

Section 3

Issue Identification and Prioritisation

PREAMBLE

This section describes how the environmental issues assessed in the Environmental Impact Statement were identified and prioritised.

A comprehensive list of all relevant environmental issues was first assembled through consultation with the local community, government agencies and other stakeholders, a review of environmental monitoring and preliminary environmental assessments and a review of relevant legislation, planning documents and environmental guidelines.

Following identification of these environmental issues, a review of the Proposal design and local environment was undertaken to identify risk sources and potential environmental impacts for each environmental issue. An analysis of the risk posed by each potential impact was then completed assuming the adoption of existing or standard control measures with a risk rating assigned based on likelihood and consequence of occurrence.

By considering the frequency with which each environmental issue was raised or identified, the associated environmental impacts and the allocated risk ratings, the relative priority of each issue was determined. This order of priority was then used to provide an order of assessment and breadth of coverage within Section 4.

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3.1 INTRODUCTION

In order to undertake a comprehensive assessment of the Proposal, appropriate emphasis needs to be placed on those issues likely to be of greatest significance to the local environment, neighbouring landowners and the wider community. To ensure this has occurred, a program of community and government consultation and a review of environmental documentation was undertaken to identify relevant environmental issues and potential impacts. This was followed by an analysis of the risk posed by each potential impact in order to prioritise the assessment of the identified environmental issues within the *Environmental Impact Statement*.

3.2 ISSUE IDENTIFICATION

3.2.1 Introduction

Identification of environmental issues relevant to the Proposal involved a combination of consultation and background investigations and research. This included:

- consultation with surrounding landowners, local community representatives and groups, and government agencies and authorities (Section 3.2.2);
- a review of relevant Commonwealth, NSW, regional and local environmental planning requirements (Section 3.2.3);
- a review of environmental policies and guidelines (Section 3.2.4); and
- reference to relevant NSW legislation, planning issues, policies and guidelines (Section 3.2.3).

3.2.2 Consultation

3.2.2.1 Consultation Strategy

As State Significant Development (SSD), the Proposal represents a relatively large and long-term development within the Lithgow City LGA, which may also have impacts (direct or indirect) within the adjoining Blue Mountains City LGA. Furthermore, as road transportation through the Blue Mountains is the only feasible method of transport between the quarry and Sydney markets (refer to Section 2.15.6), the Proposal has the potential to impact on the commercial, residential and community stakeholders along the Great Western Highway.

Recognising the various and varied stakeholders potentially impacted by the Proposal, the Applicant developed a consultation strategy to ensure that consultation is wide-ranging and inclusive, whilst remaining sufficiently detailed and targeted so as to provide an effective record of the issues most critical for assessment. This strategy has involved:

- the establishment of objectives;
- identification of critical stakeholders;
- development of preferred methods of consultation; and
- evaluation of the results of consultation.

The following subsections provide an overview of this strategy, as applied to community and government stakeholders.

3.2.2.2 Aims and Objectives

The broad aim of the consultation program was to effectively engage with the Lithgow City and Blue Mountains City Councils, relevant community groups and representatives, and individual landowners or other potentially affected stakeholders to draw together valuable local knowledge and input regarding the Proposal.

More specifically, the objectives of the consultation program were to:

- ensure all relevant stakeholders were identified and provided an opportunity to be involved in the consultation process;
- inform all stakeholders of the proposed extension to the Austen Quarry and how this could potentially impact on local communities, businesses and environment;
- ensure the methods used to gather information are appropriate and practical to ensure that all relevant inputs are identified;
- aggregate the information received to provide input, where relevant, to the design and operations of the Proposal and ensure appropriate consideration is given to the issues raised in the EIS; and
- to create partnerships with the two local councils and community groups that will facilitate ongoing interactions and constructive discussions.

3.2.2.3 Stakeholder Identification

The identification of stakeholders has drawn on several methods to ensure all relevant stakeholders are identified and given the opportunity to provide input to the consultation process.

- The Applicant prepared a list of local landowners or other parties who have previously displayed an interest in the operations of the Austen Quarry. Other interested parties were identified through consultation with these individuals and groups.
- Blue Mountains City Council was approached to provide details of community groups that have participated in the past or previously contacted the Council about local social and environmental issues relating to truck traffic through the Blue Mountains.
- Additional desktop research was undertaken resulting in the addition of several groups not identified by Blue Mountains City Council.
- A review of likely environmental issues was completed and the relevant government agency or authority responsible for the management and administration of each issue identified.

As a result of the consultation, stakeholders have been grouped as follows.

Community Stakeholders

- Adjoining Landowners – includes the owners of properties that adjoin the land owned by the Hartley Pastoral Corporation (HPC).
- The Local Community – includes nearby landowners, residents of Hartley Village and Little Hartley who are considered to have an interest in the Proposal due to the proximity of the Austen Quarry to their homes and /or properties. The interests of the local community are represented by the Hartley District Progress Association.
- The Lithgow Community and Community Groups – includes both residents and businesses in the Lithgow LGA.
- Blue Mountains Community and Community Groups – includes mostly residents but some businesses that wish to be informed and involved in programs that consider potential impacts and changes to the environment and community in the Blue Mountains.
- Aboriginal Individuals, Representative Groups and Traditional Owners.

