
- Complete the closure, decommissioning and rehabilitation works as quickly and cost effectively as possible whilst achieving primary objectives;
- Provide a sustainable plant/groundcover through rehabilitation of disturbed areas; and
- Ensure that the design periods and factors of safety for all site works take into account extreme events and other natural processes such as erosion.
- Minimise visual impact of the operation during the operational phase as well as post-quarrying; and

- Produce a final "walk away" landform that is geotechnically stable that blends aesthetically into the surrounding landforms, yet as far as possible does not limit possible future land uses.

7.15.3 Closure and Rehabilitation Criteria

Completion criteria will be utilised to demonstrate achievement of rehabilitation objectives. The closure and rehabilitation criteria for the Project are outlined in **Table 25:**

Table 25: Closure and Rehabilitation Criteria

Performance Indicator	Rehabilitation Performance
Safety	
▪ Access and public safety to be managed during operations and at the closure of the quarry.	▪ Access to the site post closure will be restricted via fencing and access gates.
Native Vegetation	
▪ Rehabilitated quarry areas contain flora species characteristic of the desired native vegetation communities in the landscape; ▪ Monitoring indicates that natural regeneration is occurring. ▪ The majority of trees are healthy and growing in rehabilitated areas. ▪ There is no significant weed infestation.	▪ More than 75 per cent of trees are healthy and growing. ▪ Second generation tree seedlings are present or likely to be, based on monitoring in comparable older rehabilitation sites (i.e. evidence of fruiting of native species observed). ▪ There is no significant weed infestation such that weeds do not comprise a significant proportion of species in any stratum.
Landform	
▪ No significant erosion or runoff impacts are present. ▪ Rehabilitation activities are undertaken as soon as reasonably possible to minimise unnecessary dust generation from cleared areas. ▪ No significant visual impacts from the quarry.	▪ Final void areas have been backfilled with clean virgin fill and stabilised to achieve a 1:4 batter. ▪ Rehabilitated slopes on overburden dumps are stabilised. ▪ No significant erosion is present that would constitute a safety hazard or compromise the capability of supporting the end land use. ▪ Contour banks are stable and there is no evidence of overtopping or significant scouring as a result of runoff. ▪ Visually prominent locations are immediately rehabilitated.
Decommissioning	
▪ All surface infrastructure to be decommissioned and removed, including the removal of services (roads, power, water and communications).	▪ All surface infrastructure which does not have a potential future use associated with the post quarrying land use will be removed, unless such removal has a greater environmental impact than rehabilitating the area with the infrastructure remaining in place. ▪ Removal of all services (power, water, communications) that are not needed as part of the future development of the land. ▪ All infrastructure that is to remain as part of the future land use have been assessed by an appropriately qualified person and determined to be suitable for the intended use and do not pose any hazard to the community.

Performance Indicator	Rehabilitation Performance
Soil	
▪ Revegetated areas to be top dressed with topsoil. ▪ Soils pH to be within an appropriate pH range. ▪ The land is to be free of land contamination or hazardous materials.	▪ Topsoil or a suitable alternative has been spread uniformly over the rehabilitation surface. ▪ Soil pH to be within acceptable range of 5-9. ▪ Monitoring demonstrates soil profile development in rehabilitated areas (e.g. development of organic layer, litter layer). ▪ Surface layer is free of any hazardous materials. ▪ Any contamination will be appropriately remediated so that appropriate guidelines for land use are met.
Water	
▪ Existing dams to be inspected to ensure they are structurally sound following closure of the quarry. ▪ No evidence of excessive run-off or contamination (namely silt) into downstream waterways. ▪ Cut off drains to be removed and/or retained for water quality control.	▪ Inspection of downstream waterways to ensure that the development site is not causing excessive run-off. ▪ Dams to be retained on-site are structurally sound and show no signs of leaks. ▪ Water control measures (where remaining) are stabilised and working effectively.

The preliminary closure criteria will be revised through the Project life and used as the basis for further refinement following the commencement of rehabilitation activities, consideration of the results of the rehabilitation monitoring programs and consideration of any stakeholder feedback.

