Executive Summary

INTRODUCTION

Wedgerock Pty Ltd (the Applicant) is proposing to develop and operate the Karuah South Quarry (the Project) involving the extraction and processing of hard rock resources for use in construction and infrastructure projects within the Hunter and Greater Sydney Metropolitan Regions. The Project would be constructed and operated on the southern section of Lot 11, DP1024564 (the Site). The Site covers approximately 21 hectares (ha) and is located approximately 40 kilometres (km) north of Newcastle and 4km northeast of Karuah (see **Figure ES-1**).

THE APPLICANT

The Applicant for the proposed Karuah South Quarry is Wedgerock Pty Ltd, a private company established and owned by Mr M.J. Kiely, the owner of the Site. The Applicant does not intend to participate in the daily planning or operations of the Quarry. Rather, the Quarry would be operated by a contractor or resource company referred to throughout this document as "the Operator".

OBJECTIVES

The Applicant's objectives in developing and operating the Karuah South Quarry are to:

- secure access to a long-term hard rock resource that would provide a range of aggregates, road pavement products and manufactured sand for use in the Hunter and Greater Sydney Regions;
- produce up to 600 000 tonnes per annum (tpa) of aggregates, pavement products and manufactured sand to meet the increasing supply demands of these materials over the next 25 years;
- maximise resource recovery within the defined extraction area;
- undertake activities in an environmentally responsible manner to meet all relevant criteria and satisfy reasonable community expectations;
- ensure its contribution to the cumulative impact of the quarries in the Karuah area is proportionate to the overall impacts of all quarries;
- increase local employment levels; and
- operate in a cost-efficient manner.

THE PROJECT

The Project would utilise conventional drill and blast, load and haul and processing methods to produce up to 600 000tpa of quarry products. Extraction would be undertaken in a staged manner, i.e. over two stages with each stage comprising three sub-stages. Production during the initial sub-stages of extraction would be lower with production during subsequent sub-stages gradually increasing. An estimated 10 million tonnes of fresh rock and 1.25 million tonnes of weathered rock have been identified within the proposed extraction area.


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TN
MN
Walgett
Site
Cobar
Nyngan
Broken Hill
Dubbo
Forster
Bathurst
Lithgow
Newcastle
Sydney
Wollongong
The Branch Lane
Carrington Creek
Bulga Creek
Karuah Quarry
Karuah East Quarry
Pacific Highway
Proposed Karuah South Quarry
KARUAH NR
GREAT LAKES
Karuah
Tahlee
Carrington
North Arm Cove
Port Stephens
Dungog
Singleton
Newcastle
Windsor
Brooklyn
Sydney
REFERENCE
Site Boundary
Karuah Quarry
Karuah East Quarry
SCALE 1:50 000 (A4)
0.5 0 0.5 1.0 1.5 2.0 2.5 km
Source: NSW Topographic Web Map - LPI
Figure ES-1
LOCALITY PLAN

It is expected that extraction and processing operations would continue for a period of approximately 25 years following Project commencement and would provide fulltime employment for approximately 20 persons.

Whilst the principal components of the Project have been defined based upon the occurrence of the underlying hard rock resource and local topographic constraints, both the extraction and processing operations have been designed to optimise the recovery of the hard rock resource whilst satisfying environmental and Site constraints.

Figure ES-2 displays the following principal components of the Project that would be located on the Site.