Government Stakeholders

- The local councils – Lithgow City and Blue Mountains City Councils.
- Government Agencies and Authorities – including the NSW Department of Planning & Infrastructure (DP&I), NSW Roads and Maritime Services (RMS), NSW Office of Water (NOW), NSW Environment Protection Authority (EPA), NSW Office of Environment & Heritage (OEH), NSW Department of Primary Industries (DPI), Sydney Catchment Authority (SCA) and Commonwealth Department of the Environment (DoE).

3.2.2.4 Consultation Methods

3.2.2.4.1 Community Consultation

Adjoining Landowners and Residents

Landowners adjoining the HPC property and located along Jenolan Caves Road were notified of the proposed quarry extension by a letter box drop of a community newsletter in August 2013. The newsletter provided an overview of the proposed quarry extension, as well as the application and determination process under which the development application is made. The contact details of the Applicant and an invitation extended to raise specific issues for consideration in the EIS. The Quarry Manager recorded 15 newsletters were distributed the adjoining landowners and residents at that times. The letterbox drop was repeated in February 2014 with an updated letter.

In January an expanded letter box drop was undertaken to include the residences of properties adjoining and surrounding the HPC owned property. The letter box drop included a brief summary of the proposed quarry extension and development application process and community feedback form (prompting identification of key issues). The Applicant estimates that between 70 and 80 letter boxes were included in this drop.

Discussions have also been held individually with surrounding landowners, either opportunistically or on request. For example, following a community meeting held on 29 March 2014 (see p. 3-7), several attendees commented on the visibility of quarry operations from their properties. Following subsequent discussions between the property owners and Mr Alex Irwin of R.W. Corkery & Co. Pty Limited (RWC), it was arranged that a site visit to each of these properties would be made. On 7 April 2014, Mr Darryl Thiedeke of Hy-Tec and Mr Alex Irwin of RWC visited the following properties and discussed the Proposal and likely impacts on visual amenity.

- 157 McKanes Falls Road (“Magic Views”).
- 61 McKanes Falls Road.
- 26 Melliodora Place, via John Grant Road and Baaners Lane.
- 43 Megalong Place, via Kanimbla Drive and Coxs River Road.

Mr Thiedeke subsequently visited the owners of 121 Blackmans Creek Road, which also has views southwards towards the Site, on 15 and 22 May 2014.

As noted above, the Quarry Manager or senior quarry personnel have always made themselves available to respond to queries as raised (in person or by phone).

Local Community Groups (Hartley, Lithgow and Blue Mountains)

In order to notify and seek feedback from stakeholders located further afield, e.g. in Hartley, Lithgow and the Blue Mountains, the Applicant wrote to the following representative and community groups referring them to a variety of documents on Hy-Tec’s website (<http://www.hy-tec.com.au/technical/p95.aspx>) providing information on the Proposal and a community feedback form.

- Blackheath Highway Action Group.
- Blackheath Streetscape Group.
- Blue Mountains Conservation Society.
- Blue Mountains Historical Society.
- Blue Mountains Sustainable Transport Alliance.
- Bullaburra Township Committee.
- Faulconbridge Residents Association.
- Glenbrook & District Historical Society.
- Hazelbrook Association.
- Linden Citizens Association.
- Lithgow Environmental Group.
- Medlow Bath Residents Association.
- Mountains Community Resource Network.
- Mount Victoria Community Association.
- Mount Victoria Historical Society.
- The Local Traffic Committee.
- Valley Heights Progress Association.
- Warrimoo Citizens Association.

The documents included on the Hy-Tec website (which remain available for download) are as follows.

- Document 1 – Project Overview: provides an overview of the current and proposed operations at the Austen Quarry.
- Document 2 – Frequently Asked Questions: provides answers to questions that have been previously received or are anticipated.
- Document 3 – Approvals Process for Austen Quarry Stage 2: provides an overview of the process under which the Applicant is seeking development consent.
- Document 4 – Request for Director-General’s Requirements (DGRs): provides an indication as to the general setting and an initial assessment of the issues requiring further assessment.
- Document 5 – A copy of the DGRs: provides a summary of the assessment requirements against which the Proposal will be assessed.
- Document 6 – Community Feedback Form: provides a platform on which the community can identify issues of concern or provide information relevant to the local or regional setting for consideration in the EIS.

Letters notifying the community groups about the documents available on the website were distributed in late October 2013 requesting feedback by 25 November 2013 (to ensure the issues raised and other comments were able to be considered during the preparation of the EIS). However, in recognition of the significant bushfire event which occurred within the Lithgow and Blue Mountains LGAs in late October 2013, the Applicant has continued to receive and address feedback from community groups and individuals following this date.