7.15.4 Rehabilitation Method

In order to achieve the closure and rehabilitation objectives and criteria, a number of rehabilitation activities are proposed as follows:

- Undertake staged and ongoing site rehabilitation works via a 'retreat method' once an area has been fully exhausted including the removal of surface and ground infrastructure no longer required;
- Utilise topsoil and vegetation that has been ripped and stockpiled on-site for use in rehabilitation works and where necessary, import additional local topsoil containing native plant seeds to build up the groundcover and encourage regeneration;
- Ensure that areas of disturbance have been stabilised and leveled with appropriate batters;
- Where necessary, areas of disturbance will be stabilised using matting or mulching as necessary to prevent erosion and sown with seed of locally native grasses and shrubs;
- Re-vegetate disturbed areas with local indigenous plant species, including ground covers, understorey and overstorey species;
- Prevent stock access to areas that have been rehabilitated to allow native re-growth; and
- Monitor rehabilitated areas ongoing to ensure that they are stable, re-vegetated and self-sustaining.

In accordance with the above, it is noted that rehabilitation works have been undertaken ongoing over the life of the quarry with Pit 2 already rehabilitated and Pit 1 partially rehabilitated with works remaining ongoing.

7.15.5 Quarry Records

Throughout the life of the Project, active records will be maintained in relation to processes that may impact upon rehabilitation of the Project area. This will provide the basis for interpretation of subsequent rehabilitation monitoring outcomes. Amongst these records to be maintained include:

- detailed rehabilitation procedures;
- identification of any potentially contaminated sites (e.g. fuel/oil facilities);
- environmental monitoring records;
- records of topsoil stockpiles, including information such as the date in which they were formed and maintenance works undertaken (e.g. weed control, planting with native legumes to maintain microbes etc.); and
- environmental incident records.

7.15.6 Rehabilitation Monitoring

Annual inspections of rehabilitated areas will be undertaken over the life of the Project to assess soil conditions and erosion, drainage and sediment control structures, runoff water quality, revegetation germination rates, plant health and weed infestation. Any required management actions that are identified as part of the inspection are implemented as soon as practical. Where necessary, rehabilitation procedures will be amended accordingly with the aim of continually improving rehabilitation standards.

The objective of this monitoring is to evaluate the progress of rehabilitation towards fulfilling long term land use objectives and criteria. The monitoring program will be continued until it can be demonstrated that rehabilitation has satisfied the closure criteria. Information from this monitoring program will also be used to refine closure criteria as required.

7.15.7 Rehabilitation Care and Maintenance

Dependent upon the outcomes of the rehabilitation monitoring as outlined above, the scope of the rehabilitation care and maintenance may include the following:

- weed and feral animal control of rehabilitation;
- erosion and sediment control works;
- re-seeding/planting of rehabilitation areas that may have failed;
- maintenance fertilising; and
- repair of fence lines, access tracks and other general related land management activities.

7.15.8 Decommissioning

Decommissioning will occur at the completion of quarrying and rehabilitation within Pit 3, including the proposed extension. This will occur once the resource within the Project area has been

exhausted and will involve the decommissioning of plant and infrastructure, as well as the finalisation of rehabilitation works consistent with the intended final land use.

A summary of the general decommissioning activities that will be undertaken as part of the closure and rehabilitation of the Project area is outlined below:

- The plant and equipment will be decommissioned, transferred or sold, either for use at another quarry or industrial operation, or for scrap metal. All surface infrastructure including the crushing and screening plant will be removed and the areas containing this infrastructure rehabilitated.

  It is noted however that the existing accessway (Winchester Lane) will remain as it will still required to service the existing dwelling at 96 Winchester Lane, as well as the Albury Wodonga Clay Target Club.

- It is envisaged that electricity services to any remaining infrastructure will be removed prior to the commencement of building demolition works. Other services such as telecommunication and water supply will also be disconnected and removed where practical.

- Provided that it does not pose a constraint to the proposed final land use, there may be circumstances where structures such as footings, underground water pipelines and disconnected power cables are left in situ. Such circumstances may include where it is not practical to retrieve the structures or where their removal may lead to environmental damage (e.g. erosion or loss of vegetation through clearing).

  In such circumstances, the location of these remaining structures will be surveyed and recorded on a plan and provided to the landowner.

- Where potential contamination may have occurred as a result of activities (e.g. re-fuelling areas, workshops, etc.), appropriate investigations will be undertaken to determine the presence and extent of any contamination.

  Where it is identified, contaminated material will be managed in accordance with relevant legislative requirements. Further investigations involving sampling will be undertaken to validate that contamination has been remediated to acceptable levels.

As discussed above, a detailed quarry closure planning process resulting in the development of a Quarry Closure Plan will be developed approximately three years prior to cessation of quarrying activities. This plan will formalise the approach to decommissioning and closure of Rockwood Quarry.