- Extraction Area - Stage 1
  The Stage 1 extraction area would cover approximately 4.9ha with its footprint typically between approximately 30m AHD and 75m AHD (to a floor with an elevation of 8m AHD).
- Extraction Area - Stage 2
  The Stage 2 extraction area would cover approximately 5.9ha with its footprint typically between 75m AHD and 120m AHD (to a sloping floor from an elevation of 8m to 12m AHD).
- Quarry Infrastructure Area
  The Quarry infrastructure area would be located on the southern side of the extraction area and would incorporate the product stockpiling area, ancillary components area and mobile processing plant.
- Product Stockpiling Area
  The product stockpiling area would be located on the northern section of the quarry infrastructure area during Stage 1. This area would be expanded to cover northern, southern and western portions of the quarry infrastructure area during Stage 2.
- Mobile Processing Plant
  The mobile processing plant would incorporate a range of crushers and screens and would be located on the western section of the Quarry infrastructure area during Stage 1. During Stage 2, the mobile processing plant would be relocated to the eastern section of the quarry infrastructure area to minimise product haulage distances.
- Internal Roads
  A network of roads to provide access for off-road haul trucks between the extraction and processing area.
- Quarry Access Road
  The inclined, sealed section of road extending from the quarry entrance to the southern side of the Quarry infrastructure areas.
- Sediment Basins
  Two sediment basins (Western and Southern), each with a with pre-treatment pond, would be constructed to collect sediment laden runoff from the disturbed sections of the Quarry.
- Diversion Drains
  Two clean water diversion (CWD) drains (CWD East and CWD West) would be constructed to direct runoff from undisturbed areas upslope of the extraction area.

Quarry products would be despatched by road using the existing road network with access to the Site via a new entrance to Lot 11 DP 1024564 from Blue Rock Close. The location of the quarry entrance would be close to the existing entrance to the property and would be constructed to accommodate quad-dog trailers and semi-trailers.

