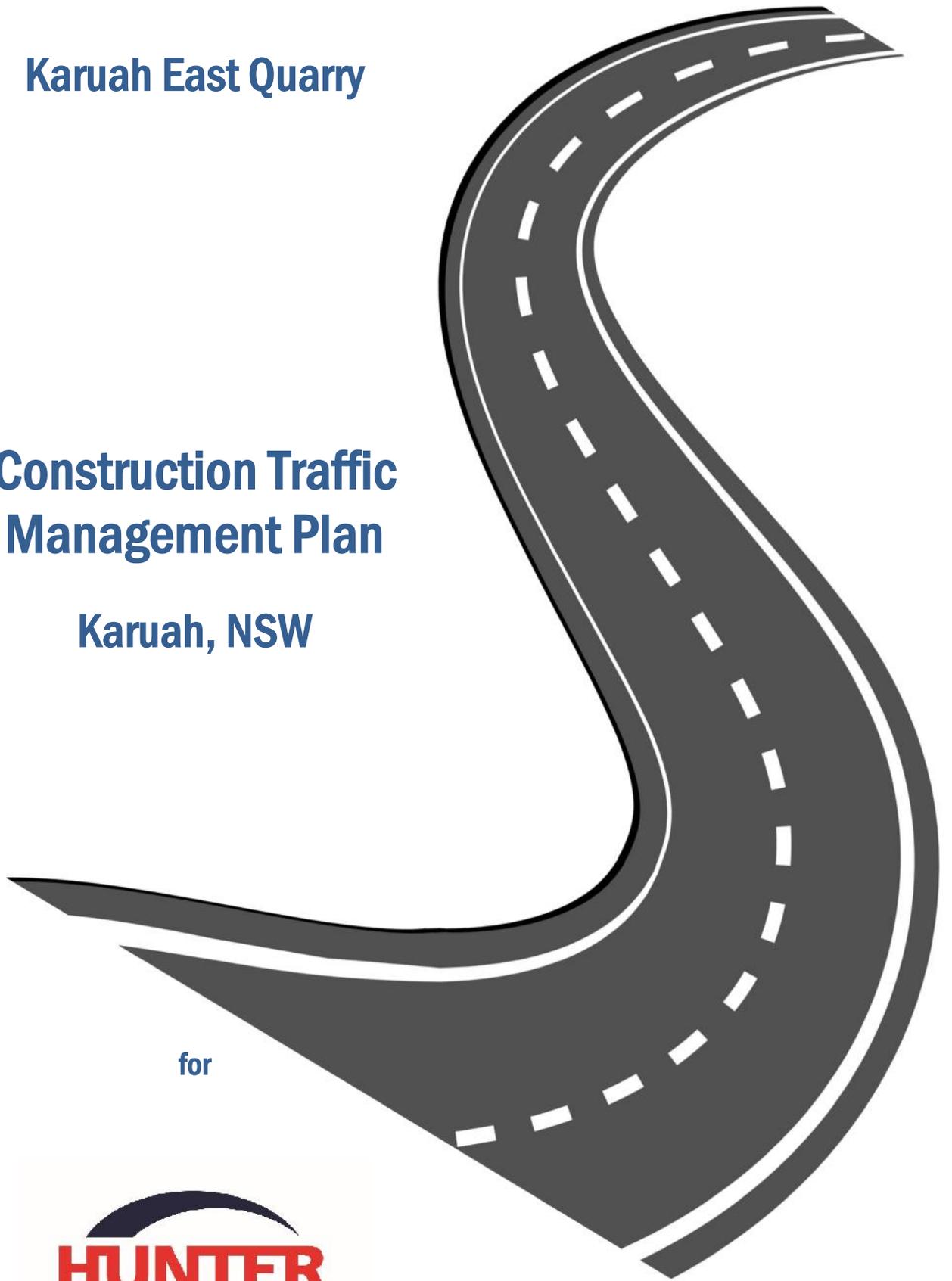


Karuah East Quarry

**Construction Traffic
Management Plan**

Karuah, NSW

for



Construction Traffic Management Plan Details

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Stakeholder				
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1. BACKGROUND

1.1 Scope of Work

StreetWise Road Safety and Traffic Services have been engaged to prepare Construction Traffic Management Plans for proposed civil works for the Karuah East Quarry. The works are required as part of an approval of a hard rock quarry within the existing quarry site, and includes upgrading the intersections in the vicinity of the existing Karuah quarry entry, and also widen & extend the existing Blue Rock Lane (off Andersite Road) to provide access to the approved Karuah East Quarry.