7.15.9 Summary of Rehabilitation Measures

In response to the likely impacts of the proposal, a number of mitigation and monitoring measures are recommended as part of the Project including:

- Undertake staged and ongoing site rehabilitation works ('retreat method') once an area has been exhausted in accordance with a rehabilitation management plan;
- Utilise topsoil that has been ripped and stockpiled on-site for use in rehabilitation works;

- Re-vegetate the site with local indigenous plant species during the rehabilitation stages of the project. This includes planting overstorey, understorey and ground-layer species;
- Upon exhaustion of all extractive materials, rehabilitate the entire site back to pre-development conditions (i.e. rural paddocks and grasslands); and
- Prevent stock access to the site after rehabilitation to allow for native re-growth.

8 Summary of Mitigation and Monitoring Measures

Table 26 provides a summary of all the currently adopted and recommended mitigation and monitoring measures proposed within this EIS in relation to the development:

Table 26: Summary of Mitigation and Monitoring Measures

Risk Type	Mitigation Measures
Transport & traffic	▪ Maintain the entrance to the property from Gerogery Road to ensure traffic safety and function is not compromised; ▪ Remove several small trees and branches on the Gerogery Road road verge to improve existing sight line issues looking south; ▪ Investigate future options to improve existing sight lines for northbound traffic, including undertaken road embankment works; ▪ Avoid movement of heavy vehicles on wet unsealed roads; ▪ Heavy vehicles shall be driven at moderate to low speeds in accordance with existing self-imposed speed restrictions; ▪ Maintain existing warning signals and communication methods for both heavy vehicles and domestic vehicles utilising Winchester Lane; ▪ Avoid the trafficking of mud and other spoil by heavy vehicles onto sealed roads; ▪ Liaise with Council and/or the RMS in regards to traffic management; and ▪ Reinstate any road surfaces damage by the movement of heavy vehicles and/or machinery associated with the proposed works.
Air Quality (dust)	▪ Regular watering of unsealed haulage roads, working areas and stockpiles, particularly on dry, hot windy days; ▪ Water sprays on conveyors, stockpiles and areas of disturbance or loose soil; ▪ Progressive stabilisation/rehabilitation of exposed areas no longer needed for operational purposes; ▪ Covering of all laden trucks leaving the site when transporting materials, particularly on public roads; ▪ Regular machinery maintenance to ensure that machinery is working efficiently; and ▪ Limiting the disturbance of waste disposal areas and the covering of these areas with clean virgin fill. ▪ Maintain and manage existing landscape screen plantings along the existing accessway and boundaries of the site; ▪ Maintain and locate existing quarrying activities below ridgelines, which will screen adjoining residential dwellings to the north; ▪ Application of fine water sprays and implementation of adequate dust control mechanisms on mobile crushing and screening plant; ▪ Imposition of speed limits on all internal roads; ▪ Minimisation of the total disturbed/working area at any one time; ▪ Designing of blasts to minimise dust (underground blasting); ▪ Consideration of current weather conditions prior to blasting. This includes visual observations of wind speed and wind direction to determine whether any dust emissions from the blast will be carried in the direction of nearest sensitive receptors; ▪ Awareness training regarding air quality management for employees and contractors, where relevant;

