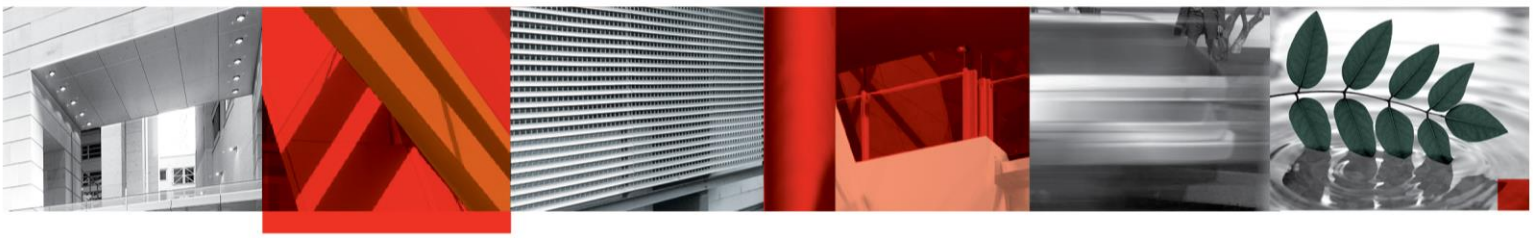
Response to Submissions

State Significant Development (SSD) 7332



Barleigh Ranch Way, Eagleton

Eagleton Hard Rock Quarry

Submitted to Department of Planning and Environment
On Behalf of Eagleton Rock Syndicate

October 2017 ■ 15647

JBA Urban Planning Consultants Pty Ltd ABN 84 060 735 104

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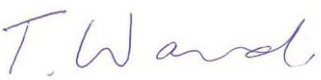
This report has been prepared and reviewed by:



Tim Ward 13/10/2017

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Executive Summary

Purpose of this Report

This Response to Submissions Report (RTS) is submitted to the Department of Planning and Environment (DP&E) as part of a Development Application under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It relates to a proposal for the Eagleton Hard Rock Quarry (Eagleton Quarry).

The proposed Eagleton Quarry is identified as a State Significant Development as it is a type of Extractive Industry identified in Clause 7 of Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011*.

The Environmental Impact Statement (EIS) for the proposal was publicly exhibited between 3 February 2017 and 6 March 2017, during which time submissions were received from members of the public and government agencies.

Overview of the Project

The Eagleton Quarry proposal is for the extraction of a hard rock reserve that is a mixture of various igneous and sedimentary rock formations. The proponent, Eagleton Rock Syndicate Pty Ltd (Eagleton Rock), has identified rock formations suited to local and regional construction markets and therefore the project will contribute to satisfying an identified demand.

The Eagleton Quarry proposal incorporates a 30 year quarry operations area of approximately 30ha which includes a processing, sales and administrative area. The key development parameters of the development proposal for which approval are sought include:

- Extraction and on-site processing of up to 600,000 tonnes per annum of rock;
- Transporting quarry products by truck to market;
- Improvements to public roads and maintenance of an existing right of carriageway to support the transport of quarry products;
- Undertaking quarry operations for 30 years;
- Employment of up to approximately 10 staff and 10 contractors on site;
- Hours of operation:
  - Processing and extraction activities 7:00am – 6:00 pm Monday to Friday and 7:00am to 4:00pm Saturdays.
  - Scheduled maintenance generally limited to processing hours.
  - Sales activities (i.e. handling and loading of processed materials) 5:00am to 10pm Monday to Friday and 5am-4pm Saturdays.
- Closure and rehabilitation based on a final landform that comprises a series of revegetated benches at the western end of the quarry.

Overview of Submissions

The EIS was exhibited from 3 February 2017 to 6 March 2017, with a total of 59 submissions. Submissions were received from the following government agencies:

- Hunter Water;
- Environment Protection Authority;
- Port Stephens Council;
- Department of Industry (Resources & Energy)

- Heritage Council;
- Office of Environment and Heritage;
- Roads and Maritime Services;
- Department of Primary Industries; and
- Rural Fire Service.

A total of 50 submissions were received from individuals, landowners and special interest groups.

The main issues identified within these submissions included:

- Traffic and transport;
- Water management;
- Noise and vibration (including blasting);
- Air quality and dust;
- Biodiversity;
- Social impacts;
- Economic impacts;
- Rehabilitation; and
- Heritage.

Proposed Amendments to the Proposal

As part of the review and response to submissions process, Eagleton Rock has reviewed the design and layout of the proposed quarry. This has resulted in a change to the design and delivery of quarry works over the life of the quarry, as follows:

- The proposed quarry will commence along the northern side of the ridgeline and progress in a south easterly direction, using the natural topography as an extensive natural acoustic and visual barrier.
- The processing plant has been reconfigured to relocate the loudest equipment over 270 m north at an excavated level of RL 45m in the northern part of the quarry, so that it will be located on the northern side of the existing hill.
- The existing hill will be retained as a barrier to the processing plant and will be excavated to a height of no less than RL 57.5m until the final year of the quarry life, where barriers will be installed at suitable locations around plant.
- The water management plan for the proposed quarry has also been refined to ensure retention of all stormwater for events of up to a 1 in 500 year frequency, and the controlled release of treated water in a manner that will ensure a Neutral or Beneficial Effect on the Grahamstown drinking water catchment, as required by Hunter Water Corporation.

Revised quarry plans are provided in **Appendix A**.

Additional Environmental Assessment

The amendments made to the quarry layout and design have been the subject of revised impact assessments, which have also responded to issues raised in submissions. The amendments result in a significant reduction in the environmental impact of the proposed development.

Conclusion and Justification

The Proposal, identified as a State Significant Development, has been subject to an EIS and, subsequently to this RTS. The potential environmental, social and economic impacts, both direct and cumulative, have been identified and thoroughly assessed as part of the EIS, and also as part of this RTS. No significant adverse environmental, social or economic impacts have been identified by the proposal in preparing the EIS or the RTS.

Any potential environmental and cultural impacts identified during the public exhibition of the EIS have been addressed by design refinements as set out in this RTS. Any residual impacts will be mitigated through the implementation of measures for the construction and operation of the proposal.

The potential impacts of the development are acceptable and are able to be managed as outlined within the safeguard and mitigation measures contained within the EIS and its appended technical reports, and this RTS.

1.0 Introduction

Eagleton Rock Syndicate Pty Ltd (the applicant) is seeking approval for the construction and operation of a hard rock quarry located on Barleigh Ranch Way, Eagleton.

An Environmental Impact Statement (EIS) was prepared for the proposal seeking approval pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in support of the application for State Significant Development (SSD).

The EIS was publicly exhibited, in accordance with Section 83 of the *Environmental Planning and Assessment Regulation 2000*, between 3 February 2017 and 6 March 2017.

During this exhibition period, submissions were invited from all stakeholders including members of the community and government agencies. A total of 59 submissions were received, with 50 from the community, landowners and special interest groups, and nine from government agencies.

The submissions received from the EIS exhibition form the subject of this report, known as the Response to Submissions Report (RTS).

1.1 Purpose of this Report

The purpose of this RTS is to respond to submissions raised by both community and government stakeholders during the exhibition of the EIS. This RTS has been prepared to satisfy the provisions of Section 89G of the EP&A Act and Section 85A of the *Environmental Planning and Assessment Regulation 2000*. Each of the submissions received has been collated, analysed and relevant issues have been addressed.

This RTS also provides a description of design amendments made to the proposed development which have been undertaken to address submissions received and also to reduce the overall environmental impact of the proposal. In addition to this amendment description, this RTS provides further environmental assessment to accommodate the change to the proposal and serves as an addendum to the technical specialist reporting provided within the EIS.

1.2 Background to the Project

1.2.1 Approval Pathway

The EP&A Act establishes the assessment framework for development in NSW. Pursuant to Part 4 of the EP&A Act development consent is required for the proposed facility.

The proposed development is defined as an extractive industry, and is permissible with consent at the site.

The SRD SEPP identifies development that is declared to be State Significant. Clause 8 of the SRD SEPP states that any development of a type specified in schedule 1 or 2 of the SRD SEPP is declared to be State Significant Development pursuant to Section 89C of the EP&A Act.

Clause 7 of Schedule 1 of the Policy relates to extractive industries. The proposal is for the purposes of extractive industry that will exceed the threshold as it would extract from a total resource of over 5 million tonnes.

As such, the proposed development is declared to be State Significant Development. The relevant consent authority for State Significant Development (SSD) is the Minister for Planning.

1.3 Overview of the Original Proposal

The Eagleton Quarry proposal is for the extraction of a hard rock reserve that is a mixture of various igneous and sedimentary rock formations. The Eagleton Quarry proposal incorporates a 30 year quarry operations area of approximately 30ha which includes a processing, sales and administrative area. The key development parameters of the development proposal for which approval are sought include:

- Extraction and on-site processing of up to 600,000 tonnes per annum of rock;
- Transporting quarry products by truck to market;
- Improvements to public roads and maintenance of an existing right of carriageway to support the transport of quarry products;
- Undertaking quarry operations for 30 years;
- Employment of up to approximately 10 staff and 10 contractors on site;
- Hours of operation:
  - Processing and extraction activities 7:00am – 6:00 pm Monday to Friday and 7:00am to 4:00pm Saturdays.
  - Scheduled maintenance generally limited to processing hours.
  - Sales activities (i.e. handling and loading of processed materials) 5:00am to 10pm Monday to Friday and 5am-4pm Saturdays.
- Closure and rehabilitation based on a final landform that comprises a series of revegetated benches at the western end of the quarry.

1.4 Amendments to the Proposal

As part of the review and response to submissions process, Eagleton Rock has reviewed the design and layout of the proposed quarry. This has resulted in the following changes that have been made to improve the design and delivery of quarry works over the life of the quarry. Revised quarry plans and sections are provided in **Appendix A**.

The quarry's processing area, that contains the office, workshop, weighbridges and processing plant, will be established along the eastern boundary of the quarry to a finished level of RL 45 m Australian Height Datum (AHD). A portion of the existing hill will be retained as an extensive natural acoustic and visual barrier at a height of no less than RL57.5m until the final year of quarrying when barriers will be installed at suitable locations around plant. A roof structure will also be constructed over the secondary and tertiary crusher to further reduce noise and dust emissions.

During construction the following activities will be undertaken:

- The site access road and associated intersections will be completed.
- The processing area will be progressively cut into the hill side.
- Three water containment dams, associated bunds, diversions and the discharge point will be constructed.
- The haulage road along the northern side of the ridgeline into the quarry will be progressively established.

- Construction activities may require up to two blasts per day (but no more than four blasts per week) for the establishment of dams, roads and the processing area. These blasts will typically be smaller and not intended solely for production of extractive material for sale.

Following construction during the first year, the proposed quarry will commence along the northern side of the ridgeline and progress in a south-easterly direction, ensuring the majority of extraction activities are set below an advancing face to limit noise propagation.

The water management system for the proposed quarry has also been refined to provide for the controlled release of treated water in manner that will ensure a Neutral or Beneficial Effect (NorBE) on the Grahamstown drinking water catchment, as required by Hunter Water Corporation. Most of the site runoff will still be retained on site, for operational purposes, with only a small proportion of annual runoff volumes to be discharged, when necessary to manage dam water levels so that available storage is replenished following extended wet weather. In total 265ML of on-site water storage is proposed to be provided on-site, across three dams, and in-pit sumps which will reduce the risk of uncontrolled discharges to a frequency of less than 1 in 500 years.

The revised water management system and changes to the processing area include an additional dam and bunding that ensures all runoff from the associated quarry buildings, the sewage pump out tank and processing plant to be fully contained onsite and managed consistent with the NorBE requirements of Hunter Water Corporation.

Closure and rehabilitation will now be based on a final landform that comprises a series of 10 m wide revegetated benches at 12.5 m intervals at the western end of the quarry.

Access to the proposed Eagleton Quarry will be via the formal right of carriageway located within the existing easement (rather than the private road located partially outside of the easement) and will not involve road construction works over and above normal maintenance and management that was ongoing from the establishment of the easement until to 1994 (when the more direct private road was formed). Revised road infrastructure plans are provided in **Appendix N**.

1.5 Site Location and Context

The proposed Eagleton Quarry is located at a site approximately 12km north of Raymond Terrace, within the Local Government Area of Port Stephens. The site is approximately 1.5km to the west of the Pacific Highway, approximately 2km southwest of the intersection of the Pacific Highway with Italia Road, and approximately 2.5km northwest of Grahamstown Dam. The site's location is shown at **Figure 1**.

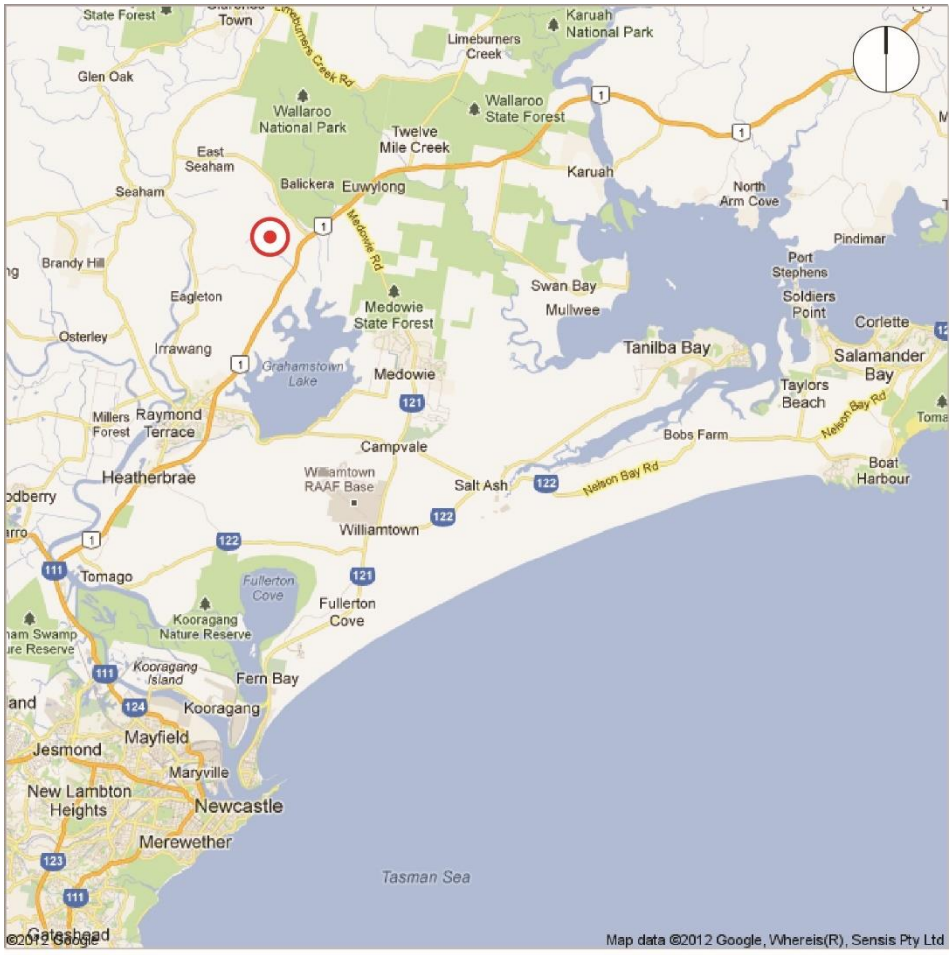

Figure 1 – Locality Plan
Source: Google Maps (modified by JBA)

1.6 Site Access

The local road access arrangements for the site are shown in **Figure 2** below. Access to the proposed quarry site is via Italia Road, which connects along an existing right of carriageway access road located on private land, to Barleigh Ranch Way (which is a public road). The quarry site is accessed directly off Barleigh Ranch Way.

Italia Road connects through to Seaham in the west, and provides access to the Boral Seaham Quarry. The right of carriageway access road provides access from Italia Road through to Barleigh Ranch Way, that enables access to a number of adjacent recreational land users, and also provides access to the existing Port Stephens Gardenland landscape supplies facility.

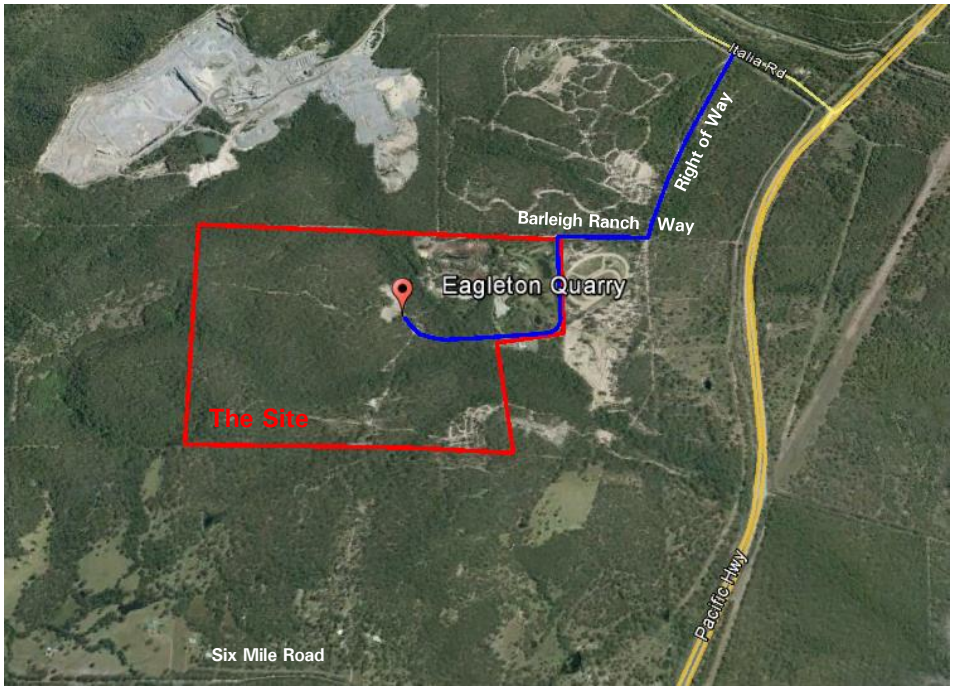

Figure 2 – Road Access Plan
Source: Google Maps (modified by JBA)

1.7 Land Ownership and Legal Description

The Eagleton Quarry site is located on part of Lot 2 DP 1108702, located on Barleigh Ranch Way, Eagleton. Lot 2 is split north-south by Seven Mile Creek. The quarry site forms the part of Lot 2 to the west of the creek.

The land is owned by the owner and operator of the existing Port Stephens Gardenland landscape supplies business which operates on the eastern part of Lot 2 DP 1108702.

The right of carriageway upon which access to the proposed Eagleton Quarry site relies is located on private land legally described as Lot 2 DP 1158962 and Lot 1 DP 245116.

It is highlighted that the right of carriageway as shown in DP 115227 is not in the same location as the existing gravel road used by landowners for access to Barleigh Ranch Way. Approximately half of the existing gravel road is located 35m to the east of the formal right of way. The formal right of carriageway was in use and regularly maintained until 1994, when the current formed road (partially outside of the easement) was constructed. Revised road infrastructure plans provided at **Appendix N** show the respective locations of the existing right of carriageway and the proposed private road.

Access to the proposed Eagleton Quarry will be via the formal right of carriageway located within the existing easement and will not involve road construction works over and above normal maintenance and management that was ongoing from its establishment until to 1994 (when the more direct gravel road was formed).

1.8 Surrounding Development

Existing Development at the Site

The property (Lot 2 DP 1108702) is currently occupied by the Port Stephens Gardenland landscape supplies business and associated dwelling, which is situated in the north-eastern corner of the site. The Port Stephens Gardenland landscape supplies business relies on the same right of carriageway across Lot 2 DP 1158962 and Lot 1 DP 245116 to Italia Road.

The Gardenland facility is subject of development application 16-2012-630-1 for which consent was granted by the Land and Environment Court on 15 March 2017. Condition 4 of this consent specifically requires the right of carriageway to be relocated, by registration of a new right of carriageway over the existing unsealed road. The new right of carriageway is required to benefit all existing properties that gain access over the existing unsealed road – which would include the proposed Eagleton Quarry.

The registration of the new right of carriageway as required under the development consent granted for DA 16-2012-630-1 would resolve the current inconsistency between the location of the right of carriageway and the location of the existing unsealed road. Irrespective of this Eagleton Rock would access the site by a road located within the right of carriageway as it is registered at the time of operations whether in its current location, or in its new location pursuant to DA 16-2012-630-1.

Surrounding Sensitive Residential Properties

The nearest residential dwelling is located adjacent to the Port Stephens Gardenland landscape supplies operation which is a manager's resident for the landscaping supplies business. The owners and occupiers of this dwelling are supportive of the Eagleton Quarry proposal and have a negotiated agreement in place with respect to the potential for noise, dust, vibration and overpressure impacts. The next nearest residential dwellings are located approximately 1km to the south of the site on Six Mile Road.

There is a single residential dwelling located to the northeast of the site, located on Italia Road between the intersections with the Pacific Highway and the right of carriageway. This dwelling is approximately 1.8 km away from the quarry site but only approximately 400m from the Pacific Highway. The nearest dwelling to the west is approximately 2km away. The location of neighbouring land uses and closest sensitive receivers are shown in **Figure 3**.

Eagleton Ridge Respite Centre is located at 100 Six Mile Road, immediately south of the proposed quarry site, providing respite services and accommodation. The centre provides shared and private accommodation, as well as day visit activities, and is a Registered Provider with the National Disability Insurance Scheme. The accommodation and activity buildings at the centre are located approximately 1km south of the proposed quarry's development extent, as shown in **Figure 3**.