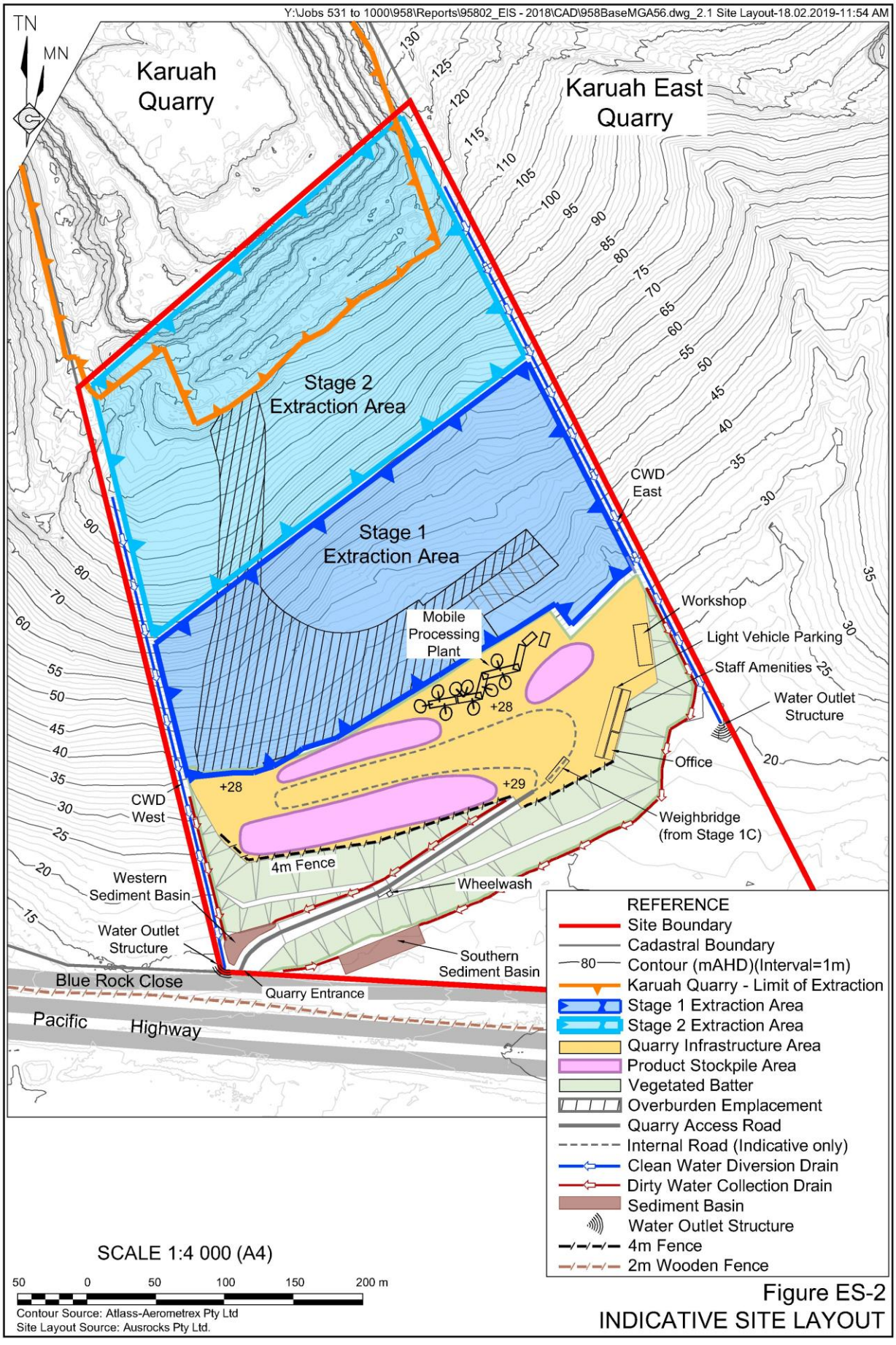

Figure ES-2
INDICATIVE SITE LAYOUT

The overall footprint of the operation would be kept as small as possible during all stages of operation, with vegetation and soil removed immediately prior to the progressive extension of operations. Progressive rehabilitation would be undertaken as soon as practicable following disturbance with those areas that would not be further disturbed for at least 6 months or are recognised as part of the final landform.

BIODIVERSITY OFFSET STRATEGY

Approximately 11.6ha of native vegetation would be a cleared during the development of the Project resulting in a Biodiversity Offset Obligation. The measures to address this offset obligation would be determined as the Project approval process progresses. It is likely that the Applicant would retire the required credits through payment into the BCF.

APPROVALS REQUIRED

Based upon the current design of the Project and understanding of environmental issues, the Project would require the following Approvals to proceed.

1. Development consent under Part 4 of the *Environmental Planning and Assessment Act 1993* with the consent authority being the Minister for Planning, his or her delegate or the Independent Planning Commission as the Proposal has been classified as a "State Significant Development" under Schedule 1 (7(a)) *State Environmental Planning Policy (State and Regional Development) 2011*.
2. An Environment Protection Licence from the Environment Protection Authority, under Chapter 3 of the *Protection of the Environment Operations Act 1997* would be required for both the extraction and processing activities.
3. A licence from the Department of Industry – Crown Lands and Water under the *Water Management Act 2000* would be required to account for the in-flow of groundwater during the extraction operations, if required.
4. A Section 138 Permit from the MidCoast Council under the *Roads Act 1993* would be required for the construction of the Quarry entrance.

CONSULTATION

In order to undertake a comprehensive assessment of the environmental impacts arising from the Project, a program of community, industry and government agency consultation was undertaken to identify relevant environmental issues for assessment. Consultation was undertaken during the planning and design of the Project with the following parties.

- Surrounding landowners and the local community
- The local Aboriginal community.
- Industry.
- Relevant government agencies.

Feedback received during consultation was considered in the final design of the Project and issues raised by participants were considered in the assessment of potential environmental impacts.

ENVIRONMENTAL SAFEGUARDS AND IMPACTS

Air Quality

The results of an air quality assessment concluded that the Project together with the surrounding quarries is predicted to comply with all impact assessment criteria for each relevant averaging period for TSP, $PM_{2.5}$, PM_{10}, dust deposition and NO_2 with the exception of a minor exceedance of maximum 24-hour average PM_{10} at

Residence 16. It has been assessed that the implementation of a real time air quality monitoring program would ensure that short-term elevations in incremental PM_{10} concentrations do not result in exceedances of the health-based criterion at surrounding residential locations.

A greenhouse gas assessment undertaken for the Project concluded that average scope 1 and 2 emissions from the Project would represent approximately 0.003% of NSW total GHG emissions and approximately 0.0006% of Australian total GHG emissions which represents a very minor proportion of global greenhouse gas emissions.