Hunter Quarries currently extract hard black andecite material from its existing quarry operation on adjoining lands. Approval was granted for this designated development on the adjoining land (Lot 21 DP 1024341, Lot 11 DP 1024564 & Lot 12 DP 1024564) by the Minister as State Significant Development on 3rd June 2005 (DA265/10/2004).

The existing Karuah Quarry currently operates under development approval DA 265/2004 and is approved to extract up to 500,000 tonnes per annum (tpa) of 'andecite' basalt material suitable for use as road base, construction aggregate and concrete batching, among various other applications.

Following exploratory works adjacent to the existing approved quarry, additional resource has been identified to the east on land owned by the Proponent (Project site). On 17 June 2014 the approval was granted by the NSW Planning Assessment Commission (PA 09_0175) for the extraction of this additional resource through the development of the Karuah East Quarry, a stand-alone operation separate to the existing Karuah Quarry. The Karuah East Quarry is approved to extract up to approximately 29 million tonnes of Andecite over a period of 20 years, with a maximum annual extraction rate of 1.5 million tonnes.

The site is described as Lots 12 & 13 DP 1024564 and contains a total area of approximately 74ha. The site is located adjacent (to the east) to the existing Karuah Quarry operation. The existing Karuah Quarry operation. The existing Karuah Quarry is accessed off Andersite Road.

Access to the Karuah East site is currently off the Pacific Highway. As detailed within Project Approval 09-0175 for the Karuah East Quarry, access to the Karuah East Quarry will be from an extension and upgrade of Blue Rock Lane (off Andersite Road) to the south-west corner of the subject site (Lot 12 DP 1024564).



Figure 1 - LOCALITY SKETCH

1.2 Road Network

The quarry is located on the northern side of the Pacific Highway, a recently completed section of 2-way, 2-lane motorway, generally known as the 'Karuah Bypass'. Tarean Road, a 2 lane rural road intersects the Pacific Highway at a grade separated interchange, close to the entry to the existing Karuah Quarry. Tarean Road connects the township of Karuah with the highway. To the west of the existing quarry, Tarean Road joins Branch Lane, an un-sealed rural road.

The existing quarry access, Andersite Road, is located on the northern side of Tarean Road, approximately 200m east of the Pacific Highway interchange. Midway between the Tarean Road intersection and the existing quarry entry gate, Blue Rock Lane intersects with Andersite Road.

Blue Rock Lane is a rural road running parallel to the Pacific Highway, and following upgrades required as part of the Project Approval (08/0175), will provide access to the Karuah East Quarry. The existing roadway is generally 6m wide, and sealed for approximately 800 metres.