Through the process of community group identification and notification, the Hartley District Progress Association (HDKA) was identified as a key representative group. Between December 2013 and March 2014, various correspondence between the Mr Tom Kent (President of HDKA) and Mr Alex Irwin of RWC was conducted in relation to the proposed operations, possible impacts and the opportunity for a presentation on the Proposal to be made to the HDKA’s membership. After identifying an appropriate date, an invitation was sent to the HDKA membership and others in the Hartley and Little Hartley area on 15 March 2014. On Saturday 29 March 2014, Mr Ian Boxall (General Manager NSW) and Mr Darryl Thiedeke (National Planning & Development Manager) of Hy-Tec, accompanied by Mr Rob Corkery (Principal and Managing Director of RWC), attended a meeting at Hartley School Hall to provide the local Hartley community with an opportunity to ask questions and/or raise concerns with respect to the Proposal.

Aboriginal Individuals, Representative Groups and Traditional Owners

Aboriginal stakeholders were identified and consulted in accordance with the guideline *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (ACHCRs) produced by the former Department of Environment, Climate Change and Water (DECCW, 2010). Further information on this consultation is included in Section 4.9.2.2 and Part 6 of the Specialist Consultant Studies Compendium (Niche, 2014b).

3.2.2.4.2 Government Consultation

Lithgow City Council

Lithgow City Council has been kept regularly informed regarding the proposed quarry extension and progress of the EIS and development application. The quarry is considered to provide a positive contribution to the Lithgow LGA and Council has been generally supportive of the proposed extension which would secure employment and economic contribution within the LGA for many years.

It is worthy of note that in December 2013, Hy-Tec personnel representing the Austen Quarry operations made a presentation to the Council, during which a donation of \$5,000 was delivered to the local Rural Fire Service branch. As with previous discussions, the Applicant was well received and in correspondence dated 23 December 2013, the Lithgow City Council Mayor, Clr Maree Statham, reiterated the valuable employment provided by the Austen Quarry.

The Applicant has commenced discussions with Lithgow City Council regarding the form and content of a Voluntary Planning Agreement (VPA) between the two parties. The VPA would aim to offset any additional costs incurred on Lithgow LGA infrastructure and services as a consequence of the ongoing operations at Austen Quarry.

Blue Mountains City Council

On 8 October 2013, representatives of Hy-Tec and RWC made a presentation to the executive and councillors of Blue Mountains City Council, focussing on the transportation of quarry products task between the Austen Quarry and markets in Sydney. A range of questions were responded to during and following the presentation.

Request for Director-General's Requirements

Given the operating status of the Austen Quarry, the DP&I determined that a Planning Focus Meeting (PFM) to discuss the Proposal was not required.

A request for Director-General's Requirements (DGRs), accompanied by a comprehensive document entitled "*Documentation Supporting an Application of Director-General's Requirements*" was submitted to DP&I on 7 August 2013. The DP&I subsequently notified those government agencies with an interest in the Proposal requesting their key environmental assessment requirements. The DGRs for the Proposal were issued on 3 September 2013, supported by correspondence from the following government agencies.

- Lithgow City Council.
- Blue Mountains City Council.
- Roads and Maritime Services.
- Environment Protection Authority.
- Office of Environment and Heritage.
- Department of Trade & Investment, Regional Infrastructure & Services – Division of Resources and Energy.
- Department of Primary Industries, incorporating:
 - Agriculture NSW;

- NSW Office of Water; and
- Fisheries NSW.
- Sydney Catchment Authority.

Referral to the Commonwealth Department of the Environment¹

The presence of *Eucalyptus pulverulenta* (Silver-leafed mountain gum), listed as a vulnerable species on the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), on and surrounding the Site has been long known and the Applicant has undertaken a program of tree propagation and replanting to offset impacts to date. The proposed extension to the extraction area would require disturbance to additional individuals and habitat. On the basis of the proposed impacts on this listed threatened species, and therefore a Matter of National Environmental Significance under the EPBC Act, the Proposal was referred to the Minister for the Environment on 6 August 2013 for determination as to whether it represents a Controlled Action.

The Applicant was notified on 23 October 2013 that the Proposal represents a Controlled Action and on 26 November 2013 the environmental assessment requirements of DoE were supplied to the DP&I for inclusion with the DGRs. Supplementary DGRs issued by the DP&I on 29 November 2013.

NSW Office of Water

Following receipt of the adequacy assessment completed by NOW, an on-site meeting with NOW personnel was requested. On 30 July, Mr John Galea (Licensing officer) and Mr Peter Dupen (hydrogeologist) of NOW undertook a site inspection of the quarry accompanied by Mr Darryl Thiedeke (Hy-Tec), Mr Alex Irwin (RWC), Mr Rod Huntley (Groundwork Plus) and Mr James Morrow (Ground Doctor). The adequacy issues raised by NOW and approach to addressing these were discussed in the context of the local setting. It was agreed that a revised copy of the groundwater assessment (of Ground Doctor) would be provided to NOW, to confirm adequacy issues were appropriately addressed, prior to resubmission of the EIS to DP&E.