Risk Type	Mitigation Measures
Air Quality (dust) Cont.	▪ Generally undertake crushing works after watering down of raw materials to be processed; ▪ Ongoing management and monitoring of deposition dust in the area surrounding the quarry; ▪ Continued rehabilitation and backfilling of waste disposal areas with clean virgin fill.
Aboriginal Cultural Heritage **(to be updated)**	▪ If any suspected human remains are discovered during any activity works, all works in the vicinity must stop and the remains must be left in place. The NSW Police and Coroner's Office must be notified immediately and if the human remains are likely to Aboriginal in origin, the find needs to be reported to the Aboriginal parties and OEH; ▪ Continue to monitor the site and if any known artefacts or objects are discovered during works immediately stop works and contact the local OEH office; ▪ Operators of extraction equipment to be briefed on the requirements relating to the unearthing of potential archaeological relics or items.
Noise & Vibrations	▪ Limit blasting to avoid impacts of noise and vibrations; ▪ Notify neighbours via letterbox drop prior to any blasting event; ▪ Any noise from extractive industry operations must not exceed 35dBA at any residence off the site; ▪ Hours of operation to be limited to 7am to 6pm Monday to Saturday with no activities to occur on Sundays or public holidays outside of the disposal of biosolids; ▪ Scheduling the use of noisy equipment at the least sensitive time of the day; ▪ Orientate heavy equipment away from any sensitive areas, to achieve the maximum attenuation of noise; ▪ Undertake regular and routine maintenance of machinery and other vehicles to ensure optimum running capacity so as to limit noise and ▪ AP Delaney and Co will manage the design and size of blasts to meet relevant ANZECC and OEH ground vibration and air blast criteria at all sensitive residential receiver locations.
Biodiversity	▪ Only undertake tree removal necessary for that stage of the development; ▪ Implement and install tree protection areas for trees proposed to be retained; ▪ Where trees are removed, reposition and retain them on-site to provide habitat for local species; ▪ Environmental degradation should be minimised by having the minimum area possible disturbed at any one time; ▪ Incorporate a site management plan; ▪ Implement a sediment and erosion control plan; ▪ Removal of any noxious weed material, including checking and cleaning earthmoving equipment prior to moving to another site; ▪ Undertake staged and ongoing site rehabilitation works ('retreat method') once an area has been exhausted; ▪ Revegetation of the site with local indigenous plant species during the rehabilitation stages of the project. This includes planting overstorey, understorey and ground-layer species; ▪ Upon exhaustion of all extractive materials, rehabilitate the entire site back to pre-development conditions (i.e. rural paddocks and grasslands); ▪ Prevent stock access to the site after rehabilitation to allow for native regrowth.

Risk Type	Mitigation Measures
Water	▪ Establishment, maintenance and monitoring of existing spillways, diversion banks and cut-off drains around quarrying and associated activities (particularly waste disposal areas) to prevent stormwater run-off from becoming polluted; ▪ Collection and filtering/treatment of all stormwater run-off generated from the site via a series of existing detention dams; ▪ Maintenance of existing discharge points preventing erosion; ▪ Monitor diversion drains in the winter and spring months when rainfall is at its highest; ▪ Staging quarrying activities and rehabilitation works on-site to minimise the area of disturbance; ▪ Regularly maintain and monitor all erosion and sediment control measures (such as cleaning out silt fencing) and sediment collection dams to ensure they are effectively functioning; ▪ Inspection of leachate dams and cut off drains to ensure that they are structurally sound and are not subject to leaking; ▪ Limiting the irrigation of leachate run-off to summer months; and ▪ Continue to undertake periodic monitoring and environmental audits of the waste disposal area in relation to surface water and groundwater, including reviewing existing piezometers and bores on-site. Continue to provide these results to the EPA in accordance with current license conditions.
Soil & Land Resources	▪ Continue to test the quality of the excavated material to ensure it is appropriate for its intended application; ▪ Erosion and sediment controls to be implemented and maintained continuously throughout the period of operation of the quarry and maintained until a rehabilitated program is completed; ▪ Topsoil (biomass) shall be stockpiled for use as part of rehabilitation works; ▪ All chemical storage and re-fuelling of vehicles to only occur in bunded areas; ▪ Site remediation/rehabilitation works to be undertaken to restore the land back to its natural state at the completion of works.
Erosion & sediment control	▪ Erosion and sediment controls to be maintained and periodically reviewed until an area has been rehabilitated back to its natural state; ▪ Stage works on-site to minimise the area of disturbance. Where works have been completed within an area undertake rehabilitation works; ▪ Sediment traps or filters to be located and placed near all disturbed areas where potential water run-off may occur. Install hay bales along run-off areas or rock beaching at outfall pipes to help filter storm-water run-off; ▪ Locate silt fences at strategic positions (downslope) to trap sediments; ▪ Provide stockpiles with adequate batters to prevent sediment transportation; ▪ Regularly maintain and monitor all erosion and sediment control measures (such as cleaning out silt fencing) to ensure they are effectively functioning; ▪ Ensure that areas of disturbance are minimised and rehabilitated as soon as works are finished; ▪ Before excavation, the works areas are to be protected from surface water flow by soil berms constructed on the perimeter of the pits and diversion banks that divert surface flow around the excavation site; ▪ Topsoil (biomass) shall be stockpiled for use elsewhere on-site or as part of future rehabilitation works and diversion banks constructed around the piles; ▪ Ongoing maintenance and cleaning of sediment collection dams; ▪ Following completion of rehabilitation works, ensure that livestock access to the quarry and re-vegetated areas is prevented as vegetation can be trampled on and soil exposed.