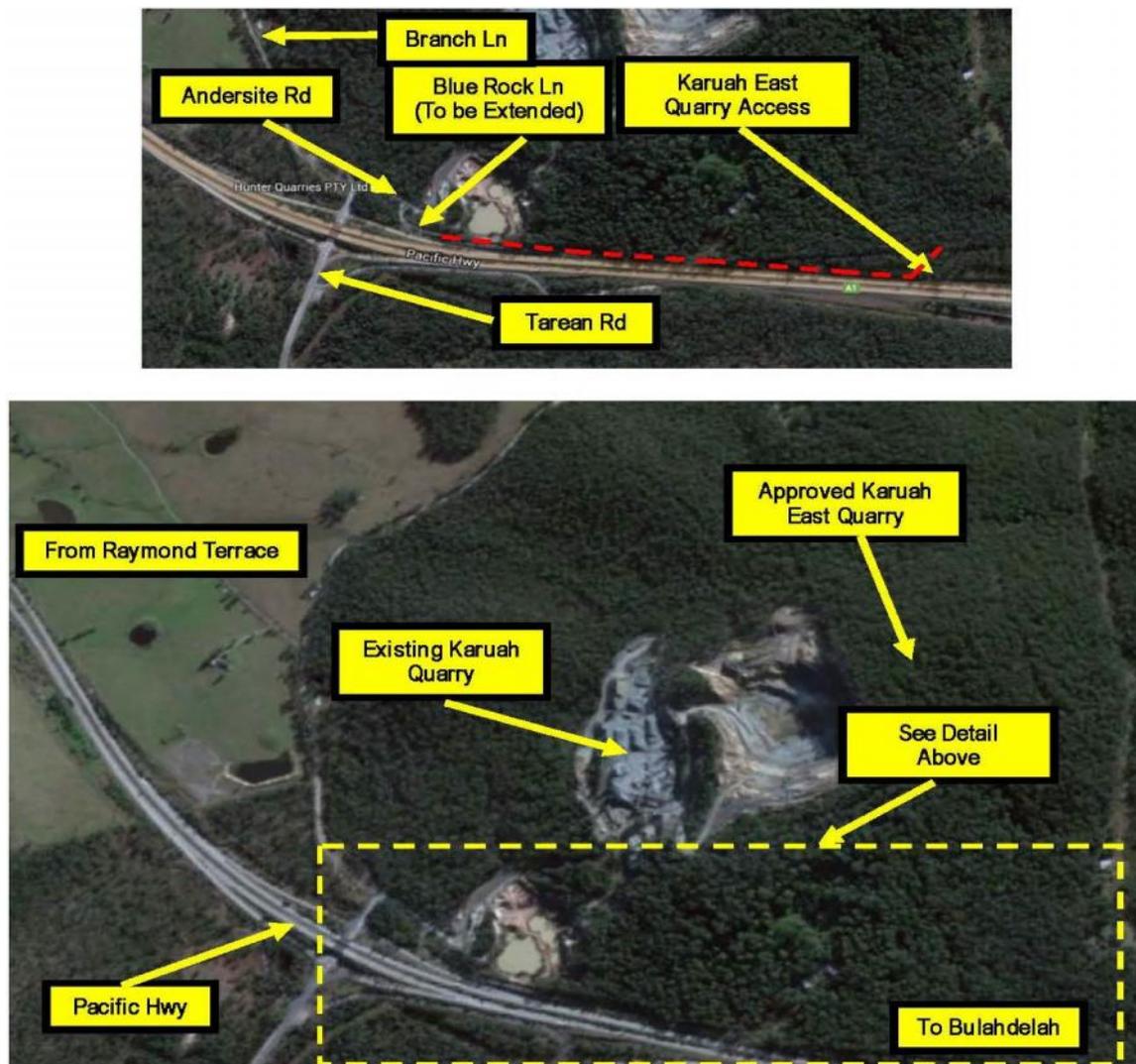


Figure 2 - QUARRY LOCATION AND LOCAL ROAD NETWORK

1.3 Objectives of this Traffic Management Plan

The purpose of this Construction Traffic Management Plan (CTMP) is to provide a reference document, as part of the quarry upgrade civil works, to maximise safety for all road users and project personnel by implementing best management practices. The CTMP includes:

- Describes how Karuah East Quarry Pty Ltd will manage and control risks associated with traffic management during construction activities of the project;
- Address the conditions of consent of the approved project;
- Address the Construction Traffic Management Plan requirements of Section 2.0 of the Project Approval Statement of Commitments

This CTMP was produced in accordance with the Roads & Maritime Services (RMS) Traffic Control at Worksites (2003). Reference is also made to the RMS's procedures in the preparation of a Traffic Management Plan. It should be noted that this CTMP relates to the proposed civil works to upgrade the roads. A separate Traffic Management Plan has been previously prepared in relation to the traffic generated by the quarry operations.

2. PROPOSED ROADWORKS

2.1 Description of Works

To provide access to the Karuah East Quarry, the following works will be undertaken:

- Upgrade and extend Blue Rock Lane
- Realigning and upgrading the existing intersection of Blue Rock Lane & Andersite Road
- Upgrading the existing intersection of Andersite Road & The Branch Lane
- Constructing site access across Lots 12 & 13 DP 1024564
- Installing onsite wheel wash facility

The upgrading of Blue Rock Lane includes widening of the existing roadway to 9 metres (2 x 3.5m lanes and 1m shoulder each side), extension of the existing road to connect with the south-western corner of Lot 12 DP 10234564 (part of the subject site), construction of concrete box culverts, formation of roadside batters and provision of guard fencing, signage, linemarking etc.

The works proposed at the intersection of Blue Rock Lane & Andersite Road include widening of the intersection, and realigning the existing layout to make Blue Rock Lane the priority road, with the quarry access reduced to the minor road. Traffic exiting the quarry via Andersite Road will be required to yield to vehicles on Blue Rock Lane via 'Give Way' signage and linemarking.