NSW Office of Environment and Heritage

Following receipt of the adequacy assessment of OEH, a teleconference was held between Ms Liz Mazzer of OEH, Alex Irwin of RWC and Messrs Rhidian Harington, Nathan Smith and Frank Lemckert of Niche Environment and Heritage to discuss the issues raised and confirm the requirement of OEH.

3.2.2.5 Results of Consultation

3.2.2.5.1 Community Consultation

Adjoining Landowners

In response to the letter box drops, the Applicant has not received any formal responses raising issues of concern.

¹ At the time of referral, the Department was known as the Department of Sustainability, Environment, Water, Populations and Communities (DSEWPaC).

With limited exception, when meetings or discussions with individual property owners or residents have taken place, there has been no major complaints or grievances raised. The one notable exception being the owner of the residence setback from Jenolan Caves Road near the Glenroy Bridge who has expressed concern over the noise of trucks as they approach and traverse the bridge. It is also worthy of note that the workforce employed at the Austen Quarry is drawn from a variety of localities including Lithgow, western Blue Mountains, Hartley and Little Hartley areas. When questioned as to whether informal complaints or issues were raised with employees in their various social networks, it was confirmed that this was not the case (pers. comm. D. Thiedeke) demonstrating general acceptance of quarry operations within the local community.

On discussion of the current and potential future visual exposure of the quarry operations to properties surrounding the Stage 2 Site during the site inspections conducted on 7 April and 15 and 22 May 2014, the comments and concerns can be summarised as follows.

- 157 McKanes Falls Road (“Magic Views”). As long-term residents of McKanes Falls Road, the owners raised concerns over the size and visual intrusion of the Yorkeys Creek Stockpile Area. The visibility of the Extraction Area Access Road was also commented on.
- 61 McKanes Falls Road. Similar to the comments of the owners of 157 McKanes Falls Road, the main issue raised was of the size of the Yorkeys Creek Stockpile Area which it was commented has increased significantly in size in recent years.
- 26 Melliodora Place, via John Grant Road and Baaners Lane. The owners are currently constructing a residence on the property and have located the residence such that the surrounding vegetation provides a natural visual screen to the west. The effectiveness of the bituminous application to the completed faces of the extraction area was also commented on. The primary concern of the owners related to dust emissions which might affect the quality of rainwater collected or their health generally.
- 43 Megalong Place, via Kanimbla Drive and Coxs River Road. The owners of the property operate “The Peak at Mt Kanimbla”, accommodation in the form of two luxury chalets. The owners, and a neighbour who attended the meeting, commented on the visibility of the upper lift of the overburden emplacement (noting that they originally mistook this for a road or farm access track). The concerns of the owners related primarily to the impact an increased visibility of the extraction area might have on the marketability of their accommodation, which relies in part on the elevated local setting which offers panoramic views of the western Blue Mountains Escarpment and Coxs River Valley.
- 121 Blackmans Creek Road. While not overly concerned, the owners commented on the visual exposure of the western face of the existing quarry and possible implications for resale value of their property. The effectiveness of the bituminous application to the completed faces of the extraction area was commented on and Mr Thiedeke (of Hy-Tec) indicated that a method of applying this to the currently inaccessible upper benches was currently being investigated.

Section 4.4 provides a comprehensive review of existing visibility and potential impacts of the proposed extension. The impact on the properties noted above are specifically assessed.

Local Community (Hartley)

The Applicant has relied upon feedback provided by HDPA and general word of mouth to identify issues of concern to the Hartley communities (Hartley, Little Hartley and Hartley Vale).

In response to the initial invitation to comment, the HDPA provided written feedback (dated 13 December 2013) flagging the issues of transportation and visual impact as those of most concern. As noted in Section 3.2.2.4.1, a meeting was held on 29 March 2014 and attended by 64 people. Mr Thiedeke (of Hy-Tec) provided a brief overview of operations at the Austen Quarry to date and the proposed extension. Mr Corkery then provided an overview of the environmental assessment of the Proposal, key issues and process to be followed as part of the development application (including opportunities for the general public to review and comment on the EIS). The meeting was then opened to take questions from attendees. Minutes were recorded, however, the following provides a summary of the main issues raised.

- Potential impacts of the quarry on the water quality of the Coxs River.
- Truck noise.
- Traffic safety concerns, principally at the Glenroy Bridge crossing of the Coxs River.
- Impacts on local visual amenity.

The Lithgow and Blue Mountains Communities

Feedback was received from several Blue Mountains based community groups.

- Mount Victoria and District Historical Society (MVDHS).
This group, which promotes the study and protection of the history and heritage of Mount Victoria, the Hartley Valley and Blackheath, noted concerns over the cumulative impact of trucks on roads which have high tourist and residential traffic. In noting this concern, the representative of the MVDHS stressed that this was an issue to which the Proposal would contribute rather than a specific criticism of current or proposed operations. The dangers associated with heavy vehicles on the Great Western Highway, in particular River Lett Hill and Mount Victoria Pass, was noted and a request made for measures to prevent poor driver behaviour to be nominated.