Figure 3 – Surrounding Land Uses

Source: NearMap (modified by JBA)

Surrounding Commercial / Industrial / Extractive Development

Boral's Seaham quarry is located on Lot C DP1645505 and Lot 66 DP753200 immediately to the north and northwest, and is clearly visible in the top left corner of **Figure 3**. Boral has a development consent to operate the Seaham Quarry until 2035. Cumulative impacts associated with the co-location of the two quarries has therefore been undertaken to 2035. Any extension of quarrying by Boral at the Seaham Quarry would need to be subject of a development application, and Boral would need to address project and cumulative impacts that continue beyond this date as part of the assessment of that application.

The site is also surrounded by a number existing recreational uses including:

- The MG Car Club located at Lot 1 DP 245116 and Lot 2 DP 1158962 to the northeast of the proposed Eagleton Quarry. The MG Car Club currently takes its access from the same right of carriageway as the Eagleton Quarry is proposed to.
- Italia Circuit: A Development Application (16-2011-564-3) was approved by Port Stephens Council in October 2013 (and subsequently modified in January 2014 and July 2015) for the Circuit Italia motor racing facility, which is approved for race meetings and Supersprint and Hillclimb events on weekends, and for general track use 9am-5pm 7-days per week. The Circuit Italia motor racing facility is located on Lot 1 DP 245116 and Lot 2 DP 1158962, which contain the right of carriageway that benefits the site of the proposed Eagleton Quarry. The approved Circuit Italia includes a new intersection to provide access directly from Italia Road.
- Hunter Valley Paintball is located at Lot 1 DP 1108702 to the southeast of the proposed quarry, and immediately south of the existing landscape supplies

operation. Hunter Valley Paintball also relies on the right of carriageway for access.

- Hunter MCC Raceway and MX Central are located at Lot 481 DP 611651 to the east of the site, between the landscape supplies operation and the Pacific Highway. Hunter MCC Raceway and MX Central also rely on the right of carriageway for access.

Future Residential Area of Kings Hill

The northern part of the future Kings Hill residential area, as shown in **Figure 3**, is located on the southern side of Six Mile Road. It is predicted to result in significant residential intensification, with up to 11,000 new residents envisaged in the area. The development of the residential area will require the construction of a new Kings Hill Interchange (grade-separated) on the Pacific Highway.

At its most northerly extent the future R1 zoned residential area is limited to land within approximately 500m of the Pacific Highway, with the residual land zoned for large lot residential and environmental living, which is more similar to the existing rural residential land use context on the northern side of Six Mile Road. See the Land Use Plan in **Appendix A** for the extent of the R1 General Residential Zone for the Kings Hill Estate.

At its closest, the future Kings Hill residential area will be located approximately 900m south of the site. However, the positioning of the quarry within the site means that any activities associated with the quarry will be over 1.2km from the release area.

1.9 Objectives of the Project

The objectives of the proposed Eagleton Quarry are to establish a business providing high quality crushed rock and aggregate to meet ongoing construction demand in the Hunter, Central Coast and Sydney regions, in an efficient and environmentally sensitive manner without generating unreasonable impacts on the surrounding environment. The project seeks to provide up 20 full time equivalent jobs during the 30 years of the quarry.

1.10 Structure of this Report

The RTS includes the following sections:

- Section 1 Introduction: Provides a summary of the proposal, the site context, the statutory approval process and the structure of the RTS.
- Section 2 Exhibition and Consultation: Provides a description of the consultation which has been undertaken for the project to date.
- Section 3 Overview of Submissions: Provides an analysis of the submissions received during the exhibition of the EIS and identifies key issues raised.
- Section 4 Response to Government Agency Submissions: Provides a response to the key issues received from Government Agencies and responses.
- Section 5 Response to Public Submissions: Provides a summary of the community, community organisation and private organisation submissions received and responses.
- Section 6 Proposal Amendment: Provides a description of the amendments to the proposal.
- Section 7 Further Assessment: Provides an environmental assessment of the amendment to the design with reference to technical specialist addendums where relevant.

- Section 8 Revised Mitigation Measures: Provides a list of revised recommendations and mitigation measures based on the technical studies undertaken.
- Section 9 Conclusion.

Technical studies prepared to support this RTS are appended to this report.

2.0 Exhibition and Consultation

2.1 Activities prior to EIS exhibition

During the preparation of the EIS, a number of consultation activities with key stakeholders took place in order to create an open dialogue.

2.1.1 Consultation with key stakeholders

As part of the Secretary's Environmental Assessment Requirements (SEARs) for the EIS, a number of key public authorities provided comment and requested various inputs be provided as part of the EIS documentation. These authorities included:

- Environmental Protection Authority (EPA);
- Roads and Maritime Services (RMS);
- Department of Industry;
- Department of Primary Industries (divisions of Office of Water, Crown Lands, NSW Fisheries, NSW Agriculture and NSW Forestry);
- Office of Environment and Heritage (OEH);
- NSW Rural Fire Service;
- Hunter Local Land Service;
- Hunter Water; and
- Port Stephens Council.

The requested inputs by those authorities were incorporated into the EIS.

2.1.2 Public Consultation

A community consultation program was also undertaken during 2016, and a detailed Consultation Report is provided in **Appendix R of the EIS**. The focus of consultation was on proximal and potentially impacted landholders such as those adjacent landholders and businesses and near neighbours located in the area along Six Mile Road, Italia Road, Barleigh Ranch Way and Winston Drive. Key issues raised in relation to the proposal were identified and assessed in the EIS.

2.2 Public Exhibition

The EIS was placed on exhibition between 3 February 2017 and 6 March 2017 in accordance with Section 89F(1)(a) of the EP&A Act. Hard copies of the EIS were available for public review and comment at a number of locations.

The EIS (and associated supporting technical studies) was made available to the public in electronic format on the DP&E website (http://majorprojects.planning.nsw.gov.au/index.pl?action= view_job&job_id= 7332) during this time.

On 7 February 2017, a Community Consultation Newsletter was sent by email to respondents of the earlier consultation program in 2016, and was also delivered to the mail boxes of residents in the immediate vicinity of the proposed quarry.

On 21 February 2017, an invitation to attend a community information was sent to respondents of the 2016 consultation program and delivered to mail boxes in the local area. The Information Session was held on 27 February 2017 and

attended by nine people. Three other land holders were consulted in person, phone or over email. The purpose of the consultation was to assist land holders and interested parties better understand the proposed quarry and the information that had been exhibited.

2.3 Post Public Exhibition

Following the receipt of submissions, Boral was contacted to discuss their perceived lack of consultation, and seek information on their operation to ensure that information was adequately considered from a cumulative perspective for this quarry. A portion of the requested information was provided, with notable exceptions relating to copies of the documentation supporting the approvals for the Boral Seaham Quarry (e.g. State of Environmental Effects), remaining resource volumes, the water management plan or traffic management plans.

Eagleton Rock also carried out further consultation with Hunter Water Corporation in relation to revising the Water Management Plan for the site.

Land owners were provided a further newsletter highlighting the changes proposed by the quarry and outcomes of the revised assessments.

3.0 Overview of Submissions

A total of 59 submissions were received during the exhibition of the EIS. These submissions were received from both government agencies and the public. The primary objective of this RTS is to collate, analyse and respond to the submissions received during the exhibition of the EIS.

An overview of the submissions and a summary of the process undertaken to ensure the submissions have been accurately responded to is provided below.

3.1 Government agency submissions

Submissions were received from the following government agencies:

- Hunter Water;
- Environment Protection Authority;
- Port Stephens Council;
- Department of Industry (Resources & Energy)
- Heritage Council;
- Office of Environment and Heritage;
- Roads and Maritime Services;
- Department of Primary Industries; and
- Rural Fire Service.

As outlined above, a total of nine government agencies provided submissions, with the DP&E providing a set of summary comments with the request for a RTS report. Each submission varied in terms of the number and types of issues raised, with some agencies raising more issues than others (dependant on their function and responsibility). Each agency submission was reviewed in detail to identify the key issues.

The agency submissions were then provided to the relevant technical specialists of the project team for consideration and preparation of updated or supplementary assessment reports. Where additional information was required to respond to the submission issue raised, it has been provided within this RTS report.

A detailed summary of the issues raised by the Government agencies and the response to those issue sis provided in **Section 4**.

3.2 Public submissions

A total of 50 submissions were received from individuals, landowners and special interest groups.

The community submissions were reviewed and summarised into key issues, using a reference number assigned to each submission. This served to clearly show which issues raised the most concerns within the community, while also capturing specific issues at a detailed level.

The main issues identified within these submissions were:

- Traffic and transport;
- Water management;
- Noise and vibration (including blasting);

- Air quality and dust;
- Biodiversity;
- Social impacts; and
- Economic impacts;

A breakdown of the key issues raised in public submissions is provided in **Table 1** below. A response to each of the key issues follows in **Section 5**.

It is noted that 20 submissions were received from owners, occupiers or employees of the Eagleton Ridge Respite Centre. Excluding these 20 submissions, the key concerns were traffic (raised by 93% of submissions), water management (79%), noise (86%) and air quality (76%). No other issues were raised in more than 50% of submissions, indicating that these are the key issues to the local community.

Table 1 – Key community comments

Key Issue	No. of community submissions raising issue	% of community submissions raising issue
Noise	42	86%
Air quality and dust	38	78%
Transport and Traffic	33	67%
Social Impacts	32	65%
Water Management	25	51%
Blasting	25	51%
Economic Impacts	25	51%
Biodiversity	19	40%
Aboriginal Cultural Heritage	2	4%
Rehabilitation	1	2%

All of the issues raised by the local community are summarised and responded to in **Section 5**.

4.0 Response to Government Agency Submissions

This section provides a response to the key issues raised in the submissions from Government agencies.

4.1 Department of Planning and Environment

4.1.1 Summary of DPE Issues

The DP&E requested a Response to Submissions (RTS) report be prepared to outline the proponent's responses to submissions received during the exhibition period. Additionally, the DP&E requested further information on several topics, including:

- Traffic and transport: further analysis is required in relation to the safety of the Italia Road / Pacific Highway intersection, with particular reference to:
  - The 2026 SIDRA modelled impacts and the likelihood of Boral's Seaham Quarry operating beyond 2026.
  - Further assessment of the adequacy of sight distances and the potential need for upgrading the intersection.
- Water management: The Department requested specific responses to key issues raised by Port Stephens Council, Hunter Water Corporation, and the EPA. With consideration of the community concern identified in submissions, the Department requested further evidence that the water management system was sufficient to store water without spillage up to and including a 1:500 year rainfall event.
- Groundwater: The Department requested clarification regarding drawdown predictions in relation to the project boundary and property/site boundaries.
- Noise: The Department requested the following matters be responded to:
  - Operational noise issues raised by the community, with particular consideration of the Eagleton Ridge Respite Centre and the future Kings Hill Estate residential area.
  - Update on the status of the noise and dust agreement with the owner and operator of the Gardenland Landscape Supplies facility.
  - Noise monitoring equipment and locations.
  - Hours for blasting.
  - Noise assessment should be in accordance with the Industrial Noise Policy.
- Air quality and dust: The Department requested that three matters be addressed:
  - Impacts of dust on solar panels and collecting in water tanks.
  - Impacts on the Eagleton Ridge Respite Centre.
  - Assessment of air quality impacts during peak daily production.
- Biodiversity: The Department requests that the issues raised by OEH and Port Stephens Council are specifically responded to.
- Social impacts: The Department requested that the social impact issues raised by Port Stephens Council be addressed, with particular consideration to rural lifestyle and amenity.

- Economic impacts: The Department requested that the economic impact issues raised by Port Stephens Council be addressed, as well as the potential impacts on the Eagleton Ridge Respite Centre.
- Rehabilitation: The Department requested that the rehabilitation issues raised by Port Stephens Council be addressed.
- Aboriginal heritage: The Department requested a response to the OEH issues.
- Waste management: The Department requests a response to issues raised by the EPA in relation to disposal of organic green waste and the reuse / disposal of the rejected tile fragments.
- Other issues:
  - Respond to the Department of Industry issues.
  - Respond to issues raised by Bilbie Dan Solicitors on behalf of Italia Road Holdings Pty Ltd (the owner of the land through which the right of carriageway travels).
  - Respond to issues raised by Boral and Hunter Water Corporation.
  - Provide comments on EPA's recommended conditions of consent.

4.1.2 Response to DPE Issues

In response to the Department's issues:

- Traffic and transport: further analysis of the Italia Road / Pacific Highway intersection has been carried out in consultation with the RMS. The additional analysis retains the truck movements from the Boral Seaham Quarry to 2026, and reconfirms the ongoing safe and efficient operation of the intersection. See Section 5.1 and **Appendix B**.
- Water management: The issues raised by EPA, Hunter Water Corporation and Port Stephens Council are specifically responded to in the corresponding sections below. The community issues in relation to potential impacts to the Grahamstown Dam are addressed in Section 5.2, and further detailed assessment of water resources impacts is provided in Section 7.2 and **Appendix C**. In summary, the water management system has been redesigned to include a total of 265ML of on-site water storage, across three dams, which is sufficient to detain the 500 year ARI storm event in a manner that will be neutral or beneficial to the Grahamstown drinking water catchment.
- Groundwater: A supplementary Groundwater Modelling Clarification has been prepared and appended to the RTS as **Appendix M**. It clarifies the extent of drawdown at the boundary of the site during and after the completion of quarrying, and provides figures illustrating these extents, as well as clarifying the location of the closest existing groundwater bores.
- Noise: In response to the Department's issues:
  - A supplementary Noise Impact Assessment has been prepared by Spectrum Acoustics, and is provided in **Appendix D**. The supplementary Noise Impact Assessment specifically includes the Eagleton Ridge Respite Centre and the future Kings Hill Estate residential area, and addresses the issues raised by the community – see Section 5.3.
  - A agreement with the owner and operator of the Gardenland Landscape Supplies facility in relation to noise, dust, vibration and overpressure impacts has been finalised.
  - Background noise monitoring was conducted using equipment located at near existing residential properties at Italia Road and Six Mile Road. The purpose of background noise monitoring is to understand the current noise

characteristics of the locality, which informs the calculation of project specific noise targets. The future location of the noise monitoring equipment for compliance will be agreed with the Department and the EPA prior to the commencement of construction. It is unreasonable to expect that every neighbour would have a noise monitor, but a selection of the nearest neighbours could be provided with compliance noise monitors. With consideration of the EPA's recommended condition 60, Receptors at 16 Italia Road, and numbers 64, 112, and 164 Italia Road have been identified as the most appropriate for annual compliance noise monitoring being representative of the most impacted receiver groups, that includes the two closest receptors.

- Hours for operational blasting associated with winning material will be in accordance with the ANZECC Guidelines, which specify the hours of 9am-5pm Monday to Saturday and no more than one blast per day (not including minor blasts). Further, as requested by the EPA, operational blasting will be limited to 9am-5pm Monday to Friday. At the request of a neighbour, blasting will be carried out as much as practicable between the hours of 12pm to 4pm Monday to Friday.
- Blasting during site establishment and construction phase will also be limited to 9am - 5pm Monday to Friday. During this period up to two (2) blasts per day and no more than four (4) per week will be required for the establishment of dams, roads and the processing area.
- The supplementary Noise Impact Assessment has been prepared in accordance with the Industrial Noise Policy. The activities where assessment under the Interim Construction Noise Guideline is deemed to be appropriate are for the temporary road works required for the construction of the new intersection between the right of carriageway and Italia Road, and for the first six months of quarry establishment when there is less capacity to acoustically screen works from nearby receptors compared to operational activities (e.g. construction of dams outside of the processing area).

- Air quality and dust: A supplementary Air Quality Impact Assessment has been prepared that specifically addresses impacts to the Eagleton Ridge Respite Centre, and assesses dust emissions from peak daily production. It concludes that emissions would result in impacts well below the EPA's criteria for dust and PM10 and would not adversely impact on the operation of solar panels and the adequacy of water collected in tanks.
- Biodiversity. The issues raised by OEH and Port Stephens Council are specifically responded to in the corresponding section below. A detailed response to biodiversity issues is provided in **Appendix E**.
- Social impacts: Further assessment of social impacts is provided in Section 7.6 and **Appendix F**.
- Economic impacts: Further assessment of social impacts is provided in Section 7.7 and **Appendix G**.
- Rehabilitation: Port Stephen Council's issues associated with rehabilitation are related to biodiversity outcomes for the site, and are addressed in Section 7.10 and **Appendix H**.
- Aboriginal heritage: OEH issues are responded to in Section 4.7 and **Appendix I**.
- Waste management: If it cannot be reused on-site, green waste will only be disposed of at a facility suitably licenced to receive it. The tile fragments already stockpiled on-site will be reused where they comply with the EPA's Recovered Aggregate Order 2014 and the Recovered Aggregate Exemption

2014. Rejected tile fragments that do not meet the requirements of the Order will be taken to a waste facility that can lawfully receive them.

- Other issues: Eagleton Rock respond as follows:
  - Department of Industry issues are responded to in Section 4.5.
  - It is acknowledged that the owner of the right of carriageway is Italia Road Holdings Pty Ltd. Italia Road Holdings is not satisfied that the right of carriageway is suitable for the haulage of quarry vehicles and requests that Barleigh Ranch Way be extended to a new grade-separated intersection with the Pacific Highway. Eagleton Rock has investigated this alternative option with the RMS, and it is not viable or feasible at the present time. Eagleton Rock are therefore proposing to use the existing right of carriageway without any road improvements over and above normal road maintenance and management that is implicitly permitted via the imposition of the easement. Eagleton Rock would maintain and manage the road for the life of the quarry.
  - Boral and Hunter Water issues are responded to in Section 4.11 and 4.2 respectively.
  - Comment on the EPA's recommended conditions of consent are provided in Section 4.3.

4.2 Hunter Water

4.2.1 Summary of Hunter Water Issues

Hunter Water considers that:

- That the proponent has not demonstrated a Neutral or Beneficial Effect on water quality, either by operating as a closed system or ensuing that water discharged from the site is of an equal or better quality than currently.
- The proponent has not demonstrated that the proposed water management system is feasible and effective.

Hunter Water has previously accepted a design event standard of a 500-year Annual Recurrence Interval (ARI). The design assessed in the EIS adopted a 100 year ARI, 24-hour duration design storm burst.

Hunter Water requests further information or clarification as follows:

- Justification for why target design criteria for a 'typical catchment' are appropriate for a drinking water catchment.
- A continuous simulation model should be used to size containment storage volumes, in order to more comprehensively determine whether the water management system will operate as a closed system. Modelling provided in the EIS indicates that there would be more than six years where continuous in-pit storage of up to 189 ML of water would be required – which would impact site operations.
- Any discharge must be demonstrated to be of Neutral or Beneficial Effect (i.e. that post-development pollutant loads must be equal or less than current pollutant loads) through an analysis of current pollutant load estimates, maximum expected pollutant load estimates during quarry operations; expected discharge volumes; and water treatment measures.

In relation to meeting the above Hunter Water provide a detailed Review of the Water Assessment by Alluvium, which raised a number of matters relating to the

water management system and assessment of potential water impacts on the Grahamstown Dam:

- Water quality monitoring locations are likely to be influenced by the Boral Quarry and the Port Stephens Gardenland facility and so do not allow for the quarry site contribution to accurately determined.
- Inadequate maintenance of the catch drains, sediment traps, check dams and bunded areas is a key risk.
- The low flow pipes proposed to be incorporated into the buds appear to make them ineffective for controlling more frequent runoff events.
- Runoff from workshop areas and plant washing areas should be isolated and directed away from the dams.
- The 1m high bunds in Extraction Areas A and B could be breached prior to overflow spilling to the central catch drain, resulting in overflow from the extraction areas bypassing the basins and discharging to Seven Mile Creek.
- Calculated event-based runoff volumes are for storm bursts only and do not represent the entire runoff volume from the event. The runoff volume from a 100 year ARI 24-hour event can also occur from more frequent longer duration storm events (e.g. 20 year ARI 48-hour event). Water storages sized based on a discrete storm event can therefore overflow more frequently than designed.

4.2.2 Response to Hunter Water Issues

The Water Management System has been revised and a new Water Resources Assessment report has been prepared, provided at **Appendix C**. The revised Water Management System is described in more detail in Section 6, and the new Water Resources report (**Appendix C**) is summarised in Section 7.2.

The redesigned water management plan provides for the controlled release of treated water, and reduces the risk of uncontrolled discharges. Most of the site runoff will still be retained on site, for operational purposes, with only a small proportion of annual runoff volumes to be treated and discharged when necessary to manage dam water levels so that available storage is replenished following extended wet weather.

The redesigned water management plan includes a total of 265ML of on-site water storage, across three dams and in pit sumps, which is sufficient to detain the 500 year 24 hour and 500 year 72 hour rainfall events, in a manner that will have a Neutral or Beneficial Effect on the Grahamstown drinking water catchment.

This revised water management strategy was subject of further consultation with Hunter Water Corporation. Hunter Water Corporation was provided the opportunity to review the Revised Water Assessment, and made only minor comments and clarifications in relation to the report which has been accordingly amended and is now attached at **Appendix C**.

4.3 Environmental Protection Authority

4.3.1 Summary of EPA Issues

The EPA has issued recommended conditions of consent for the proposal, with the following key matters specified for inclusion in the Environment Protection Licence:

- Air Quality: The EPA would require ambient air quality monitoring for the development.
- Noise:

- The Noise Impact Assessment (NIA) does not specifically assess the impacts on the potential future residential area of Kings Hill.
- The quarry will need to include all reasonable and feasible noise mitigation measures set out in the NIA (including noise barriers).
- The EPA would require appropriate noise, blast and meteorological monitoring to be established.
- EPA recommends that blasting hours should be limited to 9am-5pm Monday to Friday.
- The Industrial Noise Policy should be used to determine the appropriate amenity criteria for the project.