Noise and Vibration

Aspects relevant to Project-related noise and vibration contributions to the current environment would include the following.

- The construction and operational noise levels of the Project are not predicted to exceed the relevant criteria at any residence.
- The maximum noise levels proposed for the period between 5:00am and 7:00am are not predicted to exceed the sleep disturbance criteria at any residence.
- The maximum heavy vehicle movements associated with the Project are not predicted to exceed the road traffic noise criteria at the most affected residence (R16).
- The predicted blast overpressure and ground vibration levels at the nearest residences in each direction from the Site are below the assessment criteria presented in ANZECC (1990).
- Blast designs and operational practices would be implemented to ensure fly rock generated on site is confined to the designated blast envelope and not impinge on any public road, including the Pacific Highway.

Visibility

The existing Site is well shielded from the nearby Pacific Highway by native vegetation. The progressive clearing of the sections of the Site to develop the Quarry would not be visible during Stages 1A and 1B nor would the processing operations and product stockpiling activities on the Quarry infrastructure pad. From Stage 1C onwards, sections of the upper benches would become visible from the Pacific Highway in a northwesterly direction at a distance of approximately 1km. If necessary, at the completion of Stage 1C, the visible upper benches would be sprayed with bitumen emulsion (similar to road cuttings) to limit their visibility until the benches are finally removed.

Stage 2 of the extraction area has been designed to maximise the visual protection for the upper benches. In any event, as each bench is completed, overburden would be placed on each and vegetation established so that by the time the benches become visible from the Pacific Highway, they will be sufficiently vegetated to limit visual impacts.

Limited visual impacts are predicted from surrounding residences throughout the life of the Project.

Traffic and Transport

At maximum production, the Project would generate up to 246 truck movements (123 loads) and 60 light vehicle movements (30 return trips) per day.

Through assessment of current and future traffic levels, and modelling of road use and intersection performance, it has been determined the additional traffic generated by the Project would not adversely impact the road level of service or intersection performance. The increases in total traffic and heavy vehicles using the Pacific Highway would be comparatively small and account for approximately 1% of total traffic and 9% of heavy vehicle traffic in the vicinity of the Site.

The proposed operational safeguards that would be implemented by the Operator would ensure that the existing high safety standards on the Pacific Highway adjacent to the Site would be maintained. The Project's impacts on both local and State road networks would be minor and are not expected to result in the deterioration of future road safety levels.

Ecology

Following field survey of the Site, one Plant Community Type, occurring within the proposed area of disturbance, was identified as an Endangered Ecological Community under the BC Act and a Critically Endangered Ecological Community (CEEC) under the EPBC Act. A total of five threatened fauna species were identified within or immediately surrounding the Site. No threatened flora species were identified within the Site.

Based on the surrounding land uses, the comparatively small area of vegetation to be cleared and Project design and operational mitigation measures to be implemented, the Project would result in no net loss to biodiversity values and any potential impacts would be mitigated to the greatest extent practicable.

Surface Water

It has been assessed that the Project could be undertaken without any significant adverse impact on surface water resources. Assuming the implementation of the proposed site water management infrastructure, operational safeguards and controls, the Project would:

- not be subjected to, or cause adverse effects from, flooding;
- minimise any reduction in environmental flows to Yalimbah Creek;
- ensure that clean water runoff is diverted away from areas of disturbance;
- ensure that sediment-laden runoff is captured, recycled and re-used for quarry-related activities to avoid discharge to Yalimbah Creek;
- ensure the capture, recycling and re-use of sediment-laden runoff is restricted to the maximum harvestable rights of the Site; and
- ensure any excess water accumulated on site is appropriate treated and released in accordance with the conditional requirements of the Site's environment protection licence.

Groundwater

Limited groundwater is present within the rhyodacite to be extracted. When present, the groundwater is typically located in discontinuous fractures and shear zones. Insufficient groundwater was present in the four groundwater piezometers on site to allow representative aquifer parameters to be determined.