The MVDHS also raised concerns over the visual impact of the Proposal, in particular from Mt York, and suggested rehabilitation alone may not address this issue satisfactorily. The issue of potential impacts on the Coxs River hydrology and aquatic environment was also highlighted.

- Blue Mountains Conservation Society (BMCS).
The BMCS manages the Blue Mountains Historical Society Museum and Research Centre and raised the issue of uncovered and recklessly operated trucks on the Great Western Highway. A suggestion for identification markers on trucks was suggested. The BMCS also noted the impact of the Proposal on the Coss River and flora and fauna more generally as issues requiring detailed assessment.
- Mountains Community Resource Network (MCRN).
While noting that the focus of resources was currently on assisting in the bushfire recovery effort, the MCRN referred the Applicant to transport related groups as this was noted as likely to be the most significant issue for members / affiliates.
- Mr Peter Green.
Commenting as an individual, Mr Green suggested there were far too many trucks on the Great Western Highway and that rail transport should be used for all bulk material movement.

Aboriginal Stakeholder Consultation

The Applicant identified and consulted with the following organisations and individuals during preparation of the EIS and associated documentation.

- Bathurst Local Aboriginal Land Council.
- Mingaan Aboriginal Corp.
- Gundungurra Aboriginal Heritage Association.
- Tocumwal.
- Wiradjuri Traditional Owner Central West Aboriginal Corporation (represented by Tocumwal).
- Dhuuluu-yala.
- North East Wiradjuri Company Limited.
- Warrabinga Native Title Claimants.

Further details on the outcomes of consultation, and the Aboriginal heritage assessment in general, are provided in Section 4.11.2 and Part 6 of the *Specialist Consultant Studies Compendium* (Niche, 2014b).

3.2.2.5.2 Government Consultation

Request for Director-General's Requirements

Table 3.1 presents a summary of the environmental issues identified in correspondence from the DP&I and other State and local government agencies.

Table 3.1
Government Agency Issue Identification

Government Agency / Public Authority	Issue																				
	Groundwater	Biodiversity	Surface Water/Erosion & Sediment Control	Terrestrial Ecology	Noise/Blasting/Vibration	Air Quality / Greenhouse Gas	Traffic and Transport	Rehabilitation and Final Landform	Cultural Heritage	Socio-economic Impacts	Land Use / Planning / Permissibility	Soil Resources / Management	Consultation	Visual Amenities	Aquatic Ecology	Hazards	Waste Management	Cumulative Impact	Licensing	Health and Safety	Agricultural Sustainability
DP&I (now DP&E)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
EPA			✓		✓	✓	✓					✓				✓	✓	✓	✓		
OEH*		✓		✓				✓		✓											
DPI - NOW	✓	✓	✓												✓						
DTIRIS - DRE										✓	✓									✓	✓
DPI - OASFS	✓		✓				✓	✓					✓								✓
DPI - Fisheries	✓	✓	✓	✓											✓						
RMS							✓														
Lithgow City Council			✓		✓		✓	✓		✓						✓	✓				
Blue Mountains City Council							✓	✓						✓							
Sydney Catchment Authority	✓		✓				✓	✓			✓					✓					
NSW Rural Fire Service																✓					
Department of the Environment		✓																			

* OEH includes the Heritage Council of New South Wales which separately submitted Director-General's Requirements to the Department of Planning & Infrastructure.

Appendix 3 summarises these assessment requirements and where each has been addressed in the EIS.

NSW Office of Water

At the on-site meeting, the NOW personnel acknowledged the suitability of the Conceptual Site Model used by Ground Doctor (2014) to underpin the groundwater assessment. It was agreed, however, that additional review of the likely presence or absence of groundwater dependent ecosystems, quantification of likely drawdown and groundwater take, and further discussion on future groundwater management would largely address the adequacy issues raised by NOW.

On review of the revised groundwater assessment (Ground Doctor, 2014), NOW personnel confirmed the identified adequacy issues had been satisfactorily addressed.

NSW Office of Environment and Heritage

It was confirmed that the proposed BOA was likely to be accepted by OEH, however, further justification for not sourcing credits on the Biodiversity Credit Market was required. This is now provided by Niche (2014a) and summarised in Section 4.7.5.2.1.

3.2.3 Environmental Plans, Policies and Guidelines

3.2.3.1 Introduction

A number of Commonwealth, NSW, regional and local planning instruments or policies apply to the Proposal. A brief summary of each relevant planning instrument is provided in Sections 3.2.3.2 to 3.2.3.4 with the environmental aspects requiring consideration in the EIS identified.

In addition, the DGRs identified a number of guideline documents to be referenced / reviewed during the preparation of the EIS (see **Appendix 3**). The approach taken to referencing and reviewing environmental guideline documents is provided in Section 3.2.3.5.