- Waste:
  - Organic and green waste can only be taken to the adjacent Port Stephens Gardenland Facility once all the necessary consents, approvals, licences and obtained for that facility.
  - Reuse of the existing waste tiles should be undertaken in accordance with the Recovered Aggregate Order 2014 and the Recovered Aggregate Exemption 2014. Waste tiles that do not meet the requirements of the Order should be taken to a facility that can lawfully receive that waste. The EPA does not recommend approval for the receipt of waste at the premises.
- Surface water management:
  - Adequate capacity should be maintained in the surface water dams to capture the design rainfall events and a level or volume indicator should be installed on the dams.
  - An emergency overflow into Seven Mile Creek should be installed for rainfall in excess of the water management design criteria. Water quality and volume should be monitored daily during any discharge.
  - The EPA would require monitoring of water quality (upstream and downstream), rainfall, water usage, dam volumes, and discharges, and review of water balances and water management measures.
  - The on-site application via spray irrigation of treated sewage has not been assessed.

4.3.2 Response to EPA Issues

Eagleton Rock accepts all of the recommendations of the EPA, subject to the amendments made to the design of the quarry in response to submissions and associated revision of the assessment reports (e.g. proposed Conditions 39 and 60 – a supplementary Noise Impact Assessment has been prepared which amends the noise mitigation measures required and proposed monitoring receptors, and proposed Condition 22 – the design rainfall event has been revised).

In response to the matters raised in relation to the NIA, a supplementary Noise Impact Assessment is provided in **Appendix D**, which includes consideration of the INP Amenity Criteria, and sets out additional measures taken to further reduce noise impacts to the nearest receptors.

If on-site application via spray irrigation of treated sewage is required, then that would be subject to further assessment and approval. Until that time, sewage would be managed via pump-out and off-site disposal by a suitably licenced contractor.

4.4 Port Stephens Council

4.4.1 Summary of Council's Issues

Council raised the following issues:

- Environment and ecology:
  - There is inadequate information on the density and location of hollow-bearing trees. It is also noted that important habitat for the Brushtailed Phascogale is known within Kings Hill, located to the south of the proposed development. Accordingly, potential cumulative impacts should be assessed.
  - There is inadequate information provided in relation to koala habitat. Additional survey effort is required, and a new koala habitat map should be prepared. The importance of the Koala habitat to be lost should be assessed with consideration of the movement corridor in the south-eastern corner of the site. The project should be assessed against the objectives of the Port Stephens Comprehensive Koala Plan of Management (CKPoM) and SEPP44, and consideration of a referral should apply the *EPBC Act Referral Guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and Australian Capital Territory*).
  - Aquatic ecology: The third-order stream (Seven Mile Creek?) flows through a mapped wetland east of the Pacific Highway before entering Grahamstown Dam. The Dam is also mapped as key fish habitat under the Fisheries Management Act 1994. An aquatic ecology survey should be undertaken to establish a baseline which can be used as part of an aquatic monitoring program.
  - The EIS has not quantified the extent of riparian aquatic habitat required to be removed for the bridge. This is linked to Groundwater Dependent Ecosystems, and needs to be subject of further assessment, including to determine appropriate riparian buffers.
  - The potential impacts to north-south fauna corridors have not been adequately identified in the event that the neighbouring site to the west is developed.
  - The off-site offsets required should be obtained prior to development consent being issued.
  - Further details are requested on how rehabilitation objectives will be achieved, in particular in relation to how the final landform will fit into the surrounding landscape including linkages to existing waterways and fauna movement corridors.
- Traffic, road works and parking:
  - All haulage should be via the Pacific Highway, and no haulage should travel west on Italia Road.
  - Street lighting should be provided at the Italia Road / Pacific highway intersection. A left-turn acceleration lane should also be provided.
  - Works to upgrade the Italia Road / right-of-way intersection should be carried out in accordance with Council's specifications and subject of an approval under Section 138 of the Roads Act 1993.
  - Council recommends that a condition of consent be applied to relocate the easement to reflect the actual location of the right-of-way.

- A Traffic Management Plan should be prepared that sets out haulage routes, driver behaviour, incident management, fatigue and access road maintenance requirements.

- Drainage and Stormwater: The development should be designed to contain by on-site detention a 1:500 year ARI rainfall event, in order to protect the drinking water catchment. A Stormwater Drainage Plan should be prepared that demonstrates stormwater infrastructure is designed to accommodate this design event. A Maintenance Plan should be prepared that sets out the relevant maintenance requirements for the life of the quarry.
- Further assessment should be required in relation to social and economic issues, as follows:
  - Impact of the development on surrounding non-related businesses (including tourist and recreation based land uses), and on land values.
  - Assessment of social impacts including identification of relevant communities of interest, cumulative social impacts, and implications of those impacts.
  - Assessment of the implications for the future residents of the Kings Hill Urban Release Area.
- The on-site application via spray irrigation of treated sewage should be subject of a comprehensive wastewater assessment to adequately inform the type of on-site sewage management system that is best suited to the site. Approval under Section 68 of the Local Government Act 1993 is required for on-site sewage management.
- Potable water should be supplied to the site in accordance with the requirements of the Public Health Act 2010.
- There are inconsistences between the Traffic Impact Assessment and the EIS in relation to hours of operation and anticipated daily truck movements.
- Haulage contributions should be levied pursuant to Council Section 94A Contributions Plan, being a rate of $0.04 per tonne for the section of Italia Road between the Pacific Highway and the tight-of-way.

4.4.2 Responses to Council's Issues

Environment and Ecology

A revised Biodiversity Assessment Report is provided in **Appendix E**, and an Aquatic Ecology Assessment has been prepared by Marine Pollution Research (see **Appendix L**). In particular:

- Additional field surveys were carried out to assess the density and location of hollow-bearing trees within the study area, and results are shown in Figure 10 of the revised Biodiversity Assessment Report, and the relevant Assessments of Significance (at Appendix 6 of the report) have been updated. The cumulative impact on Brush-tailed Phascogale are provided at Appendix 10 of the revised Biodiversity Assessment Report.
- Further details assessment of Koala habitat against the objectives of the CKPoM is provided at Section 7.5 of this RTS Report. The assessment of Koala impacts in the revised Biodiversity Assessment Report has been adjusted at the request of OEH and is considered appropriate. An assessment under the EPBC Act referral guidelines is provided at Appendix 6 of the revised Biodiversity Assessment Report.
- The proposed bridge has been located in an area of previous disturbance and the revised Biodiversity Assessment Report and Aquatic Ecology Assessment provide an assessment of the impacts on riparian vegetation (approximately

2400 m^2 identified as HU798 White Mahogany - Spotted Gum - Grey Myrtle Semi-mesic Shrubby Open Forest), and have included consideration of the required offsets. They conclude that there will be negligible impacts on the riparian corridor and Groundwater Dependent Ecosystems.

- There is no known proposal for the development of the adjacent land to the west, which does not form a part of the proposed development of the Eagleton Quarry. The extraction along the western front of the pit will reduce the corridor of vegetation between the western boundary and the edge of the disturbance boundary. Notwithstanding this, rehabilitation of the western front will commence after year three of the quarry operations to return vegetation to quarry benches in that area, increasing the corridor width. In addition, connectivity will be maintained between the habitats areas to the north of the pit and to the south of the pit via riparian habitat associated with Seven Mile Creek and associated tributaries. Further to this, the bridge design enables the inclusion of a koala underpass under the haul road crossing over Seven Mile Creek to facilitate the safe movement of koalas along the creek corridor. It is also worth noting the frequency of traffic on the haul road (10 per hour) reduces potential for obstructing koala passage, especially as haulage is suspended between 10 pm and 5 am where koala movement is higher than during the day.
- The additional off-set credits will be secured from the open market prior to commencement of construction, subject to approval of the proposed development.
- An updated Rehabilitation and Closure Management Plan has been prepared by SLR and is provided at **Appendix H**, and a summary of the revised approach to quarry closure and rehabilitation is provided in **Section 7.10**.

Traffic and Transport

Eagleton Rock accepts Council's recommendations in relation to local road works on Italia Road (i.e. not including those that relate to the Italia Road / Pacific Highway intersection which is the responsibility of the RMS). It is noted that the left-turn acceleration lane is not warranted because the proposed development traffic will be mostly southbound journeys, involving a right turn from Italia Road, and low traffic volumes means left turn delays are insignificant. There are no other left turn acceleration lanes at other intersections on this section of the Pacific Highway.

It is also highlighted that Eagleton Rock's proposal has been amended to avoid the need to upgrade the existing unsealed private road and rely on the existing cleared and previously used unsealed road that is located within the existing right of carriageway easement without any road improvements over and above normal road maintenance and management that is implicitly permitted via the imposition of the easement. Noting Council's recommendation to relocate the right of carriageway easement to the existing unsealed road, Eagleton Rock would support such a condition, and notes that it reflects a condition imposed on the adjoining Gardenland landscape supplies facility under DA 16-2012-630-1. Eagleton Rock still intends to reach agreement with the landowner to improve (by sealing the surface) and use the existing private access road (that is not located within the current easement), however it is no longer part of the proposed development, and any such works would require further approval, as necessary.

Barleigh Ranch Way will be upgraded, sealed and maintained to meet Council's requirements. The private access road from Italia Road to Barleigh Ranch Way will be maintained and managed pursuant to the rights permitted by the imposition of the right of carriageway easement. Eagleton Rock will undertake all reasonable endeavours to reach agreement with the landowner to enable the right of

carriageway to be upgraded, sealed and maintained to Council's requirements (subject to further approvals, as necessary).

Drainage and Stormwater

Eagleton Rock accepts recommendations in relation to drainage and stormwater. A revised Stormwater Management Plan is provided at **Appendix C**.

Socio-Economic

Further assessment of socio-economic issues is provided at **Section 7.6** of this RTS.

Other Matters

Eagleton Rock accepts Council's recommendations in relation to haulage contributions, and provision of potable water

If on-site application via spray irrigation of treated sewage is required, then that would be subject to further assessment and approval. Until that time, sewage would be managed via pump-out and off-site disposal by a suitably licenced contractor. The pump out system can be positioned over 100m from both Seven Mile Creek and Dam 1B, and is otherwise fully contained within the water management system.

To clarify the identified inconsistencies:

- Anticipated daily trucks movements are estimated as being up to 20 per hour (10 empty in and 10 laden out) during the 17-hour operational period (i.e. up to 170 laden trucks dispatched per day). This has formed the basis of the assessment, although it is noted that it is a conservative estimate of the maximum likely number of trucks in any 1-hour period, and the quarry would not be able to generate trucks at this rate every hour of every day. With consideration of the annual production limit of 600,000 tonnes per year, average truck movements would be closer to 5 per hour, which reflects a more usual quantity of dispatched trucks on any given hour and any given day during operations.
- Hours of operation are as follows:
  - Processing and extraction activities 7:00am – 6:00 pm Monday to Friday and 7:00am to 4:00pm Saturdays.
  - Scheduled maintenance generally limited to processing hours.
  - Sales activities (i.e. handling and loading of processed materials) 5:00am to 10pm Monday to Friday and 5am-4pm Saturdays.

4.5 Department of Industry (Resources & Energy)

4.5.1 Summary of DOI Issues

The Department of Industry considers that the resource size of approximately 10 million tonnes has not been adequately demonstrated. The Department of Industry requests further clarification of the total resource size for each rock type, and further details of the methods used to assess the size of the resource. Quarry design and staging cross-sections should be provided to demonstrate the size of the resource proposed to be extracted.

The Department of Industry requests that Eagleton Rock be required to provide annual production data.

4.5.2 Response to DOI Issues

Engenicom was engaged to utilise Vulcan mine planning software to estimate the total volume of the resource, based on a bench spacing of 12m, with 12.5m wide benches and excavation down to RL 45 m AHD. The total volume of the resource was calculated at 5.37 million cubic metres or approximately 12.9 million tonnes.

Appendix F of the EIS provided a preliminary resource assessment of the proposed quarry, building on studies of the site by Douglas Partners, URS and Geochempet Services. The assessment determined that the quarry was composed of predominantly three rock types, however, current geological mapping of the site is insufficient to accurately model the volumetric distribution of the rock types observed on the site. Based on the surface geology the distribution is roughly estimated to be as follows:

- Conglomerate. Occurring primarily on the eastern and lower side of the quarry is expected to comprise approximately 35 % of the resource.
- Rhyolite. Occurring on the western and highest portion of the site is expected to comprise approximately 25 % of the resource.
- Rhyodacite. Occurring between the conglomerate and rhyolite is expected to comprise approximately 40 % of the resource.

Ignimbrite outcrop was also observed in the quarry area but does not appear to be a primary rock type. Ignimbrite is the primary rock type at the neighbouring Boral quarry.

Eagleton Rock commits to providing annual production data to the Department of Industry, and would accept a condition of consent to this effect.

4.6 Heritage Council

4.6.1 Summary of Heritage Council Issues

The EIS documents provided do not include a thorough assessment of potential impacts to historic heritage or historical archaeology. A more comprehensive assessment of historical heritage should be provided that considers the historical context of the land.

4.6.2 Response to Heritage Council Issues

A Heritage Report is provided at **Appendix J**.

4.7 Office of Environment and Heritage

4.7.1 Summary of OEH Issues

OEH has assessed the proposal in relation to threatened species and biodiversity, Aboriginal cultural heritage and flooding / floodplain management.

No issues were raised by the OEH in relation to flooding / floodplain management.

OEH considers that the assessment correctly complies with the Framework for Biodiversity Assessment, but identified the following minor issues with the Biodiversity Assessment Report.

- OEH recommends that the third order stream in the BioBank area be assigned to PCT 1584 (HU798) and the BioBanking Assessment Methodology credit calculator be re-run to reflect this change and determine the revised biodiversity credit yields.

- OEH request that justification be provided as to why the SAT Test Location in the far south-eastern corner of the site was excluded from the Koala Habitat Area polygon, or the habitat area to be amended to include it. If the Koala habitat area is changed, then the Credit Calculator will need to be re-run and the quantum of biodiversity credits amended accordingly.
- OEH notes that before any variation of the offset rules can be applied the proponent must demonstrate to OEH that they have searched the 'credits available' register and lodged a 'credits wanted' expression of interest on the BioBank webpage for a period of at least 6 months.

The OEH identified the following issues in relation to the assessment of Aboriginal cultural heritage:

- The assessment does not comply with the DEECCW Guide to Investigating, Assessing, and Reporting on Aboriginal Cultural Heritage in NSW.
- The Indigenous Archaeological Due Diligence Assessment Report should be amended to clarify that an Aboriginal Heritage Impact Permit is not required for impacts to Aboriginal objects or Places for SSD projects.
- Consultation with Aboriginal stakeholders is not adequate and a revise consultation process should be undertaken in accordance with the DECCW guideline Aboriginal Cultural Heritage Consultation Requirements for Proponents.
- Identified areas of Potential Archaeological Deposit should be investigated in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW and subject to consultation with the Aboriginal community.
- Further surveys and assessment should be provided as necessary to determine Aboriginal cultural and scientific significance.

4.7.2 Response to OEH Issues

Biodiversity

The requested updates to the BioBanking Assessment Methodology credit calculator in relation to the vegetation class along the third order stream and the boundary of the included Koala habitat areas have been made as requested. An updated Biodiversity Assessment Report is provided in **Appendix E**.

The proponent acknowledges that all reasonable steps to secure matching ecosystem credits should be taken and no variation of the offset rules or supplementary measures are sought for the proposed onsite offset or the remaining ecosystem and species credits required. The revised Biodiversity Offset Strategy (**Appendix E**) details the results of recent searches of the 'credits wanted' register, which indicate that there are suitable ecosystem credits on the market to meet the residual ecosystem requirements not addressed by the proposed BioBank site. There are currently no Southern Myotis species credits on the 'credits available' register; and an expression of interest of "credits wanted" for the shortfall of Southern Myotis credits was lodged in July 2017.

Aboriginal Heritage

An updated Aboriginal Cultural Heritage Impact Assessment report is provided in **Appendix I**. The Aboriginal Cultural Heritage Assessment has been prepared in accordance with relevant OEH/DECCW guidelines, including for consultation with Aboriginal stakeholders and to determine Aboriginal cultural and scientific significance. It identifies that areas of Potential Archaeological Deposit will not be impacted.

4.8 Roads and Maritime Services

4.8.1 Summary of RMS Issues

Roads and Maritime objects to the proposed development as it is considered the proposal will have an adverse impact on the safety and efficiency of the nearby classified (State) road network, specifically, the following aspects of the intersection of Pacific Highway and Italia Road.

- Right-turn movement by heavy vehicles, including the slow acceleration times from start to clear northbound carriageway; and
- Insufficient acceptable gaps in northbound traffic stream.

The proposed increase in heavy vehicle movement generated by the subject development will result in additional demand on the intersection, exacerbating the potential safety risk and the potential crash occurrence and severity.

In particular the traffic modelling should use 'large trucks', being a 38-tonne vehicle, which would result in longer delays up to 1 hour and a higher 'gap acceptance' threshold. Longer delays would increase risky behaviour by drivers who may accept shorter gaps in the traffic stream, increasing the likelihood of crash occurrence and severity. It is further noted that as background growth on the highway occurs fewer acceptable gaps are expected to be available further exacerbating the risk.

The RMS therefore concludes that the Pacific Highway / Italia Road intersection is required to be upgraded in order to adequately address the risks associated with the traffic generated by the proposed Eagleton Quarry.

4.8.2 Response to RMS Issues

An updated Traffic Impact Assessment has been prepared by GHD and is provided in **Appendix B**. The updated Traffic Impact Assessment involved additional traffic surveys at the intersection, and further testing of the traffic model assumptions based on the RMS issues.

Additional truck delay surveys were carried out that confirmed actual current truck delays were consistent the GHD modelled delays, and that intersection clearance times for trucks was consistent with the gap acceptance thresholds used as an input into the GHD modelling.

In relation to the specific model input parameter issues raised by the RMS:

- Sensitivity testing was carried out by using "large trucks" instead of "standard heavy vehicles" in the SIDRA traffic modelling software settings. This change results in substantially higher delays and queuing affects.
- An increase of 3% background traffic has been attributed to the Italia Road approach to the Pacific Highway. This has little impact on analysis outputs.
- Specific lane allocations have been provided for right turning and left turning vehicles in Italia Road, as there is ample room for separation of the two movements resulting in modelled delays of current traffic conditions in order of 1.5 minutes.

The survey results for the current operation of the existing intersection show delays generally in accordance with the modelling results using the original input parameters. Average delays and intersection clearance times are also consistent with previous surveys on which the modelling assumptions were based. As such, the modelling results based on the use of "standard heavy vehicles" as a model

input parameter are the most appropriate for assessment of the Eagleton quarry development.

4.9 Department of Primary Industries

4.9.1 Summary of DPI Issues

DPI has issued recommended conditions of consent for the proposal, as follows:

- All works on waterfront land should be carried out in accordance with the Guidelines for Controlled Activities on Waterfront Land.
- The following management plans should be prepared in consultation with DPI Water:
  - Water Management Plan, including a Surface Water Management Plan, a Groundwater Management Plan and Sediment and Erosion Control Plans.
  - Landform and Rehabilitation Plan.
  - Biodiversity Management Plan/Flora and Fauna Management Plan.
- All necessary entitlements and licensing for water take must be obtained prior to commencement of take.

4.9.2 Response to DPI Issues

Eagleton Rock accepts all of the recommendations of the DPI.

4.10 Rural Fire Service

4.10.1 Summary of RFS Issues

The RFS made the following recommendations:

- The proposal should comply with the Planning for Bushfire Protection Guidelines including access arrangements, emergency evacuation arrangements, and that the asset protection zone around the administration building be managed as an inner protection area.
- Works which may lead to bushfire ignition (e.g. blasting or refuelling) should only occur on total fire ban days following consultation with approval from the RFS.
- Proposed vegetation rehabilitation should be done in such a way as to ensure it will not result in an increased bush fire management and maintenance risk to adjoining land holders.

4.10.2 Response to RFS Issues

Eagleton Rock accepts all of the recommendations of the RFS.

4.11 Boral

4.11.1 Summary of Boral Issues

Boral provided a detailed submission, which raised a number of technical assessment issues. These are summarised below.

Planning Assessment

Boral raised the following issues in relation to assessment against environmental planning instruments:

- Mining SEPP: The future residential area of Kings Hill appears to be located less than 1km away. The EIS does not consider noise and air quality impacts in this area.
- Port Stephens LEP: The EIS does not specifically provide an assessment of the proposed quarry against clause 7.8 of the LEP, relating to water catchment for Grahamstown Dam.
- Infrastructure SEPP: The EIS does not provide an assessment against *State Environmental Planning Policy (Infrastructure) 2007*.

Traffic and Transport

Boral submit that the TIA does not rely on 3-days of traffic counts (as requested by the RMS), does not reflect the traffic capacity and safety concerns of the Italia Road / Pacific Highway intersection, does not include details of the necessary infrastructure upgrades for this intersection, and does not consider the safe access requirements for public transport users, pedestrians or cyclists, in accordance with the Guide to Traffic Generating Developments.

Boral disagrees with the conclusions of the TIA, suggesting that the traffic modelling and safety analysis indicate that the quarry would have an adverse impact on the road network. In particular, Boral submits that the intersection visibility is barely adequate to meet the minimum intersection traffic safety standard currently, and that the intersection effectively has only a limited future life before the prevailing background traffic growth in the Pacific Highway through traffic will make the future traffic delays (and traffic safety conditions) unacceptable for local traffic using the intersection. This limited future life will be significantly reduced by the proposed additional development traffic using the intersection.