Groundwater impacts from the Project are predicted to be negligible as the limited groundwater present is not connected to local water courses and there are no registered groundwater bores within 3km of the Site.

Aboriginal Cultural Heritage

An Aboriginal Cultural Heritage Assessment was undertaken for the Project, including consultation with three Aboriginal stakeholders who registered interest in the Project.

No Aboriginal sites were identified on the Site during a survey conducted in May 2018 and the archaeological and cultural significance of the Site has been assessed as low. The Operator would be committed to ongoing management measures in the case

that any Aboriginal sites are identified during operations. As a result, there would be no adverse impacts on Aboriginal heritage as a result of the Project.

Historic Heritage

There are currently no listed historic heritage items within or near the Site. A survey, undertaken for the Project in May 2018, did not identify any places or items of historic heritage significance.

The Historic Heritage Assessment identified that there may be archaeological items located within the Site related to historical land uses such as agriculture and logging, however, the significance of any potential material has been assessed as not holding heritage significance. As the Operator would be committed to the implementation of an unexpected finds protocol, any risks to heritage have been assessed as acceptable.

Land and Soil Capability

The following three soil landscapes were identified during a desktop assessment of Site's soils.

- Gan Gan Soil Landscape.
- Gan Gan (variant A) Soil Landscape.
- Nungra Soil Landscape.

The above soil landscapes have been classified as very low capability land, low capability land and moderate-low capability land respectively.

Adherence to the recommended soil and growth medium stripping, handling, stockpiling procedures and other management practices, together with appropriate rehabilitation practices would result in a minimal impact to soils and land capability within the Site.

Bush Fire Risk

The Site is located on land covered by vegetation classified as Bush Fire Prone Land Vegetation Category 1. It is also recognised that the area is directly adjacent to a heavily wooded area, and therefore the potential for bush fire to spread both within the Site and adjacent to the Site would be high if management measures are not adopted to mitigate this hazard. A *Bush Fire Management Plan* would be prepared in consultation with the local Rural Fire Service.

With the proposed safeguards and controls, it is considered that the bush fire hazard associated with the Project would be acceptable and would not significantly contribute to raising the risk of bush fires impacting the community, property or environmental assets.

Economic Impacts

The Project provides for the removal, processing and despatch of aggregates, pavement products and manufactured sand recognised within the Hunter and Greater Sydney Regions. The extraction of this resource would ensure downward pressure is exerted on costs associated with construction material supply and influence market costs associated with construction and infrastructure projects. The Project would further assist in generating local employment and contribute to Local, Regional, State and National economies through flow-on effects.

Acknowledging any potential residual environmental and social impacts associated with the Project, it is concluded that the net economic benefits of the Project would outweigh any potential costs.

Social Impacts

Comprehensive social scoping, review of the existing social context and stakeholder engagement has identified a range of potential social impacts that are either currently occurring as a result of the existing quarry operations or are expected by the community to be prolonged or exacerbated under the Project.

Each of the identified impacts has been evaluated and subject to a social risk review that assessed both the mitigated risk of impact and the community's expectation of impact. Both existing and expected impacts are closely associated with the potential for amenity impacts from dust, noise and impacts to water management to impact the community way of life and sense of place, and has created concern for the future and a feeling that the community is not able to influence decisions that affect their lives. Concerns about the community's ability to influence decision making is exacerbated by the distrust in the operators and regulators to ensure that the conditions of consent would be satisfied.

The existing social impacts experienced by the community influence the potential for and expectation of cumulative social impacts. The potential amenity impacts of the Project have been the subject of comprehensive technical review that predicts that all operations (including the Project) would operate within acceptable criteria established in NSW guidelines and legislation. Residual social impacts are predicted to occur as a result of changes to local amenity which may influence the existing way of life for some stakeholders. In addition, the community values local environmental features of the area and impacts to these natural resources has social consequences. Community fears about the operations are likely to remain in the short term.