Risk Type	Mitigation Measures
Hazards & Wastes	▪ Ensure that all work areas are maintained in a neat and tidy manner and prevent the accumulation of waste on-site including; recycling most materials and disposal of waste as appropriate to the Albury Regional Waste Management Centre; ▪ All waste oil will be collected and stored in containers within a covered and bunded area and will be removed from the site by an appropriately licensed contractor including any EPA requirements with respect to the tracking of waste; ▪ All refueling on-site will be undertaken via off-site storage vehicles in bunded areas; ▪ All oil filters will be separately stored and returned to the manufacturer for re-use; ▪ Silt will be periodically removed from the various silt control structures and placed/stored in the product stockpiles or overburden materials for use in progressive rehabilitation; ▪ Waste water from amenities buildings will be treated and disposed of via an on-site septic disposal system; ▪ All waste tyres will be removed by the supplier of replacement tyres; ▪ Waste disposal to be undertaken in accordance with previously issued development consents and EPA licenses; and ▪ Rehabilitated areas to be top dressed, re-vegetated and screened off from access by stock.
Visual	▪ Locate and position future works below the existing ridgeline of Nine Mile Hill to screen areas of extraction and waste disposal away from sensitive receptors (rural residential dwellings); ▪ Undertake ongoing rehabilitation works on site to minimise the area of disturbance and maintain the natural setting of the land; ▪ Maintain existing landscape screen plantings and where appropriate, undertake additional landscape plantings; and ▪ Upon exhaustion of all extractive materials, rehabilitate the entire site back to pre-development conditions (i.e. rural paddocks and grasslands).
Utilities and Services	▪ Protect existing easements and infrastructure that currently traverse the subject land from works; ▪ Realign the existing electrical easement prior to works commencing on Stages 4-6 of the development in consultation with the responsible electricity provider; ▪ Undertaken routine monitoring and maintenance of the existing septic tank system to ensure that it is operating efficiently and not causing any environmental harm; ▪ Maintain and where necessary, improve the entrance to the property from Gerogery Road to ensure traffic safety and function is no compromised; and ▪ Reinstate road surfaces damage by the movement of heavy vehicles and/or machinery associated with the proposed works.

Risk Type	Mitigation Measures
Social Economic Impact	▪ Maintain and improve, where necessary, existing site access points with Gerogery Road from a traffic safety and efficiency perspective; ▪ Implement dust suppression measures as outlined under the air quality section of this report; ▪ Implement noise reduction measures as outlined under the noise, blasting and vibrations section of this report; ▪ Implement and maintain existing environment protection measures for the disposal of waste in accordance with previously issued development consents and EPA licenses; ▪ Maintain existing landscape screenings to haulage roads and property boundaries; ▪ Hours of operation to be limited to 7am to 6pm Monday to Saturday with no activities to occur on Sundays or public holidays; ▪ Areas of extraction shall continue to be located below the ridgeline and screened from adjoining residential neighbours; ▪ Undertake staged and ongoing site rehabilitation works ('retreat method') once an area has been exhausted in accordance with a rehabilitation management plan; and ▪ Upon exhaustion of all extractive materials, rehabilitate the entire site back to pre-development conditions (i.e. rural paddocks and grasslands).
Surrounding Land Uses	▪ Maintain and improve the entrance to the property from Gerogery Road to ensure traffic safety and function is not compromised; ▪ Implement dust suppression measures as outlined under the air quality section; ▪ Implement noise reduction measures as outlined under the noise, blasting and vibrations section of this report; ▪ Implement and maintain existing environment protection measures for the disposal of waste; ▪ Maintain existing landscape screenings to road access areas; ▪ Hours of operation to be limited to 7am to 6pm Monday to Saturday with no activities to occur on Sundays or public holidays outside of the intermittent disposal of biosolids; ▪ Areas of extraction shall continue to be located below the ridgeline and screened from adjoining residential neighbours; ▪ Revegetate the site with local indigenous plant species during the rehabilitation stages of the project. This includes planting overstorey, understorey and ground-layer species; ▪ Undertake staged and ongoing site rehabilitation works ('retreat method') once an area has been exhausted in accordance with a rehabilitation management plan; and ▪ Upon exhaustion of all extractive materials, rehabilitate the entire site back to pre-development conditions (i.e. rural paddocks and grasslands).
Public Safety	▪ Maintain and monitor existing environmental protection measures around quarrying areas and waste disposal areas; ▪ Maintain and where necessary, undertake improvement works to the intersection of Gerogery Road and Winchester Lane to ensure traffic safety and function is not compromised; ▪ Maintain existing speed restrictions, warning signals and communication methods for both heavy vehicles and domestic vehicles utilising Winchester Lane; ▪ Undertake blasting and site operation works in accordance with relevant works health and safety guidelines, Work Cover and Australian Standards.