Boral notes that traffic modelling is based on the current give-way-sign arrangement, as opposed to the stop-sign arrangement as recommended in the TIA.

Boral requests that the TIA be amended to include traffic modelling that takes account of Boral traffic beyond 2026, is based on additional traffic counts pursuant to RMS requirements, and complies with RMS guidelines. The amended TIA should confirm the safety and capacity of the intersection or propose intersection upgrades to mitigate impacts.

Cultural Heritage

The EIS is supported by a Due Diligence Assessment prepared in 2012, and therefore cannot respond to the SEARs issues in 2015. Particularly, Boral raised the following issues with the Due Diligence Assessment:

- The survey effort is not adequately recorded.
- It appears to show the incorrect project area and relies on out of date aerial photography.
- It has not identified potential sites with archaeological potential on crests and ridges beyond a distance of 50 m from the 2nd and 3rd order streams.
- It does not include targeted archaeological test excavations.
- It has allocated potential for Aboriginal heritage values inconsistently between 2nd order streams.
- It has not demonstrated that adequate consultation with Aboriginal stakeholders has been carried out.

- Does not include adequate mitigation measures in relation to protocols for contractor inductions or procedures for any unexpected finds during construction or operation.

Boral request that an Aboriginal Cultural Heritage Assessment (ACHA) be prepared in accordance with OEH guidelines, including re-survey of the site and archaeological test excavations. The ACHA should include an unexpected finds protocol and contractor induction process, as well as an Aboriginal cultural heritage archaeological management plan (if required).

Assessment of non-Indigenous heritage should include inspection of early maps and plans to determine whether there is any evidence of historical European activity.

Air Quality

Boral raised the following issues in relation to the assessment of air quality impacts in the EIS:

- There is inconsistency between the EIS and the appendix as to whether wet suppression technologies will be applied at the processing plant. This should be clarified, and air quality modelling updated if necessary.
- Emissions from on-site diesel fuel combustion should be further quantified, and incorporated into air quality modelling if emissions are significant.
- Mitigation measures should be included in an air quality management plan.

Noise and Blasting

Boral raised the following issues in relation to the assessment of noise and vibration impacts in the EIS:

- There are anomalies in the measured background noise levels – the lower background noise level at the monitoring location closer to the pacific Highway should be explained. There is less than 7 days of valid noise data.
- Blast impact assumptions should be further explained and an assessment provided for impacts to animals and natural features.
- The assessment does not consider the Kings Hill residential release area.
- Vibration has not been assessed in accordance with *Assessing Vibration: a technical guideline*.
- The cumulative noise assessment should be undertaken in accordance with current methodology provided in the INP, and should include noise emissions from Boral's Seaham Quarry.
- Further details of compliance noise monitoring should be provided.

Water Resources

Boral raised the following issues in relation to the assessment of groundwater impacts in the EIS:

- Additional baseline monitoring and hydraulic testing from existing groundwater bores is required to increase confidence in the groundwater model and allow assessment of seasonal variations.
- With no empirical creek level/flow data and comparison against seasonal groundwater levels the assessment of impact to baseflow is inadequate.
- A groundwater contour map showing the baseline local and regional groundwater flow regime should be provided.

Boral raised the following issues in relation to the assessment of surface water impacts in the EIS:

- The in-pit storage concept for stormwater will require inundation of nearly the entire extraction area for extensive periods, impeding quarry operations.
- Quarry evaporation areas and rates are overestimated, and runoff coefficients underestimated, undermining the water balance and resulting in an increased likelihood of discharges.
- The potential risks associated with failure of the embankments retaining in-pit stored water should be carried out.

Ecology

Boral raised the following issues in relation to the assessment of ecological impacts in the EIS:

- A table should be provided cross-referencing the mapping and reporting requirements of the FBA.
- An assessment against the Commonwealth's *EPBC Act Referral Guidelines for the Vulnerable Koala* should be provided.

Economic

Boral raised the following issues in relation to the assessment of economic impacts in the EIS:

- A cost-benefit analysis (CBA) and local effects analysis (LEA) should be provided.
- The Input-Output model provided in the EIS should be further explained and the assumptions and outputs validated.

Other Issues

Boral identified inconsistencies in the EIS and its appended documentation as follows:

- Maps in the EIS, Appendix C and Appendix D show the quarry extent inconsistently.
- Description of the area of vegetation to be cleared ranges from approximately 28.4ha to approximately 30ha, and has not factored in bushfire emergency access route along the Barleigh Ranch Way boundary.
- The handling, reuse and disposal of organic material associated with vegetation clearing are inconsistently addressed in the EIS. Further details of vegetation clearing, topsoil management and final landform should be provided.
- Hours for blasting are inconsistently described and not compliant with the ANZECC Guidelines.
- Boral was not consulted in the preparation of the EIS, and claims that the Seaham Quarry are likely to cease operations by 2026 are inaccurate.

4.11.2 Response to Boral Issues

In response to the issues raised by Boral:

- Planning:
  - Mining SEPP: The closest part of the Kings Hill residential release area is located approximately 900m south of the site. However, the siting of the quarry within the site means that any activities associated with the quarry will be over 1.2km from the release area. Noise and air quality have been assessed for residential receptors along Six Mile Road immediately adjacent

to the Kings Hill area, but closer to the quarry site. If noise, vibration and air quality criteria can be met at these receptors then the criteria will also be met for any future residence within Kings Hill in addition Receptors 4A, B and C have been included in revised assessments to show indicative dwelling sites in Kings Hill.

- Port Stephens LEP: The entire water management strategy for the site is designed to ensure compliance with Hunter Water's 'Neutral or Beneficial Effect' standard for the Grahamstown Dam. Satisfying Hunter Water's requirements will demonstrate that the development is designed, sited and will be managed to avoid any significant adverse impact on water quality and flows.
- Infrastructure SEPP: The only relevant clause of the Infrastructure SEPP relates to traffic generating development. Pursuant to clause 104 of the Infrastructure SEPP the development application should be referred to the RMS for review and comment. The RMS has reviewed and commented on the proposal.

- Traffic: A revised Traffic Impact Assessment has been provided at **Appendix B**. It reconfirms that the Italia Road / Pacific Highway Intersection currently operates efficiently and safely, and will continue to do with the traffic from the proposed Eagleton Quarry.

  It is highlighted that the Italia Road / Pacific Highway intersection was designed to provide safe access to the highway, with known pre-existing heavy vehicle usage associated with the Boral Seaham Quarry – as demonstrated by the current seagull type arrangement, which incorporates a very long (1.3 km) southbound acceleration lane.

  In 2011 Boral successfully sought approval from Port Stephens Council to extend its development consent to increase the life of the Seaham Quarry. Boral has also been granted a modification to its development consent to increase the life of the quarry to 2035, primarily on the premise that there would be no additional traffic generation. This modification was not challenged by RMS and no safety issues were raised at the time in relation to the ongoing use of the intersection by quarry haulage vehicles in the context the background traffic growth on the Pacific Highway.

  The revised Traffic Impact Assessment includes existing quarry haulage movements in the 2026 traffic modelling, although it is not expected that Boral's current haulage rates could continue to that time or beyond.
- Aboriginal Heritage: An ACHA has been prepared and is provided at **Appendix I**. No archaeological test excavations are warranted for the bridge crossing of Seven Mile Creek because it is not located in a Potential Archaeological Deposit.
- European Heritage: A European Heritage Report is provided at Appended XJ.
- Air Quality: A supplement to the Air Quality Impact Assessment report is provided in **Appendix K**. Wet suppression techniques will be used on processing plant, consistent with the assumptions in the air quality modelling. Diesel emissions have been estimated and included in the updated air quality modelling.
- Noise and Vibration: A supplementary Noise Impact Assessment is provided at **Appendix D**, which:
  - Includes three new residential receptors as being indicative of the closest future residential receptors in the Kings Hill residential release area. The noise modelling confirms that noise from the quarry would be well below the relevant noise criteria over the life of the quarry within the residential release area.

- Provides a cumulative noise assessment that accounts for existing noise sources in the locality, including Boral's Seaham Quarry. It is highlighted that due to the low project noise levels, the project contribution to cumulative noise levels will not be significant, and will not cause an exceedance of the recommended daytime amenity level of 50 dB(A) in the Industrial Noise Policy.

In response to other noise and vibration issues raised by Boral:

- Measured background levels were conducted using accepted methods and calibrated equipment in 2012 and are considered adequate for the assessment. With typical increases in traffic and minimal changes in the surrounding land use, the monitoring is therefore likely to have resulted in conservative noise criteria. It was also noted that night time background noise levels were measured higher at the location more distant from the highway. This apparent anomaly is likely explained by the increased consistency of noise (i.e. longer duration at lower intensity) from highway vehicles at locations further from the highway, as opposed to the shorter duration but higher intensity of noise received by locations closer to the noise source.
- The EPA has accepted the assessment of vibration presented in the EIS, and recommended conditions of consent that include maximum blast overpressure and ground vibration limits, as well as ongoing compliance monitoring requirements. Eagleton Rock accepts these conditions and has not undertaken further assessment of vibration for the RTS.
- Blasting and noise generating activities have the potential to displace native wildlife in the immediate area adjoining these activities, however tolerance of wildlife to noise varies with the animal species and can vary between individuals of the same species, in addition the local area has an existing history of noise generating activities, including blasting from the Boral Seaham Quarry. Ecological receptors will be considered in the preparation in the Blasting and Vibration Management Plan.
- Further details of compliance noise monitoring will be provided in a Noise Monitoring Plan that will be prepared prior to the commencement of construction, in consultation with the local community, and to meet the requirements of the EPA and the DPE.

- Groundwater: The peer review of the Groundwater Assessment determined that it was fit for purpose, and the NSW Office of Water has recommended that any residual groundwater issues be addressed by way of a Groundwater Management Plan. As such, no further groundwater assessment has been provided in response to Boral's issues.
- Surface Water: An updated Water Resources Assessment is provided at **Appendix C**, which documents the revised water management plan, and demonstrates that the quarry can operate within the very strict Neutral or Beneficial Effect requirements of Hunter Water in relation to the protection of the Grahamstown drinking water catchment.
- Ecology: The OEH has reviewed the Biodiversity Assessment Report and accepted its methodology and conclusions, subject to some minor clarifications. These clarifications have been made and are set out in **Appendix E**. Referral to the Commonwealth is not required because although the cleared area is assessed as critical Koala habitat, the impacts of the proposal are unlikely to adversely affect habitat critical to the survival of the species due to the large area of habitat, with similar characteristics, occurring in the locality.
- Economic: A Cost Benefit Analysis and Local Effects Analysis are provided at **Appendix G** and summarised in Section 7.7.

- The RTS addresses the identified inconsistencies as follows:
  - Final development plans are provided at **Appendix A**.
  - Impacted vegetation is approximately 32.0 ha within a total development area of 33.7 ha. Existing access roads have been excluded from the vegetation mapping and as such would remain available to be utilised in the event of an emergency without adverse effects on biodiversity. The provision of suitable management access trails within biodiversity offset sites are necessary components of offset sites, these access trails are likely to be suitable for emergency use.
  - Organic material from vegetation clearing will be stockpiled and reused on-site where possible for reuse in landscaped areas or for site rehabilitation. Excess organic material will be directed to a facility suitably licenced to accept the material. If the adjoining Gardenland facility is approved and licenced then the material will be directed to this facility. Further details of topsoil management and final landform are provided in the updated Closure and Rehabilitation Management Plan (see **Appendix H**) and summarised in Section 7.10).
  - Hours for operational blasting associated with winning material will comply with the ANZECC Guidelines, which specify the hours of 9am-5pm Monday to Saturday and no more than one blast per day (not including minor blasts).As requested by the EPA, operational blasting will be limited to 9am-5pm Monday to Friday.
  - The Traffic Impact Assessment of the Eagleton Quarry has been revised to account for the continuation of the Boral Seaham Quarry to 2026 in the traffic modelling, although it is not expected that Boral's current haulage rates could continue to that time or beyond.
  - The Boral quarry manager was interviewed by project consultation representatives in April 2016, and provided an information sheet on the project. Subsequent emails were sent to the quarry manager on 7/02/2017 and 21/02/2017 providing a copy of the second newsletter and an invitation to the community open day.

    The project team has subsequently consulted with Boral's Senior Planning and Development Manager (NSW/ACT) between April and June culminating in the provision of some requested information being provided to enable Eagleton Rock to better consider Boral Seaham Quarry operations in this RTS. Notable exclusions in information provided related to water and traffic management at the Seaham Quarry and copies of supporting texts (e.g. Statement of Environmental Effects) that formed part of the conditions in Boral's development consent.

5.0 Response to Public Submissions

This chapter provides a response to the key issues raised in the submissions from the public, including special interest groups and private organisations.

5.1 Traffic and transport

Issues Raised

Traffic and transport issues were raised in 34 public submissions (68%). Key traffic issues raised in public submissions include:

- The Italia Road / Pacific Highway Intersection is dangerous and already heavily used by trucks due to the limited visibility and high speeds of through traffic on the highway. The Eagleton Quarry will increase the traffic safety risks and overall delays at this intersection, and will require the intersection to be upgraded.
- Cumulative traffic impact assessment on the operation of the Italia Road intersection with the quarry access road (right-of-way). This intersection is too close to the Pacific Highway, with potential traffic safety risks to Italia Road users (including pedestrians, bicyclists and public transport users) arising from slow moving trucks turning into the quarry access road.
- Wear and tear on Italia Road impacting other road users.
- Increased growth in traffic from other surrounding developments, school buses and an increase of local residents from East Seaham Road and Clarence Town.
- Traffic survey was conducted during school holidays.
- The traffic survey should be conducted during the school holiday period, not during a 'quiet phase'.
- Heavy vehicles should not be permitted to travel west on Italia Road.
- Additional trucks on the highway will lead to impacts on the safety and function of the Six Mile Road / Pacific Highway intersection.

Response to Issues

In response to these issues:

- An updated Traffic Impact Assessment has been carried out by GHD, see **Appendix B**, which confirms that the intersection currently operates safely and efficiently, and will continue to do so with the addition of the Eagleton Quarry traffic.
- The intersection of Italia Road with the quarry access road (right-of-way) will be upgraded with a formed sealed surface and an appropriately designed splay to enable trucks entering the quarry access road to do so more efficiently and safely than the current situation. Access to the existing landscape supplies facility, and other facilities on Barleigh Ranch Way, will also benefit from the improvement of the road infrastructure at this intersection.

  Use of the existing intersection by public transport users, cyclists and pedestrians is effectively negligible. There are no bus routes on Italia Road and there are no bus stops in the vicinity of the intersection. Similarly, there is no regular pedestrian activity in the area, there are no houses or shops nearby and no pedestrians have been observed in any site visit or regular trips to the proposed quarry site. Bicycle activity is limited to highway usage by infrequent long distance riders – there does not appear to any substantive recreational or social cycling on these sections of road.

- As explained in the EIS, Eagleton Rock will contribute to the maintenance or local roads by the payment of a Heavy Vehicle Haulage Fee in accordance with the *Port Stephens Section 94 Development Contributions Plan 2007*.
- Traffic modelling for the project has taken into account the underlying traffic growth along Italia Road. It is highlighted that the immediately surrounding MG Car Club, motorbike track, and raceway facilities are primarily recreational in nature and generate peak traffic on weekends. Quarry operations are unlikely to be at full capacity on Saturdays, with deliveries to construction sites generally ceasing around midday. The departure peak from any Saturday motor racing event will be mid to late afternoon and as such any overlap of traffic is unlikely to be significant.
- Updated traffic survey was carried out on 12 April 2017, which was during the Easter school holiday period.
- It is not proposed for quarry vehicles to travel via the western part of Italia Road, except where making deliveries to those localities.
- The number of trucks on the Pacific Highway, including for the haulage of quarry materials, is likely to occur irrespective of the proposed Eagleton Quarry. The safety and efficiency of the Six Mile Road / Pacific Highway intersection will need to be managed by the RMS to accommodate this growth in Pacific Highway through traffic.

5.2 Water resources

Issues Raised

Water resources issues were raised in 26 public submissions (52%). Key water resources issues raised in public submissions include:

- Impacts to Grahamstown Dam from uncontrolled discharges of potentially contaminated water.
- Any discharge should be required to be treated on site.
- Retention dams should be built to a 500 year ARI storm event.

Response to Issues

In response to these issues:

- The water management plan for the proposed quarry has been redesigned, in consultation with Hunter Water. The redesigned water management plan provides for the controlled release of treated water, and reduces the risk of uncontrolled discharges. Most of the site runoff will still be retained on site, for operational purposes, with only a small proportion of annual runoff volumes to be discharged when necessary to manage dam water levels so that available storage is replenished following extended wet weather.

  An updated Water Assessment has been carried out by SLR, see **Appendix C**, which documents and assesses the redesigned water management plan. The updated Water Assessment includes modelling of stormwater events, and confirms that the quarry can operate in a manner that will ensure a Neutral or Beneficial Effect on the Grahamstown drinking water catchment.
- All discharges will be subject to on-site treatment prior to the discharge to reduce sediments and other pollutants, and to meet appropriate water quality parameters.
- The redesigned water management plan includes a total of 265ML of on-site water storage, across three dams and in-pit storage, which is sufficient to

detain the 500 year ARI storm event, in a manner that will be neutral or beneficial to the Grahamstown drinking water catchment.

5.3 Noise

Issues Raised

Noise and blasting issues were raised in 43 public submissions (86%). Key noise and blasting issues raised in public submissions include:

- Noise impacts from the long working hours proposed – especially the 5am start times which will impact sleep patterns. Early morning noise will especially impact shift workers.
- Exacerbation of noise impacts arising from removing the hill between residential areas and the existing noise sources of Boral Seaham Quarry, the motorbike track, MG Car club circuit, and Circuit Italia Raceway. This will also exacerbate blasting impacts from Boral Seaham Quarry.
- Noise modelling has not taken into account the different heights of benches that noise sources would make with different temperature inversions.
- Noise modelling needs to include rock hammers.
- More details of noise mitigation measures should be provided, as well as details of compliance noise monitoring. Noise monitoring compliance data should be available to the local community.
- Noise should be assessed as operational noise, not construction noise.
- Boral blasts are already loud and intrusive, and occur without warning. Blasts should only occur 12pm-4pm, at most once per day.

Response to Issues

The proposed quarry has been redesigned to reduce noise impacts. The processing plant will be located in the northern part of the quarry, located at an excavated level of RL 45m and behind the existing hill that rises to approximately RL 70m. The existing hill will be retained as an extensive natural acoustic and visual barrier at no less than RL57.5m until the final year of quarrying when barriers will be installed at suitable locations around plant. A supplementary Noise Impact Assessment has been prepared by Spectrum Acoustics, and is provided in **Appendix D**.

In response to the issues listed above:

- Noise modelling of the redesigned processing and sales areas in the supplementary Noise Impact Assessment demonstrates that the day-time quarry activities (including extraction, processing and sales) will be below the project-specific night-time noise criteria. Sales activities alone were shown in the EIS to result in noise impacts at least 7dB less than daytime quarry activities at all residential receivers. As such, sales activities proposed to be carried out at the redesigned quarry between 5am and 7am are not predicted to result in significant noise impacts to any residential receiver.
- The proposed quarry has been redesigned to reduce noise impacts. Revised noise modelling has taken into account the changing topography that will be created by the quarrying activities at Eagleton Quarry. In particular, the existing hill will be retained as an extensive natural acoustic barrier at no less than RL57.5m until the final year of quarrying, by which time the Boral Seaham Quarry will have ceased to operate, noting that the Seaham Quarry is only consented to operate until 2035. The progressive extraction of material at the

Eagleton Quarry would, based on model results, progressively increase the noise level from Boral processing plant by approximately 5 dB over a 17-year period at the four closest residents on Six Mile Road. The current noise level from the Boral Seaham Quarry is unknown but, given the low noise levels generated by the proposed Eagleton Quarry, there is no scope for the predicted noise level from the Eagleton Quarry to add to noise levels from Boral and result in an exceedance of the cumulative noise criterion.

- Noise modelling of the night time and morning shoulder periods has taken into account potential temperature inversion conditions.
- No mobile rock hammers will be used for production purposes at the quarry face, a small hammer will be used from time to time to clear blockages at the primary jaw, the frequency of use of the hammer is expected to be minimal.
- The proposed quarry has been redesigned to significantly reduce noise impacts. Operational management measures to manage noise to the lowest levels possible will be documented in a Noise Management Plan prior to the commencement of construction. This will include details of compliance noise monitoring which will be carried out to the satisfaction of the EPA and the Department of Planning and Environment. Noise monitoring compliance data will be available to the local community.
- The Global Acoustics Acoustic Assessment demonstrates that all of the on-site activities will comply with the operational noise criteria at all residential receivers. A minor 1dB exceedance is predicted at the Italia Road residential receiver if the Italia Road / access road intersection works are assessed against operational noise criteria. Given that these works are located well away from the quarry site and will be temporary in nature and short-term in duration it is considered reasonable to consider them against the construction noise criteria, against which they are compliant.
- Operational blasting for the purposes of winning material will be carried out consistent with the ANZECC Guidelines at a frequency significantly less than once per day, and Eagleton Rock will notify its neighbours ahead of blasts. Blasting will be limited to 9am-5pm Monday to Friday, and as requested in the submissions, where practicable blasts will occur generally between 12pm-4pm Monday to Friday.