3.2.3.2 Commonwealth Planning Issues

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. These are collectively referred to as Matters of National Environmental Significance (NES). Under the EPBC Act, if a proposal has the potential to have a significant impact on a Matter of NES, it is required to be referred to the DoE for assessment as to whether it represents a ‘controlled action’ and therefore requires approval from the Minister for the Environment. As noted in Section 3.2.2.4.2, the Proposal has been determined to be a controlled action and approval from the Commonwealth Minister for the Environment is therefore required. As approval under the EPBC Act is required, an offset must be developed and implemented in accordance with the *EPBC Act Offset Assessment Guide* (DSEWPaC, 2012). Section 2.14.2.2 provides an overview as to the considerations that must be given to both the impact and offset sites to comply with the requirements of DSEWPaC (2012).

3.2.3.3 State Planning Issues

State Environmental Planning Policy (State and Regional Development) 2011

This State Environmental Planning Policy (SEPP) was gazetted on 28 September 2011 and applies to all projects satisfying nominated criteria made following that date. One of the purposes of this SEPP is to define those developments of State significance and therefore requiring Ministerial approval under the provisions of the EP&A Act. This SEPP, and Part 4 – Division 4.1 of the EP&A Act, is a system introduced to specifically deal with State significant development.

As an extractive industry, the Proposal is identified as State Significant Development under Schedule 1 (7(a)) by virtue of annual extraction exceeding 500 000tpa and resource quantity exceeding 5 million tonnes. As such Part 4, Division 4.1 of the EP&A Act applies and requires Ministerial approval.

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

This SEPP (“the Mining SEPP”) was gazetted in recognition of the importance to New South Wales of mining, petroleum production and extractive industries and to provide proper management and orderly and economic use and development of land containing mineral, petroleum and extractive material resources and to establish appropriate planning controls to encourage ecologically sustainable development through environmental assessment, and sustainable management.

The SEPP specifies matters requiring consideration in the assessment of any mining, petroleum production and extractive industry development, as defined in NSW legislation. A summary of the matters that the consent authority needs to consider when assessing a new or modified proposal and where these have been addressed in this document is provided in **Table 3.2**.

Table 3.2
Application of SEPP (Mining, Petroleum Production and Extractive Industries) 2007

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Relevant SEPP Clause	Description	EIS Section
12: Compatibility with other land uses	Consideration is given to:	
	• the existing uses and approved uses of land in the vicinity of the development;	4.2.4, 4.14
	• the potential impact on the preferred land uses (as considered by the consent authority) in the vicinity of the development; and	Various Subsections of Section 4
	• any ways in which the development may be incompatible with any of those existing, approved or preferred land uses.	
	The respective public benefits of the development and the existing, approved or preferred land uses are evaluated and compared.	2.2, 4.15, 6.3.4
Measures proposed to avoid or minimise any incompatibility are considered.	4.2.4, Section 5	
12AA: Significance of resource	Consideration is given to the significance of the resource that is the subject of the application, having regard to:	
	• the economic benefits, both to the State and the region; and	2.2, 4.15
	• the advice provided by the DG of DTIRIS as to the relative significance of the resource in comparison with other mineral resources across the State.	N/A*
12AB: Non-discretionary development standards for mining	Consideration is given to development standards that, if complied with, prevents the consent authority from requiring more onerous standards for those matters	Noted
13: Compatibility with mining, petroleum production or extractive industry	Consideration is given to whether the development is likely to have a significant impact on current or future mining, petroleum production or extractive industry and ways in which the development may be incompatible.	4.2.5
	Measures taken by the Applicant to avoid or minimise any incompatibility are considered.	4.2.5
	The public benefits of the development and any existing or approved mining, petroleum production or extractive industry must be evaluated and compared.	2.2, 4.15

Table 3.2 (Cont'd)
Application of SEPP (Mining, Petroleum Production and Extractive Industries) 2007

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Relevant SEPP Clause	Description	EIS Section
14: Natural resource and environmental management	Consideration is given to ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure:	
	<ul style="list-style-type: none"> impacts on significant water resources, including surface and groundwater resources, are avoided or minimised; 	4.5 and 4.6
	<ul style="list-style-type: none"> impacts on threatened species and biodiversity are avoided or minimised; and 	4.7 and 4.8
	<ul style="list-style-type: none"> greenhouse gas emissions are minimised and an assessment of the greenhouse gas emissions (including downstream emissions) of the development is provided. 	4.10
15: Resource recovery	The efficiency of resource recovery, including the reuse or recycling of material and minimisation of the creation of waste, is considered.	2.5 and 2.9
16: Transportation	The following transport-related issues are considered.	
	<ul style="list-style-type: none"> The transport of some or all of the materials from the Project Site by means other than public road. 	2.15.6
	<ul style="list-style-type: none"> Limitation of the number of truck movements that occur on roads within residential areas or roads near to schools. 	2.8
	<ul style="list-style-type: none"> The preparation of a code of conduct for the transportation of materials on public roads. 	4.3.5
17: Rehabilitation	The rehabilitation of the land affected by the development is considered including:	
	<ul style="list-style-type: none"> the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated; 	2.13.6
	<ul style="list-style-type: none"> the appropriate management of development generated waste; 	2.9
	<ul style="list-style-type: none"> remediation of any soil contaminated by the development; and 	N/A
	<ul style="list-style-type: none"> the steps to be taken to ensure that the state of the land does not jeopardize public safety, while being rehabilitated or at the completion of rehabilitation. 	2.13.6
Note *: Clause 12AA only gazetted following a request for and issue of DGRs.		