Risk Type	Mitigation Measures
Rehabilitation & Future Land Use	▪ Undertake staged and ongoing site rehabilitation works ('retreat method') once an area has been exhausted in accordance with a rehabilitation management plan; ▪ Utilise topsoil that has been ripped and stockpiled on-site for use in rehabilitation works; ▪ Revegetation the site with local indigenous plant species during the rehabilitation stages of the project. This includes planting overstorey, understorey and ground-layer species; ▪ Upon exhaustion of all extractive materials, rehabilitate the entire site back to pre-development conditions (i.e. rural paddocks and grasslands); ▪ Prevent stock access to the site after rehabilitation to allow for native regrowth.
Ongoing Site Operations	▪ Maintain a complaints register and hotline for the quarry; ▪ Continue ongoing consultation with neighbours, particularly prior to any blasting occurring on-site; ▪ Undertake regular maintenance and monitoring of the site to ensure compliance with the Environmental Management Plan recommendations including sediment and erosion control measures and water management recommendations; ▪ Limit the area of extraction and annual extraction rates to those outlined in this EIS; ▪ Hours of operation to be limited to 7am to 6pm Monday to Saturday with no activities to occur on Sundays or public holidays; ▪ Maintain a register of annual extraction rates.

9 Conclusion

The proposed Environmental Impact Statement has been prepared to consider the environmental, social and economic impacts for an extractive industry, the crushing or recycled concrete and associated works at 208 Winchester Lane, Table Top, more commonly known as 'Rockwood Quarry'.

The EIS has addressed the issues outlined in the SEARs and accords with Schedule 2 of the EP&A Regulation with regards to consideration of relevant environmental planning instruments, built form, social and environmental impacts including traffic, noise, construction impacts and stormwater.

The Project will allow for the ongoing supply of construction and road building materials to the local and regional markets for up to 30 years, providing a valuable and necessary resource to the local economy. The Project will continue to have an economic benefit to the local area and region by securing the supply of high quality quarry products, ongoing and increased employment, capital expenditure and ongoing operational expenditure. These benefits will have flow on effects within the local and regional economies.

The Project has been designed with consideration to the environmental values of the Project area and potential impacts of the Project have been minimised through appropriate Project design and control measures. The potential environmental impacts of the Project have been thoroughly assessed and, where potential impacts have been identified, mitigation measures and environmental safeguards have been recommended and incorporated into the Project design and operational management. Wherever possible, these mitigation measures have been built into the design of the Project to minimise the need for ongoing management throughout the life of the Project such as a reduction in the overall development footprint to avoid areas of environmental sensitivity.

It is considered that the Project has identified and mitigated potential environmental impacts. Given the planning merits described above, it is requested that the Minister (or delegate) approve the application.

Attachment A

Secretary's Environmental Assessment Requirements (SEARs) dated 5 September 2016 and correspondence received from NSW Department of Planning & Environment

Attachment B

Proposed Plans

Attachment C

Copy of Previously Approved Development Consents

Attachment D

Environment Protection Licence No. 10069 – "Rockwood" Winchester Lane, Table Top

Attachment E

Aboriginal Cultural Heritage Assessment Reports, Biosis

Attachment F

Traffic Impact Assessment, Peter Meredith Consulting

Attachment G

Noise Impact Assessment, Ray Walsh Acoustics, Noise and Sound

Attachment H

Air Quality Impact Assessment, GHD

Attachment I

Biodiversity Assessment, Biosis

Attachment J

Survey & Habitat Assessment for Pink-tailed Work-Lizard, Eco-tone Wildlife & Habitat Assessments

Attachment K

Quarry Closure and Rehabilitation Plan

Attachment L

Hydro-geological Assessment & Borehole Logs, GHD

Attachment M

Australian Newsprint Mills Waste Water Management Plan, NSW Land and Water Conservation

Attachment N

Groundwater Monitoring Results – Biosolid Waste, Nolan-ITU

Attachment O

Product Material Testing Results

Attachment P

Copy of Neighbour Notification Letter and Responses to Community Consultation