5.4 Air quality and dust

Issues Raised

Air quality issues were raised in 39 public submissions (78%). Key air quality issues raised in public submissions include:

- Dust contamination to tank water, as well as requiring additional tank cleaning, roof cleaning, solar panel cleaning, and window cleaning, which should be compensated.
- No health risk assessment has been carried out. Dust and blasting residue could impact asthma sufferers and cause silicosis.
- More details of dust mitigation measures should be provided. Dust mitigation measures should include minimising the machinery that creates dust, and undertaking sales and processing activities in covered areas. Staged shut-down procedures should be provided for adverse weather conditions when air quality criteria would be exceeded. How will dust be controlled during weekend and holidays when the quarry is not operational.
- EIS relies on Williamtown meteorological data.

Response to Issues

Due to the modification to the quarry layout, updated modelling has been completed, and is provided in a supplementary Air Quality Assessment at **Appendix K**. In response to the issues listed above:

- The updated modelling demonstrates that for private receptors on Six Mile Road to the south, including the Eagleton Ridge Respite Centre, the predicted incremental increase in dust deposition from the project is 0.02 to 0.03 g/m2/month, against a criterion of 2 g/m2/month. Given the minor predicted increase in dust dispersion levels from the Project, it is considered that there will be no impact on the operation of solar panels or the need for any additional remediation for water tanks.
- An environmental health risk assessment is usually carried out in circumstances where changes in exposure to contaminates is complex and multi-faceted (such as the simultaneous emission of a number of toxic and carcinogenic air pollutants) and where no guidelines or standards exist. In this case, the only significant air emission is dust, which will not contain toxic and carcinogenic air pollutants. The EPA has specified a standard for the assessment of dust emissions including for the PM_{10} fraction (i.e. dust particulates below 10 micrometers which are more likely to be associated with health-related impacts) and for the overall levels of dust deposition (2 g/m^2/month). The air quality modelling confirms that there are no predicted exceedances of the 24-hour average PM_{10} criterion of 50 $\mu g/m^3$ for either typical or maximum day activities. For the closest residential receivers, the peak emissions on a typical day will result in dust emissions that would result in PM_{10} concentrations less than 5 $\mu g/m^3$.
- The supplementary Air Quality Assessment at **Appendix K**. includes a detailed review of the risks associated with silicosis. In summary, extensive research has indicated that sand quarrying does not result in ambient levels of PM4 crystalline silica that are considered to be detrimental to the general population, and that coal mining operations in the Hunter Valley are at levels where no adverse effects are expected for indefinite exposure. The projected emissions from the proposed Eagleton Quarry are such that any PM4 crystalline silica levels would be significantly below levels that may be of concern.
- An Air Quality Management Plan would be developed prior to operations, in consultation with the EPA, and would include relevant management measures to minimise dust emissions.
- The EPA has reviewed the air quality modelling and has raised no concerns with the use of the Williamtown meteorological data.

5.5 Biodiversity

Issues Raised

Biodiversity issues were raised in 20 public submissions (40%). Key biodiversity issues raised in public submissions include:

- Impacts on local wildlife from the removal of native vegetation at the site. Impacts to other vulnerable flora and fauna species.
- Significant impact on the local koala population.
- The regional Wallaroo/Raymond Terrace wildlife corridor will be unacceptably impacted upon and while it may still perform a role as a corridor and habitat, this role will be clearly diminished by its reduction in size.

- Inadequacy of the fauna surveys. Did they take into account the clearing undertaken on the nearby raceway site? Extensive Koala survey must be conducted over a minimum of twelve months, to fully assess the species on site.
- The noise impacts will also have a damaging effect on wildlife, driving them further into the surrounds, and away from their chosen habitat.
- Further details of off-site offsets requested. The offset area (58.8ha) seems low compared to the impact (30ha).
- The footprint of quarry should be smaller and biodiversity offset areas enlarged to cater for endangered flora and fauna.

Response to Issues

In response to the issues listed above:

- An updated Biodiversity Assessment Report has been prepared to incorporate amendments requested by OEH and Port Stephens Council. The updated Biodiversity Assessment Report complies with the Framework for Biodiversity Assessment, and concludes that the proposal is unlikely to have a significant impact upon any threatened or migratory species.
- Koala were assessed in accordance with SEPP 44 and the Port Stephens Comprehensive Koala Plan or Management. The proposed development aims to minimise the direct disturbance to habitat through design and implementation of clearing protocols, mitigation of indirect impacts on retained habitat through implementation of management plans, and protection of retained habitat through the BioBanking mechanism. The proposed development will maintain vegetated corridors on the eastern part of the site to allow movement of this species to adjoining habitat to the north-east. Vegetation connectivity through the north-east part of the site will be maintained via two corridors (one along Seven Mile Creek and one along the north-east boundary).
- The regional Wallaroo/Raymond Terrace wildlife corridor is a large forested corridor that runs north-south between the Pacific Highway to the east, and cleared grassland/wetlands to the west adjacent to the Williams River. While the proposal would reduce habitat connectivity in the study area, it would not reduce the overall east-west width of this corridor. The proposed development will maintain two vegetated corridors on the eastern part of the site (one along Seven Mile Creek and one along the north-east boundary) to allow fauna movement to adjoining habitat to the north-east.
- OEH and Port Stephens Council have not raised any concerns about the adequacy of threatened species surveys and indicate satisfaction that the presence of threatened species (including Koala) on the site have been accurately identified.
- The tolerance of wildlife to noise varies with the animal species and can vary between individual species of a population. The local area has an existing history of noise generating activities associated with the Boral Quarry, the Pacific Highway, motorcross track, Port Stephens Gardenland and the MG Car Club, as such wildlife within the area are likely to have some adaptation to noise disturbance. Noise and blasting undertaken at the quarry has the potential to result in native wildlife moving away from the area of the noise generating activity. In this regard, noise sources will not occur uniformly across the quarry. The greatest potential for noise generation occurs around the processing area, while extraction noise sources will move around. The proposed amendments in the design will reduce the extent of noise impacts on wildlife adjoining the quarry. Ecological receptors will be considered in the

preparation in the Noise Management Plan and the Blasting and Vibration Management Plan.

- The offset area (58.8ha) only offsets part of the biodiversity impacts under the Framework for Biodiversity Assessment. In addition to the on-site offset area, off-site BioBanking credits will need to be purchased as follows:
  - 1,303 HU 804 ecosystem credits.
  - 127 species [Southern Myotis] credits.
- The proposed development aims to minimise the direct disturbance to habitat through design and implementation of clearing protocols, mitigation of indirect impacts on retained habitat through implementation of management plans, and protection of retained habitat through the BioBanking mechanism. The proposed quarry has been assessed in accordance with the Framework for Biodiversity Assessment, to the satisfaction of the OEH.

5.6 Socio-economic impacts

Issues Raised

Socio-economic issues were raised in 33 public submissions (66%). Key socio-economic issues raised in public submissions include:

- Impacts on the amenity of the Eagleton Ridge Respite Care facility, potentially undermining its viability. If it was no longer able to operate as a result of the amenity impacts then this would affect the visitors to the facility as well as the staff working at the facility. 20 submissions were from employees of the Eagleton Ridge Respite Care facility.
- Rural amenity impacts to surrounding residents, including night time light pollution that can be seen, will be intrusive to rural character of area.
- Negative impacts to property values. Quarry materials are plentiful in the Hunter Region and proposed quarry is not needed as current quarries are not operating to full capacity.

Response to Issues

Further assessment of social impacts has been carried out in **Section 7.6.4** and **Appendix F**. In response to the issues listed above:

- The quarry design has been amended to significantly reduce potential noise impacts. In particular, the existing hill will be retained as an extensive natural acoustic and visual barrier at no less than RL57.5m until the final year of quarrying when barriers will be installed at suitable locations around plant. A roof structure will also be constructed over the secondary and tertiary crusher to reduce noise and dust emissions. Supplementary noise and dust modelling of the redesigned quarry confirms that amenity impacts at the Eagleton Ridge Respite Centre will be well below the criteria established in the EPA's *Industrial Noise Policy* and *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* respectively. There is therefore no reason to believe that the proposed Eagleton Quarry will adversely impact on the ongoing viability of the Eagleton Ridge Respite Centre. Eagleton Rock will liaise with the operators of the Respite Centre to ensure any complaints are addressed in a timely and efficient manner.
- Quarries are a type of land use that are almost exclusively acceptable within a rural environment. The quarry's potential impact on existing rural amenity values have been assessed, particularly in relation to traffic, dust, noise and visual issues. Whilst residual local amenity impacts have been assessed as

complying with the relevant goals and standards, the level of concern within the local community indicates that the proposed quarry would be expected to result in impacts on the local rural character. As described in **Section 7.6.4**, Eagleton Rock will implement a range of mitigation and management measures to minimise residual amenity impacts (i.e. traffic, noise, dust, visual), and ensure that the quarry operates with best practice community engagement and complaints handling procedures, to minimise the impacts on the local rural character experienced by the local community.

In relation to visual amenity impacts, the quarry has been redesigned to retain a portion of the existing hill as an extensive natural acoustic and visual barrier to the processing area at no less than RL57.5m until the final year of quarrying. Rehabilitation of the western benches of the quarry, including tree planting, will be carried out in the early stages of the project. By the time quarry operations have reached an advanced stage, these rehabilitated areas will be well established and will assist in minimising the visual impacts of the quarrying activities from the adjacent landowners.

In relation to night-time lighting impacts, the only night-time activities will be sales (i.e. loading of delivery trucks), which will potentially occur up to 10pm Monday to Friday. No quarrying or processing activities will take place at night time. Sales activities will remain behind the retained hill until the final year of quarrying, and so will be well-screened until that time. Directional night-time lighting in the sales area will be installed to minimise night-time glow effects.

- Property prices are a complex aggregation of a large number of factors. The residual local amenity impacts have been assessed as minimal, and there are a range of management and mitigation measures that would be implemented to further minimise residual impacts. Conversely the beneficial aspects of the development are significant – including the initial capital investment, temporary construction employment, and ongoing permanent employment, that will support income and employment within the local community. It is also noted that property values of land to the southeast of the quarry are likely to be positively affected in the longer term by the future delivery of the Kings Hill residential suburb, which will bring additional services, utilities, opportunities, infrastructure and connections to the local area.
- Analysis of the price for aggregates indicate that prices have been increasing above the inflation rate for the last three years at between 2% and 18% year on year. Projected price increases over 2017 are in the order of 7%. The Australia inflation rate over the last three years has varied from 1 to 2.3%, with producer price increases ranging from 0.5 to 1.9% over the same period. This indicates that demand for aggregate materials is outpacing supply in NSW.

  Sufficient competition between well-located quarries supplying the main markets is required manage price increases. The proposed Eagleton Quarry is well located with respect to likely demand (e.g. Newcastle, Maitland and surrounding areas), and is close to a major arterial route with Sydney, so will contribute to minimising product costs over time.

  Further, with several existing quarries in the Hunter Region currently undertaking or seeking extensions and/or expansions, it is an indicator of both dwindling existing approved supplies and confidence in the market demand. When viewed in the context of an expanding housing and infrastructure demand locally and also within Sydney, the demand is likely to continue despite expansion of existing quarries.

5.7 Other issues

Issues Raised

Other issues raised in public submissions include:

- Community consultation prior to the lodgement of the development application was insufficient.
- Bushfire assessment has not been carried out by a specialist.
- No contamination assessment provided. The property is subject to illegal tile dumping which is currently polluting the catchment, and has been ongoing for 10 years. This needs to be resolved before any development can proceed.
- No cultural heritage has been carried out.
- Rehabilitation should be required at the completion of each bench.
- A rehabilitation fund needs to be setup prior to the operation of the quarry, to guarantee availability of money, to ensure the site can be fully restored to a natural habitat.

Response to Issues

In response to the issues listed above:

- Eagleton Rock has made genuine efforts to consult with the local community in order to understand their issues and concerns, and has made substantive amendments to the proposed quarry in order to avoid, minimise and manage potential impacts.
- Whilst the site is located within bushfire prone land, the proposed quarry is not a type of development that requires a bushfire assessment to be carried out by a specialist. The *Planning for Bush Fire Protection* guideline does not specify any specific provisions that apply to development for extractive industries. The general aims and objectives of the guideline are met in the nature and design of the proposed quarry, which will involve extensive cleared areas around the processing plant and equipment – which will both provide a defendable space during a bushfire event, as well mitigate against the possibility of the site activities causing a bushfire. Specifically, the site will have a minimum 40 m asset protection zone at the office, and in excess of 60m at the workshop, to safely endure a fire. Notwithstanding, in the event of local fires, works are likely to be suspended and staff requested to vacate the premises to avoid being becoming isolated on the property. As requested by the Rural Fire Service, Eagleton Rock will liaise with the Rural Fire Service prior to the commencement of operations to ensure bushfire prevention, management and evacuation procedures are appropriate.
- There is no evidence on the site of any historical contaminating activities occurring. The stockpiling of rejected tile fragments is not contaminating as the tile fragments are inert. The tile fragments will be used, where they comply with the EPA's Recovered Aggregate Order 2014 and the Recovered Aggregate Exemption 2014. Rejected tile fragments that do not meet the requirements of the Order will be taken to a waste facility that can lawfully receive them. Eagleton Rock was not responsible for the stockpiling of the rejected tile fragments at the site, and will not take receipt of any waste at the proposed quarry.
- A Cultural Heritage Assessment has been prepared and is provided in **Appendix J**.

- Each bench will be rehabilitated as it is finished. Rehabilitation of the western benches of the quarry will occur during the early stages of quarrying, and will provide viable wildlife corridors within the first five years. By the time open pit operations have reached an advanced stage, these rehabilitated areas will be well established and the terraces will form part of the final landform.
- Eagleton Rock fully intends to rehabilitate the site in accordance with the Closure and Rehabilitation Management Plan, and expects to be treated in the same way as other quarry operators in relation to guaranteeing future rehabilitation obligations.

6.0 Proposal Amendment

6.1 Proposed Changes

As part of the review and response to submissions process, Eagleton Rock has reviewed the design and layout of the proposed quarry. This has resulted in a change to the design and delivery of quarry works over the life of the quarry, as follows:

- The proposed quarry will commence along the northern side of the ridgeline and progress in a south easterly direction, using the natural topography as an extensive natural acoustic and visual barrier.
- The processing plant has been reconfigured to relocate the loudest equipment over 270 m north at an excavated level of RL 45m in the northern part of the quarry, so that it will be located on the northern side of the existing hill further away and more sheltered from sensitive receivers on Six Mile Road.
- The existing hill will be retained as a barrier to the processing plant and will be excavated to a height of no less than RL 57.5m until the final year of the quarry life, where the material will be removed to establish a better final land form and barriers will be installed at suitable locations around plant to ensure noise criteria are achieved.
- A roof structure will be constructed over the secondary and tertiary crusher within the processing area.
- The internal haul road between the extraction areas and the processing area has been relocated to the northern side of the ridgeline, further away and more shielded from noise receivers on Six Mile Road.
- The revised water management system and changes to the processing area includes an additional dam and bunding that ensures all runoff from the associated quarry buildings, the sewage pump out tank and processing plant to be fully contained onsite and managed consistent with Hunter Water's Neutral or Beneficial Effect requirements for the Grahamstown Dam drinking water catchment.

Revised quarry plans are provided in **Appendix A**.

During construction the following activities will be undertaken:

- The site access road and associated intersections will be completed.
- The processing area will be progressively cut into the hill side.
- Three water containment dams, associated bunds, diversions and the discharge point will be constructed.
- The haulage road along the northern side of the ridgeline into the quarry will be progressively established.
- Construction activities may require up to two blasts per day (but no more than four blasts per week) for the establishment of dams, roads and the processing area. These blasts will typically be smaller and not intended solely for production of extractive material for sale.

The water management plan for the proposed quarry has also been refined to provide for the controlled release of treated water in manner that will ensure a Neutral or Beneficial Effect on the Grahamstown drinking water catchment. Key characteristics of the revised water management plan are as follows:

- The addition of a third dam, to be located in the product processing and stockpiling area, increasing total on-site dam capacity from 57ML to 82ML.
- Excess water will still be stored within the disturbed area of quarrying to significantly increase the overall storage volume ('in-pit sumps'). Total storage on site will be 265ML. Discharge from the in-pit sumps will be better controlled by pumping rather than low flow pipes.
- Controlled release of treated water into Seven Mile Creek, via a licensed discharge point subject to an Environmental Protection Licence (EPL) to be issued by the EPA, and to comply with Hunter Water's 'Neutral of Beneficial Effect' requirements.

Water from the disturbed area of the quarry will be collected in the 'in-pit sump', then pumped to Dam 2, and overflow into Dam 1. Water from the processing / stockpiling area will be collected in Dam 3, then overflow into Dam 1 by gravity pipeline. Dam 1 will contain two compartments (Dam 1A and 1B). When Dam 1A is more than 50% full, water will be pumped into Dam 1B, where it will be treated (by flocculation with Gypsum and Alum), and discharged at the licensed discharge point. Prior to discharge, water will be sampled and tested for compliance with requirements set out in the EPL, and the development consent.

Dams 3 and 1A/1B would be constructed initially, before commencement of quarry operations, and would function as sediment basins during the quarry construction phase. Runoff would be conveyed to Dam 1 by a catch drain along the edge of the haul road, and then an initial length of diversion drain constructed so that water discharges into Dam 1A. Dam 2 would be added within the first 2 years.

Most of the site runoff will be retained on site, for operational purposes, however a small proportion of annual runoff volumes would be treated and discharged when necessary to manage dam water levels so that available storage is replenished following extended wet weather.

The ability to actively manage water storage build-up during extended periods of wet weather through 'controlled releases', ensures that the risk of uncontrolled discharge has been significantly reduced.

Access to the proposed Eagleton Quarry will be via the formal right of carriageway located within the existing easement (rather than the private road located partially outside of the easement) and will not involve road construction works over and above normal maintenance and management that was ongoing from the establishment of the easement until to 1994 (when the more direct private road was formed). Revised road infrastructure plans are provided in **Appendix N**.

7.0 Further Environmental Assessment

This section provides an additional assessment for each of the technical areas affected by the proposed changes. Additional technical specialist studies (as relevant) have been provided.

7.1 Traffic and transport

An updated Traffic Impact Assessment has been prepared by GHD and is provided in **Appendix B**. The updated Traffic Impact Assessment involved additional traffic surveys at the Italia Road / Pacific Highway intersection, and further testing of the traffic model assumptions.

In particular, a truck delay survey was carried out to further understand the operation of the existing intersection and validate the traffic modelling input parameters. The survey recorded arrival, waiting and intersection clearance times for each truck, as well as the time to the next northbound vehicle at the intersection to assess gap acceptance parameters. These additional traffic surveys confirmed that:

- Actual current traffic delays at the intersection are (20 seconds average, 85 seconds maximum) consistent with the GHD modelling of current delays (20 to 24 seconds)
- Actual gap acceptance thresholds for drivers turning right out of Italia Road and crossing the northbound carriageway of the Pacific Highway was 9-14 seconds, which is consistent with the gap acceptance thresholds used as an input into the GHD modelling (7 seconds for light vehicles, 10.5 seconds for heavy vehicles). It is noted that actual time taken by a truck to clear the intersection ranged from 6 to 13 seconds, which is consistent with the modelling inputs.

The results for the current operation of the existing intersection show delays generally in accordance with original GHD modelling, and are considered to validate the conclusions of the Traffic Impact Assessment, which are:

- The development will not have any adverse impact on the surrounding road network or operation of surrounding intersections.
- The Italia Road / Pacific Highway intersection generally meets the required safety criteria and that sight and stopping distance are satisfactory.

For right turning vehicles, the PM peak post development in 2026 shows the largest potential impacts with delays of about 1 minute and queueing of up to 3 vehicles.

Following commentary from the RMS on the assumed modelling parameters, the SIDRA analysis has been revisited to test potential changes to input assumptions. The outcome of this sensitivity testing confirms that the model input parameters used in the EIS result in model outputs that best reflect the current situation (as observed through traffic surveys), and so are the most appropriate input parameters for the assessment.

The updated Traffic Impact Assessment has included future haulage movements from the existing Boral Seaham Quarry, also using Italia Road. However, based on an estimated remaining reserve at the Seaham Quarry of 5 million tonnes (based on the last development consent modification), and the current extraction rate in the range of 700,000 – 800,000 tonnes per annum it is estimated there may be only 7 – 8 years of remaining reserves. Alternatively, if these reserves are to extend to 2026 and beyond (i.e. 2035 as indicated by Boral), current production

rates would need to be substantially reduced. As such, the projected intersection performance results for 2026 are worse than is likely to be the case at that time. If the Boral quarry operations are downsized, actual performance is more likely to be reflected by the existing intersection performance.

7.2 Water management

The revised water management strategy involves the controlled release of treated water into Seven Mile Creek, in order to reduce the risk of uncontrolled discharges occurring. A Revised Water Assessment has been prepared by SLR, to document and assess the revised water management strategy.

This revised water management strategy was subject of further consultation with Hunter Water Corporation. Hunter Water Corporation was provided the opportunity to review the Revised Water Assessment, and made only minor comments and clarifications in relation to the report.

7.2.1 Water Balance

The Revised Water Assessment includes an analysis of site water balance to assess the performance of the proposed water management system over historical rainfall and evaporation data. The water balance model simulates daily changes in the volumes of quarry water in response to inflows (rainfall, groundwater and externally sourced water) and outflows (evaporation, operational water demands, and controlled releases/overflows). The model was run over a simulation length of 102 years, using historical rainfall data recorded at the Grahamstown BOM station.