State Environmental Planning Policy (Rural Lands) 2008

The aims of the 'Rural Lands SEPP' are to facilitate development on rural land that is orderly and economic, promotes the social economic and environmental welfare of the state and avoids land use conflicts with existing agriculture. It also allows government authorities to identify State significant agricultural land and ensure the ongoing viability of agriculture in the State.

Specifically, and as described in Clause 12, the objectives of the Rural Lands SEPP are to provide for the protection of agricultural land:

- *that is of State or regional agricultural significance, and*
- *that may be subject to demand for uses that are not compatible with agriculture, and*
- *if the protection will result in a public benefit.*

The Proposal is considered with respect to these aims.

- The land that would be affected by the Proposal has not been identified as State or regionally significant agricultural land by Schedule 2 of the Rural Lands SEPP.
- The Proposal would not impact on any additional land currently managed for agriculture. As demonstrated at numerous other quarry sites where agricultural activities are undertaken concurrently within extractive industry, the Proposal would not be incompatible with continued agricultural land use surrounding the Site.
- The protection of the land that is the subject of the Proposal would not provide any public benefit. In fact, the employment and local economic stimulus that would be generated by the Proposal is considered to be of wider public benefit.

As a result, the Rural Lands SEPP is not considered further in this document.

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33)

Hazardous and offensive industries, and potentially hazardous and offensive industries, relate to industries that, without the implementation of appropriate impact minimisation measures, would, or potentially would, pose a significant risk in relation to the locality, to human health, life or property, or to the biophysical environment. Section 4.13.4 presents a risk screening of the Proposal completed in accordance with the document entitled *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33* (DoP, 2011). In summary, as the only hazardous substances materials to be stored on the Site would be restricted to well managed diesel fuel and other hydrocarbon products, and the transport of ammonium nitrate for blasting does not exceed the relevant thresholds for Class 5.1 materials, the Proposal is not classified as potentially hazardous industry.

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55)

SEPP 55 aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment. In particular, this policy requires consideration of whether a development requires a consent for remediation works or not and, where warranted, requires that remediation works meet certain standards and notification requirements.

As the areas proposed for disturbance within the Site have previously been used only for dairying or grazing cattle and passive nature conservation, the Applicant is satisfied that no contaminated land occurs on the Site. SEPP 55 is therefore not considered further in this document.

State Environmental Planning Policy No 44 – Koala Habitat Protection

SEPP 44 aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline.

As the Lithgow local government area is not identified in Schedule 1 of the SEPP as one of the local government areas to which considerations of koala habitat apply, SEPP 44 is not considered further in this document.

State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011

The aims of this SEPP are to integrate the provision of healthy water catchments with development in catchment areas by ensuring that consent authorities must not grant consent to a proposed development unless it is satisfied that the proposed development will have a neutral or beneficial effect on water quality and not hinder the achievement of water quality objectives for the Sydney drinking water catchment.

The Site is located within the Warragamba catchment which forms part of Sydney’s water supply and as such the following must be considered when assessing the Proposal.

- Incorporation of the Sydney Catchment Authority’s current recommended practices and standards or demonstration that proposed practices and performance standards meet or exceed these practices and standards.
- Demonstration of neutral or beneficial effect on water quality.

The SCA provide guidelines for the assessment of a neutral or beneficial effect on water quality and **Table 3.3** provides a summary of these and where these have been addressed in the EIS.

Table 3.3
SCA Neutral or Beneficial Water Quality Impact Assessment Guidelines

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Guideline	Description	EIS Section
Are there any identifiable potential impacts on water quality? What pollutants are likely? During construction and/or post construction?	Major potential pollutants are sediments (fine & coarse), nitrogen, phosphorus, pathogens and hazardous chemicals and contaminants such as oil/fuel. It is important to identify any possible impacts, not go straight to a conclusion that there won’t be any impacts because they will be contained by appropriate safeguards.	4.5.3 and 4.6.3
For each pollutant, list the safeguards needed to prevent or mitigate potential impacts on water quality (these may be SCA endorsed current recommended practices (CRPs) and/or equally effective other practices)?	These are the safeguards, or water quality protection measures, that need to be in place during the construction and operational stages of the project. Wherever possible these safeguards should be based on SCA endorsed CRPs: SCA has endorsed a range of Current Recommended Practices (CRPs) & Standards as required under the provisions of REP No. 1. These are listed on the SCA website: http://www.sca.nsw.gov.au/pubs-and-galleries/pubs/crp Some of the safeguards needed to prevent or mitigate potential impacts on water quality will be commonly used environmental protection measures that are not directly included in the SCA endorsed CRPs & Standards.	4.5.5 and 4.6.4
Will the safeguards be adequate for the time required? How will they need to be maintained?	Measures should be designed to cope with expected seasonal weather conditions, e.g. high intensity summer storms.	4.5.4, 4.5.6, 4.6.4, 4.6.6