Upgrading the existing intersection of Andersite Road & The Branch Lane will involve re-establishing the existing linemarking and signage.

2.2 Roadworks Activities

The proposed roadworks described in 2.1 above will include the following activities:

- Clearing of trees and other vegetation
- Earthworks to shape future roadway. This is likely to require extensive excavation at the northern end of Blue Rock Lane, and haulage of suitable material to the southern end of the road.
- Construction of box culverts and other stormwater infrastructure.
- Placement and compaction of gravel in layers to form the future road pavement
- Provision of wearing course.
- Provision of signage, linemarking, street furniture and delineation
- Landscaping, turfing etc.

The activities described above will require various plant and machinery to undertake the works, and generate numerous vehicle movements for delivery of materials, removal of waste and commuting of workers.

2.3 Construction Hours

The construction hours for the proposed roadworks will be restricted to 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm on Saturdays or Public Holidays. No audible construction activities will be undertaken outside these hours.

This remains consistent with the Construction Activity Hours of Operation prescribed by Condition 7 Schedule 3 of the Project Approval.

3. CONSTRUCTION TRAFFIC MANAGEMENT PLAN

This Construction Traffic Management Plan (CTMP) outlines the activities, traffic generation, transport routes and traffic movements during the roadworks described in Section 2.2 above. The CTMP as discusses the mitigation measures to be implemented in order to identify the necessary management controls to minimise the impacts of the construction traffic.

3.1 Construction Access

Access to the construction site is via Andersite Road and Tarean Road. Vehicles from the north and south of the area will generally utilise the Pacific Highway, gaining access to Tarean Road via the Karuah North Pacific Highway interchange adjacent to the existing quarry. A small number of vehicles may utilise The Branch Road from the west, but it is unlikely that any heavy vehicles will use this unsealed road. The Pacific Highway and Tarean Road are both suitable for heavy vehicle use.

3.2 Construction Traffic Volumes

Existing light vehicle movements in the vicinity of Andersite Road and the existing quarry entry are likely to be limited to quarry staff commuting and a minimal number of trips by local residents, an estimated 20 trips per day.

The proposed road construction will generate additional vehicle movements in the vicinity of the site. Heavy vehicles will be required to float plant and equipment to the site, deliver materials, and haul any excess soil or waste from the site. It should be noted that crushed rock is likely to be sourced from the adjacent quarry, which will minimise the impacts on the surrounding road network. Additional light vehicle movements will also be generated, with workers commuting to and from the site, and other general activities during the day. It is estimated that the works will generate an average of 20 heavy vehicle movements a day, and approximately 10 – 20 light vehicle movements daily.

The local road network has adequate capacity to cater for the additional vehicle trips to be generated by these works. Off-street parking should be provided to ensure a safe area which does not impact on traffic movements.

3.3 Construction Traffic Impacts

The existing quarry is located in a rural area and the adjacent local roads have generally low traffic volumes. Traffic assessments have previously been undertaken in regard to the traffic movements generated by the quarry activities, and it is likely that impacts on Andersite Road and Blue Rock Lane are minimal, given that the majority of the low volumes are generated by the quarry.

Andersite Road and Blue Rock Lane are to remain open to local traffic wherever possible during the proposed roadworks. Safe access to any residences to be available during the works. Traffic control is to be implemented to guide vehicles through or around the roadworks, if required.

The 200m section of Tarean Road between the existing quarry entry road and the eastern side of the adjacent intersection with the Pacific Highway is considered the most likely section of local road to be affected by the proposed roadworks. However, due to the existing low traffic volumes, and the expected minimal increase in traffic numbers to be generated by the proposed roadworks, any delays or other impacts on the 3 intersections and current traffic patterns are expected to be minor.

The quarry and proposed road construction site are located adjacent to the existing Tarean Road/Pacific Highway interchange – a major intersection with adequate size and capacity to cater any heavy or over-sized vehicles. Once through the interchange, the Pacific Highway (north and southbound) and Tarean Road (eastbound) have adequate capacity to safely cater for the relatively low number of vehicle movements generated by the proposed roadworks.

The existing intersection of Andersite Road and Tarean Road was noted to be poorly delineated, with signage damaged or in poor condition, and linemarking was 'patchy'. It is recommended that the existing intersection signage be replaced and/or re-instated, and the linemarking be refreshed, to ensure the Give Way layout at Andersite Road is clear to entering/exiting vehicles. Consideration should also be given to trimming vegetation around the intersection to maximise sight distance.