The modelling has been based on the following assumptions for dust suppression demands:

- No dust suppression is required on days with when greater than 5mm of rainfall.
- On days with less than 5mm of rainfall that up to 5mm of dust suppression is utilised in quarry areas with traffic movement or without vegetative cover, across the process area, and the quarry haul road (0.34ML/day).
- The area for application of dust suppression can be increased when the in-pit storage is above 20% volume, to include application onto non-active quarry areas at an average rate of 4mm per day, when there is less than 5mm of rainfall depth (0.52ML/day).

The water balance modelling indicates that in an average year (over the 102 years analysed) 48.3ML of treated water would be released off-site. Additionally, 1.9ML/year of water would need to be tankered to site in order to cover the dust suppression and processing demands when there is insufficient water available in site dams from rainfall runoff.

7.2.2 Neutral or Beneficial Effect

Since the site is within a drinking water catchment Hunter Water requires demonstration of a Neutral or Beneficial Effect (NorBE) on the catchment – defined as 'post development pollutant loads discharged from the site should be equal to or less than the pre-development loads discharged from site'.

For pollutants which are in existence on the pre-development catchment, NorBE can be demonstrated by comparison of predicted pre and post-development loads i.e. kg/ha/year of Total Suspended Solids (TSS), Total Phosphorous, and Total Nitrogen.

Discharges from the proposed quarry site will include both regular treated 'controlled discharges' which will be treated as necessary to achieve a water quality discharge compliance standard, and extremely infrequent 'uncontrolled discharges' of untreated water. When taken together the total pollutant loads post development of the quarry would be significantly less than the pre-development pollutant loads – 80% for TSS, 29% for Total Phosphorous and 22% for Total Nitrogen.

Controlled discharges will be responsible for the vast majority of the average pollutant load into the catchment. On-site water storage capacity will contain the 500 year 24 hour and 500 year 72 hour rainfall events. For the purposes of assessing the impacts of uncontrolled discharges, up to 50ML of uncontrolled discharge was modelled to occur every 500 years. Since the water volume discharged, when averaged over 500 years, is a very small proportion of the average annual water volume, and therefore a very small proportion of the average annual pollutant load.

The risk to the drinking water catchment is concluded to be not significant, since NorBE requirements have been satisfied by reduction in the long term average pollutant loads for TSS, Total Phosphorous and Total Nitrogen.

7.2.3 Ecological Values and Environmental Flows

The impact from loss of yield downstream of the site in Seven Mile Creek will be reduced by the regime of planned water discharges, which will supplement flows during and following wet weather, followed by periods with no flow during extended dry weather. Consequently, the change in flow is unlikely to significantly alter the flow regime and associated existing ephemeral habitats.

7.3 Noise

7.3.1 Operational Noise

A supplementary Noise Impact Assessment has been prepared by Spectrum Acoustics, and is provided in **Appendix C**. The supplementary Noise Impact Assessment provides revised noise modelling to assess the modifications to the quarry plan, and to include additional sensitive receivers within the Kings Hill residential release area. The supplementary Noise Impact Assessment only assesses a single daytime operational scenario equivalent of the Mode 2 modelled as part of the Global Acoustic report, which is representative of the worst-case noise emissions.

The supplementary Noise Impact Assessment indicates that

- The worst case predicted Year 30 noise levels of 32-34 dB(A) for the closest sensitive receivers on Six Mile Road are significantly less than modelled for the EIS because of the location of the processing plant being further from sensitive receivers and behind a hill. Predicted worst-case noise levels at neighbouring residences are well below the project specific noise criteria and for the majority of assessed receptors would not be discernible above the existing background noise levels.
- The worst case predicted level for all scenarios and receivers of 34 dB(A) is 11 dB below the project specific maximum allowable cumulative noise contribution of 45 dB(A). In practical terms, this means that noise from the quarry would not be a substantive contributor if cumulative industrial noise ever exceeded the INP recommended daytime amenity level of 50 dB(A).

7.3.2 Night-time Road Traffic Noise

In relation to the morning shoulder period, whilst it was not modelled for the supplementary Noise Impact Assessment, the noise modelling of the redesigned processing and sales areas demonstrates that the day-time quarry activities (including extraction, processing and sales) will be below the project-specific night-time noise criteria at all off-site residential receptors. Sales activities alone were shown in the EIS to result in noise impacts at least 7dB less than daytime quarry activities at all residential receivers. As such, sales activities proposed to be carried out at the redesigned quarry between 5am and 7am will remain well below the morning shoulder noise criteria for all off-site residential receivers.

7.3.3 Blasting

Hours for operational blasting associated with winning material will be in accordance with the ANZECC Guidelines, which specify the hours of 9am-5pm Monday to Saturday and no more than one blast per day (not including minor blasts). Further, as requested by the EPA, operational blasting will be limited to 9am-5pm Monday to Friday. At the request of a neighbour, blasting will be carried out as much as practicable between the hours of 12pm to 4pm Monday to Friday.

Blasting during site establishment and construction phase will also be limited to 9am - 5pm Monday to Friday. During this period up to two (2) blasts per day and no more than four (4) per week will be required for the establishment of dams, roads and the processing area.

Prior to each blast a fly rock exclusion zone will be established based on blast specific risk assessments. No habitable dwellings are considered likely to occur within the exclusion zones, noting the nearest dwelling is over 500m from the closest blast location. Where blast exclusion zones have the potential to extend over adjoining private land, those land owners will be contacted prior to undertaking the blast to seek a land owner agreement to enable the exclusion zone to be established on their property. Without agreement, blast sizes will be reduced to reduce those exclusion zones to Eagleton Rock controlled property only. Blast notifications will be provided to surrounding residents, and commercial sites prior to each blast.

7.4 Air quality and dust

A supplement to the Air Quality Impact Assessment report has been prepared by Pacific Environment and is provided in **Appendix K**. The Air Quality Impact Assessment supplement provides revised air pollutant dispersion modelling to assess the modifications to the quarry plan, which also includes:

- Modelling of the peak daily production/activity that could occur ('maximum day activities').
- Additional sensitive receivers within the Kings Hill residential release area.
- Access to the site via the unsealed road along the existing right of carriageway easement without sealing the surface.

The revised modelling indicates that no neighbouring residential dwellings are predicted to experience exceedances of the relevant impact assessment criteria for total suspended particulates, dust deposition, PM_{10}, or $PM_{2.5}$ due to the quarry alone or when including existing background concentrators.

When considered cumulatively, some minor exceedances of the relevant impact assessment criteria for PM_{10} and $PM_{2.5}$ were predicted at the adjacent Hunter Valley Paintball facility, the nearby Motor Cross Facility, and the Manager's House.

- Hunter Valley Paintball is predicted to experience minor exceedances of annual average PM_{10} criteria (annual average and 24-hour average) when considered cumulatively, as well as the 24-hour average PM_{10} criterion on typical and maximum day activities. Hunter Valley Paintball is only open intermittently between the hours of 9 am and 8 pm, subject to demand, and as a recreational facility the same members of the public will not be at the facility on a frequent or daily basis. As such, it is considered unlikely that any individual would be adversely impacted as direct result of the quarry activities.
- The nearby Motor Cross Facility is predicted to experience a minor exceedance of the 24-hour average PM_{10} criterion on maximum day activities. The motorcross facility is only used intermittently, and most heavily on Saturdays and Sundays. As the quarry operates for shorter hours on Saturday, and not all on Sundays, it is considered highly unlikely that maximum activities would occur on a day when both the site(s) are occupied and the meteorological conditions are such that an exceedance would occur.
- Impacts on the employees of Hunter Valley Paintball and the Motor Cross Facility have also been assessed, although it is also important to note that they will also not be present at the site 24/7. The Safe Work Australia Time Weighted Average (TWA) exposure standard for inhalable dust is 200 times greater than the EPA impact assessment criteria. Eagleton Quarry will be required to comply with these workplace standards on the quarry site, and on this basis it is expected that the workplace standards will also be achieved at neighbouring properties.
- The adjoining Manager's House is predicted to experience minor exceedances of annual average $PM_{2.5}$ criterion and the 24-hour average PM_{10} criterion when considered cumulatively, as well as the 24-hour average PM_{10} criterion on maximum day activities. Eagleton Rock has negotiated a private agreement with the owner of the Manager's House, who is also the owner of the Eagleton Quarry site.

The dispersion modelling completed was based on the assumption that all activities at the site are occurring simultaneously, when in reality they will not be continuous at all times. It is therefore considered the predicted concentrations represent a conservative assessment and it is unlikely that any of the relevant impact assessment criteria will be exceeded at any of the nearby receptors due to the proposed quarry.

Notwithstanding, it is proposed that the worst case impacts would be managed on a day to day basis using a network of real-time monitoring stations, which will enable quarry personnel to respond to elevated dust levels prior to reaching critical levels and modify activities, their location or increase controls as required.

7.5 Biodiversity

7.5.1 Biodiversity Assessment Report

An updated Biodiversity Assessment Report and Biodiversity Offset Strategy has been prepared by Kleinfelder and is provided in **Appendix E**.

The updated Biodiversity Assessment Report addresses issues raised in submissions in relation to mapping and characterisation of habitat. The redesigned quarry does not change the area to be cleared. It includes:

- The outcomes of additional surveys to collect further information on the density and location of hollow-bearing trees, and revised Assessments of Significance for the hollow-dependent threatened species known, or having the potential to occur on the site.

- A cumulative impact assessment on Brush-tailed Phascogale habitat within a 10 km radius of the site.
- Additional assessment of impacts on Koala (see further assessment of Koala habitat against the CKPoM below), including an assessment against the EPBC Act referral guidelines.

7.5.2 Koala Assessment against CKPoM

Survey Effort

Further survey effort in the lands surrounding the study area is not possible due to access constraints on freehold/private land. Furthermore, the development proposal acknowledges the importance of the Koala habitat in the study area for foraging and movement.

The proposed development aims to minimise the direct disturbance to habitat through design and implementation of clearing protocols, mitigation of indirect impacts on retained habitat through implementation of management plans, and protection of retained habitat through the BioBanking mechanism.

The proposed development will maintain vegetated corridors on the eastern part of the site to allow movement of this species to adjoining habitat to the north-east. Vegetation connectivity through the north-east part of the site will be maintained via two corridors (one along Seven Mile Creek and one along the north-east boundary).

CKPoM Assessment

The Koala habitat map presented in the revised Biodiversity Assessment Report provides a more precautionary assessment of Koala impacts than the CKPoM mapping would allow as only one of the preferred feed tree species listed under the CKPoM occurs within the study area and is neither widespread nor abundant.

The CKPoM identifies three preferred feed trees in the Port Stephens LGA: *Eucalyptus robusta*, *Eucalytpus parramattensis* and *Eucalyptus tereticornis*. As explained in Section 1.4.2.2 of the revised Biodiversity Assessment Report, the study area does not support vegetation types where the three preferred feed trees mentioned above are either dominant or sub-dominant. *Eucalyptus tereticornis* is present in the study area but is neither widespread nor abundant. However, *Eucalyptus punctata* (a Schedule 2 feed tree under SEPP 44) is widespread and abundant in the study area. *Eucalyptus punctata* is not recognised in the CKPoM as a preferred feed tree for the purposes of identifying Preferred, Supplementary or Marginal Koala Habitat in accordance with Appendix 6 of the CKPoM and Section 2 of the CKPoM Resource Document.

Application of the CKPoM habitat mapping methodology categorises the vegetation across the study area as Marginal Koala habitat and the resultant Habitat Map is very similar to the CKPoM Habitat Mapping (refer to Figure 7 in the revised Biodiversity Assessment Report). Small areas along Seven Mile Creek and in the south-western corner of the study area may categorise as Preferred Koala habitat where *Eucalyptus tereticornis* may occur in sufficient abundance to be considered a sub-dominant canopy species. However, these areas are not substantial enough to be mapped and do not occur in the disturbance area.

Appendix 4 of the CKPoM does not require impacts on Marginal habitat to be assessed (and hence addressed through offsetting). As Koala activity was detected across the study area (albeit in low levels) and as SAT tests and sightings determined that Koalas were using *Eucalyptus punctata* (which is a SEPP 44 Schedule 2 tree species and is abundant across the study area), the Koala Habitat Mapping presented in the Figure 8 of the revised Biodiversity Assessment

Report was prepared in accordance with SEPP 44 definitions of Potential Koala Habitat. This enables the Koala habitat within the study area to be recognised as being locally important and allows for appropriate offsetting of this vegetation. For this reason, the existing Koala habitat map is considered to be appropriate (subject to adjustments as requested by OEH) which have now been made.

The development application is assessed against the Performance Criteria contained in Appendix 4 of the Port Stephens CKPoM. This is provided in **Table 2** below.

Table 2 – Assessment against Appendix 4 of the CKPoM

Performance Criteria	Response
a) Minimise the removal or degradation of native vegetation within Preferred Koala Habitat or Habitat Buffers.	No areas of Preferred Koala Habitat or Habitat Buffers will be impacted by the proposed development.
b) Maximise retention and minimise degradation of native vegetation within Supplementary Koala Habitat and Habitat Linking Areas.	No Supplementary Koala Habitat applies to the study area. The "Habitat Linking Areas over Marginal Koala Habitat" will be retained under a biobanking agreement.
c) Minimise the removal of any individuals of preferred koala food trees, where ever they occur on a development site. In the Port Stephens LGA these tree species are Swamp Mahogany (Eucalyptus robusta), Parramatta Red Gum (Eucalyptus parramattensis), and Forest Red Gum (Eucalyptus tereticornis), and hybrids of any of these species. An additional list of tree species that may be important to koalas based on anecdotal evidence is included in Appendix 8.	Some E. tereticornis occurs within the study area. It is not practicable to retain any individuals within the proposed quarry footprint. All individuals of this species (and Grey Gum (*E. punctata*), White Mahogany (*E. acmenoides*), and Spotted Gum (Corymbia maculata) individuals – species which may be important to Koalas as per Appendix 8 of CKPoM) within the onsite offset area will be retained and protected under a biobanking agreement.
d) Make provision, where appropriate, for restoration or rehabilitation of areas identified as Koala Habitat including Habitat Buffers and Habitat Linking Areas over Mainly Cleared Land. In instances where Council approves the removal of koala habitat (in accordance with dot points 1-4 of the above waive clause), and where circumstances permit, this is to include measures which result in a "net gain" of koala habitat on the site and/or adjacent land.	The "Habitat Buffer" over Marginal and Cleared Land, and the "Habitat Linking Areas over Mainly Cleared Land" would be protected and managed in-perpetuity under a biobanking agreement and would be subject to land improvement and management activities associated with a Management Plan established under the biobanking agreement.
e) Make provision for long term management and protection of koala habitat including both existing and restored habitat.	Approximately 41.40 ha of suitable Koala habitat would be protected and managed in-perpetuity under a biobanking agreement.
f) Not compromise the potential for safe movement of koalas across the site. This should include maximising tree retention generally and minimising the likelihood that the proposal would result in the creation of barriers to koala movement, such as would be imposed by certain types of fencing. The preferred option for minimizing restrictions to safe koala movement is that there be no fencing (of a sort that would preclude koalas) associated with dog free developments within or adjacent to Preferred or Supplementary Koala Habitat, Habitat Buffers or Habitat Linking Areas. Suitable fencing for such areas could include: i) fences where the bottom of the fence is a minimum of 200 mm above ground level that would allow koalas to move underneath; ii) fences that facilitate easy climbing by koalas; for example, sturdy chain mesh fences, or solid style fences with timber posts on both sides at regular intervals of approximately 20m; or	As outlined in Section 2.1.3.2 of the revised Biodiversity Assessment Report, details of traffic-calming measures and signage will be installed within the site to reduce the risk of vehicle strike to Koalas and other native fauna. The proposal would also involve construction of a new bridge across the 3rd order stream (Seven Mile Creek) for the haul road. The culvert may function as an overpass and underpass for Koalas and can be designed to cater for Koala movement. The bridge may incorporate some exclusion fencing to prevent Koalas from accessing the haul road. The principles for effective design and construction of koala underpasses and overpasses (Appendix 7 of the CKPoM) will be taken into consideration. Fencing along external boundaries will be installed for stock exclusion (wildlife friendly) in the biobank site and also to discourage encroachment by

Performance Criteria	Response
iii) open post and rail or post and wire (definitely not barbed wire on the bottom strand).	adjoining landholders.
However, where the keeping of domestic dogs has been permitted within or adjacent to Preferred or Supplementary Koala Habitat, Habitat Buffers or Habitat Linking Areas, fencing of a type that would be required to contain dogs (and which may also preclude koalas) should be restricted to the designated building envelope. Fences which are intended to preclude koalas should be located away from any trees which now or in the future could allow koalas to cross the fence.	No keeping of domestic dogs is likely as part of the proposed development.
g) Be restricted to identified envelopes which contain all buildings and infrastructure and fire fuel reduction zone. Generally, there will be no clearing on the site outside these envelopes. In the case of applications for subdivision, such envelopes should be registered as a restriction on the title, pursuant to the Conveyancing Act 1919.	The proposed development will be restricted to identified building envelopes.
h) Include measures to effectively minimise the threat posed to koalas by dogs, motor vehicles and swimming pools by adopting the following minimum standards.	
i) The development must include measures that effectively abate the threat posed to koalas by dogs through prohibitions or restrictions on dog ownership. Restrictions on title may be appropriate.	No keeping of domestic dogs is likely as part of the proposed development.
ii) The development must include measures that effectively minimise the threat posed to koalas from traffic by restricting motor vehicle speeds, where appropriate, to 40 km per hour or less.	As outlined in Section 2.1.3.2 of the revised Biodiversity Assessment Report, traffic-calming measures and signage will be installed within the site to reduce the risk of vehicle strike to Koalas and other native fauna. In appropriate areas of the access road, vehicle speeds will be restricted to 40 km per hour or less.
iii) The development must reduce the risk of koala mortality by drowning in backyard swimming pools. Appropriate measures could include: trailing a length of stout rope (minimum diameter of 50mm), which is secured to a stable poolside fixture, in the swimming pool at all times; designing the pool in such a way that koalas can readily escape; or enclosing the pool with a fence that precludes koalas. This last option should include locating the fence away from any trees which koalas could use to cross the fence.	No backyard swimming pools are relevant to the proposed development.

Koala Habitat Impact Assessment

The proposal would result in the removal of a relatively low proportion of similar forest habitat for this species that is contiguous with the study area. Resident individuals occurring within the study area would form part of a larger population occurring within the north-south corridor due to high vegetation connectivity in this area. The proposal would retain the majority (79%) of suitable Koala habitat in the study area, and would also maintain vegetated corridors on the eastern part of the site to allow movement of this species to adjoining habitat to the north-east. In consideration of the above, the removal of 11.18 ha of suitable habitat (revised development footprint) for this species is considered unlikely to represent a significant reduction in important available habitat for this species in the locality.

The proposed development site forms part of a larger forested corridor that runs north-south between the Pacific Highway to the east, and cleared grassland/ wetlands to the west adjacent to the Williams River. While the proposal would

reduce habitat connectivity for this species in the study area, it would not reduce the overall east-west width of this corridor.

Within the study area, Koala habitat as defined under SEPP44 extends from the south-west corner to the north-east part of the study area. The SAT activity results suggest that Koalas are moving within the lower parts of the landscape, possibly along drainage and creek lines. The proposed development would impact on the northern part of this mapped habitat. However, the proposal would also maintain vegetation connectivity through the north-east part of the site via two corridors (one along Seven Mile Creek and one along the north-east boundary). Considering the connectivity of the Koala habitat to be retained in the study area with adjoining vegetation would be largely maintained, the proposal is considered unlikely to substantially impact on koala movement in the study area.

As outlined in Section 2.1.3.2 of the revised Biodiversity Assessment Report, traffic-calming measures and signage will be installed within the site to reduce the risk of vehicle strike to Koalas and other native fauna.

7.5.3 Aquatic Ecology

In addition to the updated Biodiversity Assessment Report and Biodiversity Offset Strategy, an Aquatic Ecology Assessment was also prepared, by Marine Pollution Research (see **Appendix L**). The Aquatic Ecology Assessment included aquatic ecology field survey of Seven Mile Creek and its west-to-east tributaries located on the site.

The study revealed that the only suitable aquatic ecology habitat for long-term support of aquatic biota in the study area was in the main Seven Mile Creek channel where there are sizable drought resistant pools linked by sub-surface shallow alluvial flows during dry weather and sustained by base-flows from the natural catchment and possibly by infiltration from the Seaham Quarry.

Whilst there were no fish observed or caught for this study the result is not unexpected as Seven Mile Creek is connected to the Grahamstown Reservoir which has limiting colonisation by native fish.

It is concluded that the loss of portions of west-east feeder drainages to Seven Mile Creek to the Eagleton Quarry Project would deprive the creek of some low salinity base-line flow but, given the comparatively small sizes of the sub-catchments involved, this loss is unlikely to provide a material risk for the aquatic habitats and biota of the main creek.

7.6 Social impacts

A more detailed assessment of social impacts are provided below, with the primary objective to identify, investigate, inform, assess and mitigate any meaningful potential impacts to the social environment associated with the construction and operation of the proposed development.

7.6.1 Study Area

The social environment of a community represents the values, beliefs, characteristics, people and social capital that makes a community unique and helps demonstrate the community's way of life. Elements that make up the social environment of a community do not always have tangible qualities and can be described differently by each member of the community. Factors that describe the local social environment include:

- The day to day activities and events that occur in the community;

- The population dynamics and demographic characteristics of the local community; and
- The economic profile of the local community.