A range of standard social mitigation measures have been proposed as well as additional measures that require the Operator to address social performance criteria. These include a commitment to annual community meetings for the first two years of operations, at which feedback will be collected from the local community that will be presented in the Annual Review. This process will create a loop of feedback connecting the community, the Operator and the regulators. Assuming that the mitigation commitments for the Project are successful in alleviating community concerns, the Project would operate with only minor additional social impacts and with acceptable cumulative social impacts. Where community concerns may remain, mechanisms would be established to incorporate this feedback into adaptive management of the operation. This outcome would benefit the social outcomes of both the existing operations and the Project.

CONCLUSIONS

The Project has been designed to address the issues raised by the community and all levels of government, as well as the principles of ecologically sustainable development. The Project provides for the extraction of the identified hard rock resource and general operation of the Quarry in an environmentally responsible manner.

The Project incorporates a range of design and operational mitigation measures to ensure all relevant statutory goals and criteria, environmental objectives and reasonable community expectations are satisfied. Importantly, the environmental aspects of the Project have been assessed cumulatively with those of the adjoining quarries with the collective impacts assessed to be acceptable.

It is noted that, in the event that the Karuah South Quarry does not proceed, the existing environmental and amenity issues experienced by the local community from the Karuah Quarry and Karuah East Quarry would continue regardless of the outcomes of the current application for the Project. It is considered that the observed environmental performance of the combined operation of all quarries near Karuah would improve as a result of the development of the Karuah South Quarry through the greater emphasis placed upon cumulative environmental management, genuine community engagement and feedback.

This document and the range of specialist consultant studies undertaken have identified that the Project should proceed because it would:

- contribute towards satisfying the demand for hard rock products required for the construction industry materials, particularly within the Greater Sydney metropolitan and Hunter regions;
- have a minimal and manageable impact on the biophysical environment;
- satisfy sustainable development principles; and
- result in a net benefit for the local community, the Local Government Agencies of MidCoast and Port Stephens and the State of NSW.

KEY FACTS AND STATISTICS

Applicant	Wedgerock Pty Ltd
Location	61 Blue Rock Close, Karuah, 2324
Indicative Application Area	Total area of Site = 21ha Total area of disturbance = 16.4ha Extraction Area = 10.8ha Quarry Infrastructure Area = 5.3ha Product Stockpiling Area = 0.7ha Ancillary Components Area = 0.3ha Sediment Basins = 0.13ha
Material Extracted	Hard rock (rhyodacitic ignimbrite) – a volcanic rock.
Resource	Approximately 10.14 million tonnes of fresh rock and 1.25 million tonnes of weathered rock.
Key Products	Hard rock aggregates, pavement products and manufactured sand.
Markets	Construction industry (including major infrastructure projects) primarily in the Hunter and Greater Sydney Regions.
Project Life	Project Life = 25 Years (Stages 1 and 2)
Extraction Method	Drill and blast followed by load and haul to the mobile processing plant.
Maximum Extraction	600 000 tonnes per year
Maximum Sales	600 000 tonnes per year
Truck movements per day during operations (one load generates two movements)	At 300 000 tpa - daily average 72 / daily maximum 144 At 600 000 tpa - daily average 144 / daily maximum 240
Employment	Approximately 14 to 20 full time persons at the Quarry Approximately 8 to 10 contractors transporting quarry products

Hours of Operation (The nominated periods reflect the periods in which the activity(ies) could occur – they would not be undertaken continuously within these periods)

Activity	Monday to Friday	Saturdays	Sundays or Public Holidays
Site establishment and construction	7:00am to 6:00pm	7:00am to 1:00pm	Nil
Extraction operations	7:00am to 6:00pm	7:00am to 1:00pm	Nil
Blasting operations	10:00am to 4:00pm	Nil	Nil
Processing operations	7:00am to 6:00pm	7:00am to 1:00pm	Nil
Product despatch	5:00am to 6:00pm	5:00am to 1:00pm	Nil
Maintenance	24 hours / day	24 hours / day	Nil

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