If the existing quarry activities are to continue while the roadworks are undertaken, consideration should be given to the potential conflicting traffic movements at the intersection of Andersite Road and Blue Rock Lane. While the relative traffic volumes are expected to be low through that intersection, the priority movement needs to be identified, and the intersection layout marked and signposted accordingly. It is also recommended that heavy vehicles and construction vehicles be fitted with 2-way radios, and all movements through the intersection be announced on a selected channel as vehicles approach the workzone and quarry entry gate.

The potential impacts of the additional vehicles to be generated by the roadworks, and the amelioration and traffic management measures are listed below in Table 1.

Issue/Impact	Mitigation/Control Measure
Maintain public roads	<ul style="list-style-type: none"> • Weekly inspections of construction access routes to be undertaken and any maintenance requirements identified as soon as practicable
Community consultation	<ul style="list-style-type: none"> • Ensure neighbours, the local community and road-users are aware of any road closures or other disruptions to local roads due to the proposed roadworks, via adequate signage, VMS boards, letterbox drops etc. • Direct contact should be made with adjoining owners and users of Andersite Road and Blue Rock Lane to inform them of any closures or restrictions of movement.
Construction traffic safety issues	<ul style="list-style-type: none"> • Oversized loads to be transported in accordance with requirements of RMS and Police, with the appropriate approvals and escorts. • Heavy vehicle will use only designated entry and exit points to the site • Heavy vehicle loads with the potential to cause significant traffic disruptions (e.g. oversized loads) will be delivered outside of the peak traffic hours for the local road network wherever possible. • Approved traffic control will be implemented whenever the works impact on the operations of the adjacent local roads. • Temporary road closures, if required, will be undertaken with the approval of the local council or RMS, in accordance with Council requirements and/or the Roads Act (1993) • Power line management, if required for oversized loads, will in consultation with the relevant power supply authority • Parking for all construction related vehicles will be within designated parking areas. • All materials stockpiles will be within designated areas. • All loaded vehicles entering or exiting the site must be covered at all times in order to prevent spillage and dust generation. • All loaded vehicles leaving the site are to be cleaned of materials that may damage or be deposited on local roads. • Onsite inductions should reduce the impacts on the local road network and adjoining properties by addressing: <ul style="list-style-type: none"> • Noise minimisation • Appropriate driver behaviour • Fatigue management • Controls outlined in this CTMP • Audible construction activities will be restricted to approved construction hours.
Two Way Radio	<ul style="list-style-type: none"> • Ensure all heavy vehicles and other construction vehicles are fitted with 2-way radios, and all movements in and out of the worksite are announced on a selected channel. • Co-ordinate construction vehicle movements with any quarry-generated movements via 2-way radio to minimise potential conflicts at the intersection of:

	<ul style="list-style-type: none"> - Andersite Road & Blue Rock Lane - Andersite Road & Tarean Road • Co-ordinate quarry and construction vehicle movements with any traffic controllers required by the roadworks via 2-way radio.
Intersection of Tarean Road & Andersite Road	<ul style="list-style-type: none"> • The operations and existing intersection and 'Give Way' out of Andersite Road should be improved by: <ul style="list-style-type: none"> • Re-instating signage • Refreshing linemarking • Trimming vegetation

Table 1: Construction Traffic Management Measures

4. TRAFFIC CONTROL PLANS

Traffic Control Plans (TCP) will be required for any work that involves any form of traffic control, lane closures or other restrictions on local traffic movements. TCP's shall be prepared in accordance with the RMS 'Traffic Control at Worksites', and may include temporary signage requirements, temporary barrier placement, traffic controllers, temporary delineation, temporary speed zones etc. that are necessary to undertake the works or activities. All necessary approvals shall be obtained from the relevant road authority (Council, RMS) and emergency services and other affected authorities should be notified prior to implementing the TCPs.

5. SUMMARY

The proposed roadworks to upgrade the existing intersections at Andersite Road, and also the widening and re-alignment of Blue Rock Lane to provide access to the Karuah East Quarry, will generate a relatively low number of traffic movements. The existing local road network also carries a relatively low number of daily traffic movements.

However, the efficiency of the roadworks can be improved, and the impacts of the construction-generated traffic on the local road network can be minimised, by implementing the recommendations of this Construction Traffic Management Plan.