Three study areas have been defined representing the extent of the communities that are likely to experience varying impacts of the proposed development:

- The **Primary Study Area** (PSA) represents the immediate community surrounding the site. The PSA is defined as the Eagleton, Balickera and East Seaham suburbs and represents the area that are likely to experience the greatest degree of impacts during the construction and operation of the proposed development. It should be noted that the PSA is much larger than the immediate community surrounding the site but due to limitations in the smallest possible geographic statistical unit available has been defined to include both suburbs.
- The **Secondary Study Area** (SSA) represents the Port Stephens LGA the administrative boundaries of the council. This study area will likely experience the economic benefits generated from the proposed development however, will not be directly impacted by construction and operation of the proposed development.
- The **Tertiary Study Area** (TSA) represents the state of NSW.

Changes to the social environment from the proposed development will most likely be observed within the PSA. As such, the key focus of assessment of social impacts will be on the PSA. Impacts to the SSA and TSA will predominantly be economic and have been discussed in greater detail in the Economic Impact Assessment report (see Section 7.7 and **Appendix G**).

7.6.2 Existing Social Environment

The key existing land uses and activities located within the PSA are described in Section 1.8, with particular reference to the existing rural residences on Six Mile Road and Italia Road, and the Eagleton Ridge Respite Centre located on Six Mile Road, approximately 1km south of the proposed quarry.

The results of the ABS Population and Household Census were used to identify key socio-economic and demographic characteristics of the community within the primary study area. The key characteristics of the local community are provided in **Appendix F**.

Based on the community engagement process undertaken for the proposed development (including interviews with local community members), the key values of the local community have been identified and are documented in **Appendix F**. The specific values that individual local residents hold highest varies, but the following are generally regarded as the most important local values:

- Quiet natural amenity.
- Bush and scenic natural landscape.
- Wildlife habitat.
- Privacy.
- Air quality.
- Size of the blocks to enable keeping of animals.
- Low traffic volumes on Six Mile Road.
- Community that respects privacy but helps when needed.
- Location / proximity to larger urban areas and employment.

- The proximity of the Williams River and nearby bush trails.

The Eagleton Ridge Respite Centre provides a valuable service in the disability sector, and has been operating for over 17 years. The centre is often referred to as the "farm" and is valued for all of the above values in addition to the attained attributes since establishment including the equipment to support the disabled. The Eagleton Ridge Respite Centre, like many homes is also likely to have acquired a broad range of intangible values associated with experience. Given the Eagleton Ridge Respite Centre's past clientele of over 3,000 people, the property is likely to have higher numbers of intangible values than the typical dwelling in the area.

It is important to note that for many in the area, the presence of existing more intensive local land uses are well known aspects of the local area, including:

- Williamtown Civilian Airport since 1947.
- Grahamstown Dam and Balickera Canal since 1955.
- Ringwood Raceway (MG Car Club) since the 1960s
- Gilsons Quarry since the late 1970s.
- The motor cross track since the early 1980s.
- The Boral Quarry since the mid 1980s.
- Gardenland Landscape Supplies from the mid 1990s.
- Eagleton Ridge Respite Centre since the late 1990s.
- The Pacific Highway and its various upgrades.

These land uses are therefore significant contributors the existing local character and social environment.

7.6.3 Future Social Environment

The community and economic profile of the PSA is anticipated to change in the future when the Kings Hill residential suburb is developed. This development will result in the social environment of the PSA becoming more suburban, similar to the northern parts of Raymond Terrace. Key changes associate with transformation that are likely to affect the key social values within the PSA include:

- Clearing required may degrade the rural appeal of some areas.
- Influx of additional people is likely to impact on local wildlife.
- Additional dwellings fronting Six Mile Road is likely to result in increased traffic travelling west on Six Mile Road.
- The development is expected to result in a major upgrade and grade separation on Six Mile Road with the highway that will improve road conditions along with the upgrade of at least the eastern section of Six Mile Road.

7.6.4 Assessment of Social Impacts

With consideration of the identified existing and anticipated future social environment, the potential positive and negative impacts to the social environment of the locality during the lifetime of the proposed development have been identified and assessed. The potential impacts to the social environment of the PSA range from economic, community change, and health and wellbeing, and have been identified with consideration of the social values identified during community engagement as well as the issues raised in submissions.

For each potential impact identified, the degree or level of impact to a community is measured by the likelihood of the issue occurring and the severity of impact to the community should it occur. The severity of an impact is made up of both the technical aspects including the duration and extent of the impact, as well as the nature of the affected community including its sensitivity, level of concern and ability to adapt. By these measures an impact can be assessed as has having a low, moderate or high impact on the community.

A low impact is one which has an unlikely chance of occurring and has a minor or incidental consequence to the community should it happen. A moderate impact is one which has a possible chance of occurring and/or moderate to significant consequence to the community should it occur. A high impact is one which has a greater chance of occurring and has a significant to severe consequence for the community if it occurred and therefore necessitates the preparation of a specific mitigation or enhancement strategy. This assessment is intended to help determine what impacts require a specific and mitigation or enhancement strategy.

The assessment of potential social impacts is described below and summarised in **Table 3**.

Economic: Employment and Economic Output
The proposed development is expected to have a positive long term effect on local employment. The proposal has the capability to directly improve local employment, with likely flow on effects to other local businesses within the SSA and TSA. Assessment of economic issues is provided in Section 7.7 and **Appendix G**.

Economic: Eagleton Ridge Respite Care Facility
If the Eagleton Ridge Respite Care facility was no longer able to operate as a result of amenity impacts then this would affect the visitors to the facility as well as the staff working at the facility. 20 submissions were from employees of the Eagleton Ridge Respite Care facility.

The quarry design has been amended to significantly reduce potential noise, dust and visual impacts. Supplementary noise and dust modelling of the redesigned quarry confirms that amenity impacts at the Eagleton Ridge Respite Centre will be well below the criteria established in the EPA's *Industrial Noise Policy* and *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* respectively relevant to this kind of facility. There will therefore be no significant adverse amenity impacts on the Eagleton Ridge Respite Centre that would indicate that the facility would not be able to continue operating.

Notwithstanding this, the Eagleton Ridge Respite Centre has only a limited ability to be able to adapt to any adverse change in its local environmental amenity, and mitigation measures are warranted to ensure the potential for local amenity impacts are minimised as much as reasonably practicable, and communicated in a timely and considerate manner.

Eagleton Rock will establish a noise monitoring program, that will include monitoring noise impacts at the Eagleton Ridge Respite Centre, and reactive management program to ensure elevated noise levels can be addressed promptly. In addition, Eagleton Rock will notify all neighbours of blasts beforehand, and will liaise with the operators of the Respite Centre to ensure any complaints are addressed in a timely and efficient manner.

Community Change: Rural Character / Sense of Place / Aesthetic Values
Quarries are a type of land use that are almost exclusively acceptable within a rural environment. Notwithstanding this, the quarry can impact on the rural character of the locality. Based on the engagement activities undertaken, and the issues raised in submissions, the local rural character is taken as an amalgamation

of the local aesthetic vales, the sense of place, and the way of life enjoyed and valued by the local community.

The key values associated with the local rural character are based around:

- The quiet enjoyment of the outdoor spaces of their rural-sized properties, including by keeping animals, viewing the natural landscape and experiencing the local wildlife.
- Relationships with neighbours
- Proximity to nature and wildlife.
- Rural amenity values, particularly in relation to traffic levels of Six Mile Road, dust, noise and visual (including lighting) issues.

The proposed quarry will not affect the proximity of the local community to identified wildlife reserves and conservation areas nor will it affect the relationship that people have with their neighbours. The degree to which people consider their ability to quietly enjoy their own properties is, however, interrelated with the underlying amenity values (i.e. traffic, dust, noise and visual).

Importantly, the high social value placed on the local rural character is achieved in the presence of a number of pre-existing industries and facilities listed in **Section 7.6.2**. It can only be concluded that these pre-existing industries and facilities do not currently detract from the local rural character in a substantive way.

Appendix F provides a detailed assessment of the duration, scale and intensity of these contributing factors, concluding that the probable impact severity in all cases is minimal or incidental. The residual local amenity impacts detailed in the EIS, and further refined within this RTS Report, have therefore been assessed as minimal, and where relevant as complying with the relevant goals and standards (e.g. dust, noise). For each of these factors related to rural character (i.e. traffic, dust, noise and visual) management and mitigation measures would be implemented to further minimise residual impacts as much as possible, and these measures are set out in **Section 8** of this RTS Report.

Notwithstanding that the probable impact of the proposed quarry on the factors that contribute to rural character is minimal, the local community is highly sensitive to these amenity related factors and how they relate to the social values that contribute to the local rural character. Particularly, in the opinion of the local community, the proposed Eagleton Quarry is considered likely to result in adverse impacts to the local rural character, simply because it can be seen and heard and will generate additional traffic and dust. Whilst these individual impacts may not be significant in that they do not exceed specified assessment criteria, taken together the community considers that they degrade the local rural character of the locality. These social impacts that therefore likely to occur, and specific mitigation and management measures are required to be implemented.

Table 3 – Assessment of social impacts

Likelihood of Occurring	Level of Impact					
	Very likely to occur during the proposed development.	Employment and Economic Benefits				
	Likely to occur during the proposed development.		Impacts on Local Rural Character			
	Possible to occur during the proposed development.					
	Unlikely to occur during the proposed development.		Property Values	Impacts on Eagleton Ridge Respite Care Facility		
	Very unlikely to occur at during the proposed development.		Health and Wellbeing Impacts			
	LOW	Opportunity/Impact/Consequence				**HIGH**
		Incidental	Minor	Significant	Major	Severe
		Local, small scale or anticipated change to social characteristics of relevant communities that can easily adapt or cope with change.	Short term recoverable impacts to the daily life for communities that can adapt to or cope with change.	Impacts occurring over the medium term in which the community has some capacity to adapt and absorb.	Impacts occurring over the long term in which the community has some limited capacity to adapt to and cope with.	Irreversible and unplanned changes to social characteristics and daily life of community where they are unable to adapt or cope with change.

Key

Low Social Impact or Opportunity

Medium Social Impact or Opportunity

High Social Impact or Opportunity

Mitigation and management measures have been proposed to address this identified social impact. Particularly, Eagleton Rock has already demonstrated good faith by re-designing the quarry layout and approach to quarrying to minimise visual and acoustic emissions, and has agreed to limit blasts (where practicable) to the hours of 12pm-4pm Monday to Friday at the request of a local resident. Eagleton Rock intends to contribute to the local community as a good neighbour, however, the emissions of dust and noise are predicted to be well below the EPA's assessment criteria, meaning it is not reasonable to expect Eagleton Rock to contribute to noise mitigation and dust management at neighbouring properties. Eagleton Rock will establish a noise and air quality monitoring programs in accordance with the requirements of the EPA, that will include monitoring noise impacts at residential properties along Six Mile Road, and a reactive management program to ensure any elevated noise levels can be addressed promptly. In addition, Eagleton Rock will:

- Notify all neighbours of blasts beforehand.
- Establish a complaints protocol to ensure any complaints are addressed in a timely and efficient manner.
- Establish a Community Liaison Group to convey the project status to community and receive feedback on matters requiring consideration, response or action. This process ensures that community engagement, project design and procedures are constantly evolving to minimise the impacts of the quarry on the community.

Community Change: Property Values

Property prices are a complex aggregation of a large number of factors. The residual local amenity impacts detailed in the EIS, and further refined within this RTS Report, have been assessed as minimal, and where relevant as complying with the relevant goals and standards. There are a range of management and mitigation measures that would be implemented to further minimise these residual impacts as much as possible.

Conversely the beneficial aspects of the development are significant. The quarry will provide an initial capital investment, temporary construction employment, and ongoing permanent employment, that will support income and employment within the local community. It is also noted that property values of land to the southeast of the quarry are likely to be positively affected in the longer term by the future delivery of the Kings Hill residential suburb, which will bring additional services, utilities, opportunities, infrastructure and connections to the PSA.

Health and Wellbeing: Impacts on Local Residents and Eagleton Ridge Respite Centre

The proposed quarry will result in discharges of noise, vibration (overpressure), dust, and water that could impact on the health and wellbeing of local community, including staff and visitors at the Eagleton Ridge Respite Centre. In particular submissions from the local community have identified that:

- Noise impacts could affect shift workers trying to sleep during the day.
- Dust emissions could cause silicosis.
- Dust could build up in water tanks requiring additional filtration to ensure drinking water remains clean.
- Noise could adversely affect the health and wellbeing of the staff and visitors to the Eagleton Ridge Respite Centre.

It is highlighted that the EPA has established ambient ground level dust criteria and noise criteria that are intended to protect against adverse health and amenity impacts for each nearby receptor. The emission of dust and noise from the

proposed Eagleton Quarry has been assessed in detail in the EIS, and further refined through this RTS Report, confirming that the emissions from the quarry are well below the specified criteria for each residential property.

For the Eagleton Ridge Respite Centre, the EPA's dust deposition and PM_{10} criteria is the same as for other residential properties. In relation to noise, the EPA's Industrial Nose Policy provides special noise criteria for sensitive land uses – including day care centres and hospitals.

It is generally considered that compliance with these criteria is sufficient to demonstrate that the proposed Eagleton Quarry will have a minimal impact on health and wellbeing of the local community, including the staff and visitors of the Eagleton Ridge Respite Centre. The proposed Eagleton Quarry will generate emissions well below these criteria.

Notwithstanding the above, it is acknowledged that visitors to the Eagleton Ridge Respite Centre may be more susceptible to the sudden loud noise associated with blasting. It is however noted that visitors to the Eagleton Ridge Respite Centre are occasional (rather than permanent occupiers), and that operational Eagleton blasting will take place at a rate of no more than 1 blast per day, and generally will only require approximately 1 blast per month, and neighbours forewarned.

Section 8 includes management and mitigation measures that would be implemented to further minimise residual noise and dust impacts as much as possible. In particular, Eagleton Rock will establish a noise and air quality monitoring programs in accordance with the requirements of the EPA, that will include monitoring noise impacts at residential properties along Six Mile Road, and a reactive management program to ensure any elevated noise levels can be addressed promptly. In addition, Eagleton Rock will notify all neighbours of blasts beforehand, and will establish a complaints protocol to ensure any complaints are addressed in a timely and efficient manner. Eagleton Rock would implement a more interactive blast notification procedure with Eagleton Ridge Respite Centre to avoid where possible blasts taking place in a way that might affect the wellbeing of any visitor of the Centre.

7.6.5

7.6.5 Assessment of Cumulative Social Impacts

Many members of the local community identify cumulative impacts arising from the proposed Eagleton Quarry with local amenity impacts already occurring from pre-existing infrastructure and activities in the local area (listed in **Section 7.6.2**) – particularly, the Williamtown Airport, the Boral Seaham Quarry and the motorcross tracks. The principal local amenity issue that arises in relation to cumulative social impacts is in regard to noise, and is most clearly summed up by a local community member quote documented in the Umwelt Consultation Report (Appendix R of the EIS), as follows:

"We accept existing noise, but don't want any more."

This general sentiment is reiterated in the submissions received during the exhibition of the EIS. Specific commentary around each of the noise profile of each of the existing facilities is discussed below.

The closest residences identify that the Boral Seaham Quarry (or possibly machinery at Gardenland) is at times clearly audible in the early and still mornings, but as a breeze picks up most noise becomes masked by trees, insects and bird life. No one appeared to be notably concerned with the current noise from the Seaham Quarry. For most, they purchased after the quarry had started and appeared more tolerant of its current effect on local amenity. Comments relating to the smaller Gilsons Quarry on Winston Road were not extensive, however whilst several residents nearby cited no concern with its operation or noise

generation during the engagement process, submissions received during the exhibition of the EIS included a number that expressed frustration at the fact that Gilsons Quarry was still operating. In both cases, submissions received during the exhibition of the EIS raised concern about the cumulative noise impact.

Depending on the resident's location and intervening topography some noted the annoyance generated by the Motorcross track, particularly if a north easterly wind was blowing. The Ringwood Raceway / MG Car Club on the northern side of Circuit Italia has up to twelve events held each year, with potential for a few major events. For the last two years, the Mattara Hill Climb has relocated to the venue, operating over the Sunday and Monday of the October long weekend. The circuit has also previously hosted the Australian National Hill Climb Championship and National MG Meeting. It has been in operation since 1966.

The full Circuit Italia development has not been constructed and is currently untested. Residents appeared comfortable with the relatively low frequency of high use and controls proposed by that development to protect their lifestyles, including a noise management plan that included provisions for limiting the number of vehicles using the track.

Aircraft noise is audible at times but not intrusive, the proposed quarry and adjoining local community is located outside of areas mapped on the endorsed RAAF Williamtown and Salt Ash Air Weapons Range Aircraft Noise Exposure Forecast (ANEF) map. ANEF contours extend to the northern end of Raymond Terrace 7 km south of the quarry and over 4 km north east of the quarry beyond Medowie Road associated with the Salt Ash weapons range. While present, aircraft sounds are not defining or dominant in the area and are unlikely to significantly contribute to effects on the community given their relatively low occurrence.

The highway is a dominant background noise source for many residents in the area. For those closest to the highway, some vehicles, in particular trucks are clearly audible. For those further from the highway, and depending on the intervening topography the highway is still audible at times, typically of a night and with easterly winds. Through the daytime, the highway is less audible with the wind in trees, insects and birdlife masking most highway traffic noise.

With consideration of the long-standing quarry and motor vehicle uses in the locality, as well as the location of the community near to the Pacific Highway, the local rural character is seemingly defined by the prevailing background noise associated with these uses. It is acknowledged that the local community generally resents the continuing noise arising from these sorts of activities, perhaps preferring to consider itself as more rural than its proximity to such infrastructure and land uses would imply.

In this context, the proposed Eagleton Quarry could increase local background noise contributing to cumulative deterioration of local rural amenity values that could result in adverse impacts to the local rural character. As described in **Section 7.6.4**, Eagleton Rock will implement a range of mitigation and management measures to minimise noise impacts and ensure that the quarry operates with best practice community engagement and complaints handling procedures. Managing the noise impacts will contribute to avoiding or minimising the cumulative social impacts.

7.7 Economic impacts

An Economic Impact Assessment has been prepared by Cadence Economics, and is provided at **Appendix G**. This Economic Impact Assessment estimates the net

benefits of the proposed quarry to New South Wales and the local benefits to the Port Stephens region.

7.7.1 Cost Benefit Analysis

This EIA uses the economic assessment framework set out in the Department of Planning and Environment's Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals. This assessment has assumed a scenario of capital investment, from 2017 to 2020, and production over a 24 year period from 2018 to 2041 (taking into account that there are likely to be periods of reduced market demand during the 30-year life of the quarry).

The proposed quarry is calculated to confer an estimated net benefit to NSW of $82.7 million in net present value terms over the life of the quarry using a 7 percent real discount rate (NPV terms). The breakdown of benefits and costs is shown in **Figure 4**. Sensitivity analysis indicates that the net benefits could range from $44 million to $121 million.

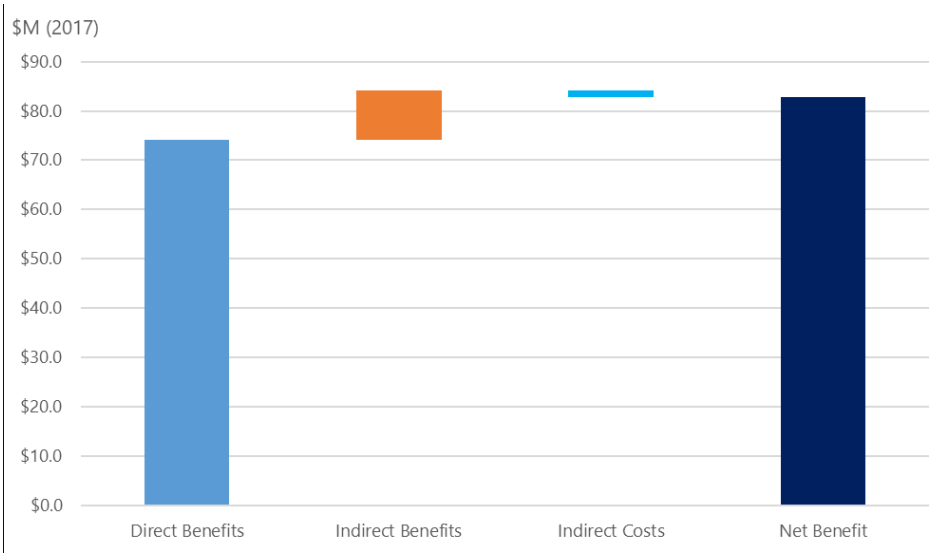

Figure 4 – Breakdown of costs and benefits to NSW

7.7.2 Local Effects Analysis

This Local Effects Analysis indicates that the proposed quarry would confer a net benefit of $1.5 million to Port Stephens in NPV terms. This is driven largely by:

- Benefits to employees of which, 80 percent are assumed to be drawn from the local area.
- Benefits to local suppliers of which, is assumed to provide 20 percent of the quarry inputs to production.

Again, the report shows that the estimated local effects are robust under the sensitivity analysis conducted with positive net benefits ranging from $1.1 to $1.9 million in NPV terms on the range of sensitivities considered.

7.8 Aboriginal heritage

7.8.1 Revised Assessment

A revised Aboriginal Cultural Heritage Impact Assessment was carried out by McCardle Cultural Heritage, provided at **Appendix I**. In particular, the revised Aboriginal Cultural Heritage Impact Assessment includes:

- The outcomes of consultation carried out in accordance with the DECCW guideline *Aboriginal Cultural Heritage Consultation Requirements for Proponents*; and
- Additional archaeological assessment.

The Aboriginal stakeholders have not assigned any specific or general significance to the site in relation to aesthetic, historical or scientific values. The stakeholders assigned general social/cultural significance to the project area.

The assessment concludes that there will be no harm and loss of value to the isolated item or the PADs. The project includes a 40-metre buffer along Seven Mile Creek and a 30-metre buffer along the remaining creeks. These buffers will ensure the protection of all areas of sensitivity within the project area. The haul road and bridge crossing at Seven Mile Creek will be placed in the disturbed section (impacted by earth works associated with the paintball business).

7.8.2 Revised Mitigation Measures

The proposed mitigation measures have been updated to reflect the revised Aboriginal Cultural Heritage Impact Assessment as follows:

- Staff and contractors during construction and operations will be made aware of the statutory legislation protecting sites and places of significance.
- Should any Aboriginal objects be uncovered during works, all work will cease in that location immediately and the OEH contacted;
- A cultural awareness program will be included as part of the site induction program and developed with the registered Aboriginal stakeholders and form part of the Environmental Management Plans;
- If the project design changes in a way that will impact on either of the PADs then test excavations will be required in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW.
- If the isolated artefact will be harmed by any future development a community collection will be undertaken prior to works in the location.

7.9 European heritage

An Historical Archaeology and Cultural Heritage Values Assessment has been prepared by MAXIM Multicon, provided at **Appendix J**.

The Historical Archaeology and Cultural Heritage Values Assessment found no evidence that indicated the use or occupation of the site in any way importing heritage values to the site or to the immediate or broader locality. The only features identified during the assessment were a small fragment of fencing possibly up to 50 years old, the residual sar of a small conglomerate quarry that appears to have operated within the last 20 or so years and the creation of a hard stand of reject tile fragments as an apron to the quarry and associated track and a bushfire asset.

The Historical Archaeology and Cultural Heritage Values Assessment concludes that the study area revealed no evidence possessing actual or potential

archaeological or historical heritage significance at either State or local level on historical, scientific, cultural, social, archaeological, architectural or aesthetic criteria.

7.10 Rehabilitation and closure plan

An updated Rehabilitation and Closure Management Plan has been prepared by SLR and is provided at **Appendix H**. The updated plan takes into account the revised quarry design and approach to sequencing, as well as providing details relating to management of topsoil, timing of rehabilitation and integration with the surrounding landscape.

The Eagleton Quarry site is dominated by Seaham Spotted Gum – Ironbark Forest with Hunter Valley Moist Forest interspersed. The broad rehabilitation objective for the post-quarry landform is to establish a similar woodland land use on the disturbed areas.

Rehabilitation of all disturbed areas will be undertaken progressively prior to final closure, assisting in the development of linkages with the remnant vegetation during the life of the quarry. Rehabilitation of the finished benches will include:

- Application mulched vegetation blended with available topsoil, gravels and weathered rock from site will be applied to the finished benches to attain a growing medium depth of at least 0.3-0.5m. The highest and more exposed benches will have an available growing media depth of up to 1m of material to provide greater rooting depth.
- Planting of native shrubs and trees on the top soiled bench. The proposed species to be planted on the benches will be shallow to medium rooted species. Small bunds will be created on benches to reduce erosion associated with the rehabilitated landform and retain water for vegetation growth. Locally endemic species will be used in the seed mix for planting out the benches to assist with linkages.

It is proposed to undertake some tree planting in the early stages of the project along the western benches of the quarry. These rehabilitated areas will assist in minimising the visual impacts of the quarrying activities from the adjacent landowners, and will provide viable wildlife corridors within the first five years of quarrying. By the time quarrying operations have reached an advanced stage, these rehabilitated areas will be well established and these terraces will form part of the final landform.

The floor of the quarry final land form will include depressions and drainage lines linking to established dams, before connecting to the existing creeks. In this manner, the final landform in the longer term has the potential to increase the connectivity for some fauna through removal of the currently steep and exposed rocky hill.

7.11 Contamination

As set out in the EIS, there is currently no known contamination within the areas proposed for quarrying, and contamination is not expected in these areas due to the lack of development that has occurred. Subsequent to the preparation of the EIS, a detailed historical heritage review was carried out by MAXIM Multicon, provided at **Appendix J**, which further supports this assessment. The historical review identifies the following:

- The land showed no potential in the past for agricultural development and little for pastoral uses, and was mapped as such by 19th and 20th Century surveys.

- The patterning of vegetation/regrowth in the aerial photography indicates that the study area may have been selectively logged or ringbarked and cleared early in the third quarter of the 20th Century. The photos show a number of tracks around the lightly timbered southern and eastern periphery of the study area but no clear evidence of any in the timbered slopes.
- The clearing has not survived or been maintained, with the 1974 photo showing substantial regrowth, and in the 1980s, the cover on the former clearing has reached more than 80% while the cover on the slopes had become intense.
- In more recent aerial photography, the former clearing has substantially regrown and the former track around the southern rise is no longer visible.

The historical review concludes that since the mid-19th Century and to the present time, there is little likelihood that the study area has ever been used for grazing sheep, cattle or horses and there is no potential that any part has been cultivated or subject of residential occupation or activities. There is therefore no evidence of any historical activity taking place at the site that might have caused contamination.

Since the commencement of operations of the Gardenland facility in 2000 a small section of the proposed quarry site has been cleared, and subjected to the placement of reject ceramic tile fragments. The reject tile fragments are inert and present no risk of contamination or off-site polluting discharges. It is proposed to validate the reject tile fragments in accordance with the criteria set out in the EPA's Recovered Aggregate Order and Exemption 2014 and then to reuse them as crushed aggregate material for the purposes of internal site and haulage road construction and for ground preparation of the processing areas.

Based on the above there is no evidence to suggest that ground contamination is currently causing a risk of harm to the environment. Pursuant to Clause 7 of *State Environmental Planning Policy No. 55 – Remediation of Land*:

- The land is not within an investigation area;
- The land has not been subject of development referred to in the *Managing Land Contamination Planning Guidelines*.
- The proposed development is not for residential, educational, recreational or child care purposes, or for the purposes of a hospital.

Given the nature of the proposed land use (i.e. quarrying), the site is considered to be suitable in its current state for the proposed quarry land use, and no remediation is considered necessary, or proposed.

The proposed development involves substantive land forming including relocation of topsoils and extraction of rock. If areas of ground contamination become apparent during the land forming activities, then the Department will be notified and appropriate controls will be implemented to prevent impacts on the surrounding environment. Where possible, all identified sources of contamination will be remediated during the operational phase of the site. In some cases, this may not be possible and in these circumstances the remediation will be undertaken following closure and during the decommissioning phase.

8.0 Revised Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed in **Table 4** below. These measures have been modified appropriately in response to the amendments to the proposal.

Table 4 – Eagleton Quarry mitigation measures

Objective	Action
Construction Environmental Management	
Minimise impact of the construction activities associated with the development of the quarry on surrounding area	A Construction Environmental Management Plan (CEMP) will be prepared and implemented for construction works associated with the quarry, including improvements to access roads. The CEMP will include measures for: ▪ Environmental Management ▪ Traffic Management around road works ▪ Air Quality management ▪ Water Quality, including Erosion and Sediment Control Plans ▪ Noise management ▪ Blast and vibration management ▪ Heritage management ▪ Waste management ▪ Clearing protocols for management of wildlife ▪ Emergency Response, including from bush fire hazards ▪ Community Consultation
Construction Blasting	Blasting during site establishment and construction phase will also be limited to 9am - 5pm Monday to Friday, at a rate of no more than two (2) blasts per day and no more than four (4) per week.
Operational Environmental Management	
Minimise impact of the operational activities associated with the development of the quarry on surrounding area	An Operational Environmental Management Plan (OEMP) will be prepared and implemented for the quarry to guide operational activities. The OEMP will include: ▪ Environmental Management ▪ Traffic Management ▪ Air Quality management ▪ Water Management Plan, including a Surface Water Management Plan, and a Groundwater Management Plan, ▪ Noise management ▪ Blast and vibration management ▪ Heritage management ▪ Waste management ▪ Flora and fauna management ▪ Landscaping and rehabilitation ▪ Emergency Response, including from bush fire hazards ▪ Community Consultation
Operation hours	Hours of operation for the quarry will be as follows: ▪ Processing and extraction activities 7:00am – 6:00 pm Monday to Friday and 7:00am to 4:00pm Saturdays. ▪ Scheduled maintenance would generally be limited to processing hours. However, in the event of urgent unscheduled maintenance that cannot be completed within this period, maintenance works may need to be undertaken anytime 7 days per week. ▪ Hours for operational blasting associated with winning material will be limited to 9am-5pm Monday to Friday and at a frequency of no more than one blast per day (not including minor blasts) pursuant to the ANZECC Guidelines. Eagleton Rock will notify its neighbours ahead of blasts. As requested in submissions, where practicable, blasting will occur generally between 12pm-4pm.

Objective	Action
	▪ Standard operating hours for loading and dispatching of sales trucks will be from 5.00am-10pm Monday to Friday, and 5am-4pm Saturday. Subject to demand sales loading activities may need to take place up to 10pm Monday-Friday and up to 6pm on Saturdays.
Traffic	
Design of access routes	Barleigh Ranch Way will be upgraded, sealed and maintained to meet Council's requirements. The private access road from Italia Road to Barleigh Ranch Way will be maintained and managed pursuant to the rights permitted by the imposition of the right of carriageway easement. Eagleton Rock will undertake all reasonable endeavours to reach agreement with the landowner to enable the right of carriageway to be upgraded, sealed and maintained to meet Council's requirements.
Flora and Fauna	
Avoid and offset biodiversity impacts.	▪ Avoidance and retention of 58.81 ha of native vegetation within the study area. This retained vegetation is proposed to be secured under a biobanking agreement as part of the offset to provide in-perpetuity protection and management of this native vegetation and threatened species habitat. ▪ Avoidance of 2nd and 3rd order streams and the associated riparian buffers in the study area, with the exception of a small area for the proposed haul road. Haul road design and construction to ensure existing hydrological regimes for Seven Mile Creek are maintained. ▪ Retention of vegetation corridors on the southern, central and north-east parts of the study area. Connectivity through the eastern corridor would be enhanced through revegetation of grassland areas. ▪ The development site should be delineated with permanent wildlife-friendly fencing, and include signage to identify 'no-go' areas. ▪ Speed limits on traffic using access roads to 40 km / hr (in accordance with CKPoM 2002) will reduce potential for death or injury to wildlife as well as reduce noise and pollution levels.
Flora and Fauna Management Plan	The Flora and Fauna Management Plan would include the following: ▪ Weed Management Plan and Pest Management Plan; ▪ Pre-clearing fauna surveys; ▪ Clearing protocols: ▪ Hollow-bearing tree clearing protocol; ▪ Fauna translocation protocol; and ▪ Vegetation clearing protocol.
Landscape and Rehabilitation Management	The Landscape and Rehabilitation Management would include the following: ▪ Management of any retained vegetation within the development footprint during operations; ▪ Measures to protect areas of native vegetation and fauna habitats occurring adjacent to the development site; ▪ Details of traffic-calming measures and signage to be installed within the site to reduce the risk of vehicle strike to Koalas and other native fauna; ▪ Details of proposed rehabilitation and revegetation (including timing, target species composition, rehabilitation methods, and ongoing monitoring); ▪ Details on appropriate soil handling processes, including topsoil management for later use in any rehabilitation areas; ▪ Details on the salvage, storage and redistribution of habitat features (e.g. hollows and logs) within the rehabilitation areas; ▪ Fire management; ▪ Details of maintenance, monitoring and performance criteria to assess the condition and functioning of the adjoining vegetation and fauna habitats retained on-site, and to evaluate progress of rehabilitation works.

Objective	Action
Surface Water Quality	
Prevent pollution of waters and impacts on aquatic ecology	▪ Implement Water Management Strategy ▪ Prepare and implement a Water Monitoring Plan which includes. - Surface water quality monitoring will be undertaken at upstream and downstream locations on Seven Mile Creek. - The parameters and frequency of sampling will be monthly sampling of pH, EC, TSS, Total Phosphorus and Total Nitrogen. - Monitor the performance of the water management systems and associated sediment control measures monthly and after major storm events. Flow monitoring of Seven Mile Creek will be undertaken by visual observation during water quality sampling, the visual flow data observations will be used to inform the assessment of water quality data. - Document rainfall depths, water usages, dam volumes and discharges (during extreme events) together with other data that will facilitate updating of water balances, assessment of spill risk and associated water management requirements. - Undertake dam safety and maintenance checks biennially (every two years) on all water management dam walls to assess structural integrity and maintenance requirements, including removal of any trees and shrubs that may impact on the integrity of the walls, and ensuring adequate erosion protection is in place. - Report results of surface water monitoring activities in the Annual Environmental Review which will be distributed to the relevant government agencies and made available to the public. All monitoring data will be retained in an appropriate database. ▪ Implement a Construction Erosion and Sediment Control Plan which meets the requirements of the *Blue Book Volumes 1 and 2* (Landcom, 2004 and DECC, 2008) as part of the CEMP. The performance of erosion and sediment controls at construction areas, including the creek crossing and associated water management measures will be reviewed and monitored during construction. ▪ Implement erosion protection at the bridge for the crossing of Seven Mile Creek and adjacent licenced discharge point.
Groundwater	
Groundwater monitoring	▪ All existing bores will continue to be monitored until they are disturbed or quarried through. A network of bores will be maintained through the life of the quarry. It is proposed to monitor groundwater levels at these bores quarterly and the following water quality parameters six monthly: - pH - Conductivity - Total Dissolved Solids - Chloride - Arsenic - Total Phosphorus - Total Nitrogen, NOx, Ammonia. ▪ Groundwater level and quality results will be analysed, compared with groundwater model predictions and reported annually.
Air Quality	
Minimise impacts to local air quality	▪ An Air Quality Monitoring Plan (AQMP) for operations will be prepared and implemented as part of the OEMP. ▪ Best practice environmental management controls will be applied to the operation of quarry plant, equipment and vehicles, including: - Use of water carts/trucks to control emissions from haul roads. - Enforcement of speed limits onsite and on right of way. - Progressive rehabilitation of exposed areas. - Application of water at the crusher and on conveyor transfer points.

Objective	Action
	- Minimising drop height of material during truck loading and unloading. - Use of water sprays when drilling. - Sheltering of stockpiles and transfer points where possible. - Proper blast design. - Management of dust generating activities during unfavourable meteorological conditions.
Minimise emissions, including of greenhouse gas emissions	▪ Plant and equipment will be maintained in a good condition to ensure efficient operations. ▪ Plant, equipment vehicles not in use will be switched off to minimise emissions.
Noise and Vibration	
Noise barriers	The existing hill will be retained on the southern side of the processing area to a height of at least RL 57.5m until the final year of quarrying, when temporary barriers will be placed around the processing plant.
Minimise operational noise impact on surrounding residences.	A Noise Management Plan (NMP) for operations will be prepared and implemented as part of the OEMP and would detail methods available to mitigate noise. In particular the Plan will include: ▪ Maintenance of all equipment to ensure correct working order; ▪ Selection of quiet equipment and plant where practicable; ▪ Broadband reversing alarms on mobile plant and equipment; ▪ Appropriate training of all staff in relation to noise issues; ▪ Appropriate maintenance of internal haulage roads; ▪ Community consultation program, including 24-hour hotline number for complaints; ▪ Procedures for responding to complaints; and ▪ Nominated responsibilities for noise control during operation, and response to complaints.
Minimise vibration impacts from blasting on surrounding land owners, wildlife, infrastructure and properties.	A Blasting and Vibration Management Plan will be prepared to address the risks associated with blasting, including fly-rock, vibration and overpressure. This will include the implementation of risk management measures such as defining and implementing blast exclusion zones, including consideration of potential ecological receptors. Prior to each blast a fly rock exclusion zone will be established based on blast specific risk assessments. No habitable dwellings are considered likely to occur within the exclusion zones, noting the nearest dwelling is over 500m from the closest blast location. Where blast exclusion zones have the potential to extend over adjoining private land, those land owners will be contacted prior to undertaking the blast to seek a land owner agreement to enable the exclusion zone to be established on their property. Without agreement, blast sizes will be reduced to reduce those exclusion zones to Eagleton Rock controlled property only. Blast notifications will be provided to surrounding residents, and commercial sites prior to each blast.
Aboriginal Heritage	
Protect known Aboriginal items and areas of cultural significance	Implement as part of the Site's environmental management plans a strategy of conservation and protection of Aboriginal heritage through: ▪ Ensuring that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance. Of particular importance is the National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010, under the National Parks and Wildlife Act 1974; ▪ Promoting the involvement of Registered Aboriginal stakeholders in the ongoing management of the Aboriginal cultural materials within the project study area; and ▪ Preparing and implementing as part of the Environmental Management Plan a cultural awareness program, developed with the registered Aboriginal stakeholders, to be included as part of the site induction

Objective	Action
	program.
Waste Management	
Reduce the generation of waste	▪ Unnecessary resource consumption would be avoided to the greatest extent practicable. ▪ All waste or redundant materials generated by the project would be reuse or recycled where feasible and reasonable. ▪ Topsoil will be stored at the site for reuse during rehabilitation. ▪ Any excess re-usable and recyclable materials that cannot be re-used or recycled on the project site would be transported to an appropriate, licensed recycling facility. ▪ General wastes would be segregated into recyclable and non-recyclable streams through the provision of appropriate disposal bins on the project construction site. ▪ Reject tile fragments currently deposited on the ground at the quarry site will be tested against the requirements of the Recovered Aggregate Order and Exemption 2014. If they comply with these criteria, they will be re-used for road base for internal site roads and as surface treatment for the processing area.
Remove and dispose of waste appropriately	▪ Organic material from vegetation clearing and topsoils will be stockpiled and reused on-site where possible for reuse in landscaped areas or for site rehabilitation. ▪ All waste material requiring off-site disposal would be classified using the Waste Classification Guidelines. ▪ Any excess materials that are not re-usable or recyclable would be disposed of at nearby licensed waste facilities. ▪ Any waste oils, greases and lubricants would be stored in designated drums prior to their removal for recycling or disposal. ▪ Any soils contaminated through fuel or chemical spills would be excavated and transported to a licensed waste facility and the resulting excavation would be filled with suitable clean soil. ▪ Any weed species that are cleared for the project would be disposed of at a licensed green waste disposal facility or landfill. ▪ Transport of wastes to recycling or waste disposal facilities would be undertaken by an appropriately licensed waste transporter.
Bush Fire Hazards	
Minimise the potential for site activities to cause bush fire	▪ Contractors/work staff would be trained in how to prevent, bush fires. ▪ Work vehicles would be parked in cleared operational areas, away from grass or vegetation.
Ensure that staff and contractors are suitably protected from bush fires.	▪ Contractors/work staff would be trained in how to control and survive bush fires. This would include conducting fire drills. ▪ Work vehicles would be equipped with appropriate bushfire control equipment. ▪ Alternate fire trail routes for ingress and egress to the site will utilise existing fire trails along the south of the property. Also, an alternative 4-wheel-drive emergency access route will be planned for the northern boundary onto Barleigh Ranch Way. Eagleton Rock will initiate discussions with Boral as to the creation of an alternate emergency exit route if Barleigh Ranch Way is blocked. Emergency access routes and fire trails will be planned and designed in consultation with RFS.
Socio-Economic	
Contribute appropriately to the maintenance of local road infrastructure	▪ Upgrade, and maintain for the duration of operational activities, Barleigh Ranch Way to meet Council's requirements. ▪ Pay to Port Stephens Council a Heavy Vehicle Haulage Levy of 4c per tonne per km for transportation of quarry products on Italia Road, between the Right of Carriageway and the intersection with the Pacific Highway (a distance of approximately 450m).

Objective	Action
Closure and Rehabilitation	
Ensure minimal environmental impact on quarry closure	▪ Implement the Rehabilitation and Closure Plan
Consultation	
Effective consultation with the community	▪ Carry out additional consultation with local community during project planning and construction. ▪ Establish a Community Liaison Group to convey the project status to community and receive feedback on matters requiring consideration, response or action. ▪ The OEMP will outline measures for effective consultation with the local community and will include contact details for site manager or other appropriate representative and a complaints handling procedure to address and respond to issues raised by the community.

9.0 Conclusion

This proposal seeks approval for a new hard rock quarry at Eagleton, which would extract and process up to 600,000 tonnes per annum of rock for up to 30 years.

This RTS has been prepared to satisfy the provisions of Section 89G of the EP&A Act and Section 85A of the *Environmental Planning and Assessment Regulation 2000*. Each of the submissions received during the public exhibition period has been collated, analysed and addressed.

This RTS has describes and assesses design changes that include relocation the processing area away from residents, and incorporated additional noise reduction components (including retention of the existing hill until the final year of quarrying as an extensive natural acoustic and visual barrier, and placing a roof structure over the secondary and tertiary crusher to reduce noise and dust emissions). The water management plan for the proposed quarry has also been refined to ensure retention of all stormwater for events of up to a 1 in 500 year frequency, and the controlled release of treated water in a manner that will ensure a Neutral or Beneficial Effect on the Grahamstown Dam drinking water catchment, as required by Hunter Water Corporation.

The amendments made to the quarry layout and design have been the subject of revised impact assessments, which have also responded to issues raised in submissions. The amendments result in a significant reduction in the environmental impact of the proposed development, compared to the original proposal described in the EIS.

No significant adverse environmental, social or economic impacts have been identified. Residual environmental impacts identified will be mitigated through the implementation of measures for the construction and operation of the proposal.

The mitigation measures provided within the EIS have been updated where necessary to respond to the submissions received, and these updated measures will further reduce the overall environmental impacts during both the construction and operation of the proposal.

Having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development, the carrying out of the project is justified.