Table 3.3 (Cont'd)
SCA Neutral or Beneficial Water Quality Impact Assessment Guidelines

Page 2 of 2

Guideline	Description	EIS Section
Will all impacts on water quality be effectively contained on the site by the identified safeguards (above) and not reach any watercourse, water body or drainage depression? Or will impacts on water quality be transferred outside the site for treatment? How? Why?	The level of analysis should be in proportion to the risks related to the type of activity and sensitivity of the site. For routine projects, a qualitative assessment would be sufficient to deem the achievement of neutral or beneficial effect. For large scale projects or where they are located in particularly sensitive areas, some form of pollutant modelling is recommended.	4.5.6.5, 4.6.5
Is it likely that a neutral or beneficial effect on water quality will occur? Why?	When the activity has been completed, will the level of pollutants be the same as they were before work commenced (i.e. neutral effect)? Or lower than before (beneficial effect)? Or worse than before (adverse effect)? It may be useful to consider the likely effect in the short-term and long-term.	4.5.6.5, 4.6.5.1

Notably, as the Minister is the consent authority, concurrence of the Chief Executive of the SCA is not required (as nominated by Clause 11 of the SEPP). The SCA has been consulted, however, and the SCA's assessment requirements, along with where these are addressed in the EIS and/or the Specialist Consultant Studies Compendium, is provided in **Appendix 3**.

3.2.3.4 Local Planning Issues

3.2.3.4.1 Lithgow City Local Environment Plan 1994

The current Lithgow City Council Local Environmental Plan (LEP) was gazetted in 1994 and guides development in the local government area by encouraging the proper management, development and conservation of natural resources and the built environment. The Site is located on land zoned Rural 1(a) under the existing LEP. The objectives of this zone and where these are addressed in the EIS are included in **Table 3.4**.

Table 3.4
Objectives of Rural Land Use 1(a) of the Lithgow LEP

Page 1 of 2

Objective	EIS Section
a) protecting, enhancing and conserving	
(i) rural land, in particular prime crop and pasture land, in a manner which sustains its efficient and effective agricultural production potential,	4.2 and 4.14
(ii) soil, by controlling and locating development in accordance with soil capability,	4.2.3
(iii) forests of existing and potential commercial value for timber production,	N/A
(iv) valuable deposits of minerals, coal and extractive materials, by controlling the location of development for other purposes in order to ensure the efficient extraction of those deposits,	4.2.5
(v) trees and other vegetation in environmentally sensitive areas, where the conservation of the vegetation is significant for scenic amenity or natural wildlife habitat or is likely to control land degradation,	2.14 and 4.7

Table 3.4 (Cont'd)
Objectives of Rural Land Use 1(a) of the Lithgow LEP

Page 2 of 2

Objective	EIS Section
(vi) water resources for use in the public interest, preventing the pollution of water supply catchment and major water storages,	4.5 and 4.6
(vii) localities of significance for nature conservation, including places with rare plants, wetlands and significant wildlife habitat, and items of heritage significance.	2.14, 4.7, 4.11, 4.12
b) preventing the unjustified development of prime crop and pasture land for purposes other than agriculture,	N/A
c) facilitating farm adjustments,	N/A
e) minimising the cost to the community of: (i) fragmented and isolated development of rural land, and (ii) providing, extending and maintaining public amenities and services,	N/A
f) providing land for other non-agricultural purposes, in accordance with the need for that development, and	2.13
g) providing for the separation of conflicting land uses.	4.2.4

3.2.3.4.2 Draft Lithgow City LEP 2013 / Lithgow City Council Land Use Strategy 2010-2030

A draft LEP for Lithgow City was prepared in 2013 by the Lithgow City Council. Public exhibition of this draft LEP was completed in August 2013 and Council is currently reviewing submissions. The draft LEP changes the naming convention for zones and zone development standards to provide consistency with the core mandated zone objectives and drafting directions provided by the DP&I Practice Note *Preparing LEPs using the Standard Instrument: standard zones 2011 (PN 11-002)*. Although the naming of zones and some objectives and development standards are expected to change, the draft LEP does not indicate that these changes will affect the permissibility of extractive industry development at the Site.

Preparation of the draft LEP followed formal endorsement of the Lithgow Land Use Strategy 2010-2030 (LCC, 2011) by the Department of Planning and Infrastructure in May 2012. It explores the land use and planning issues currently facing the LGA and provides recommendations for resolving these issues. The issues of greatest relevance to the Proposal are considered below.

Industry Profile

The LGA is heavily dependent on both mining (including extractive industries) and retail as the largest employment industries in the region. As the mining industry also provides employees with the disposable income to be spent on retail goods, the two industries are invariably linked. The Proposal would extend the life of the quarry for a further 30 years (to at least 2050) ensuring the employment and economic contributions that are currently provided by operations at the Site are extended and continue.

Sydney Drinking Water Catchment

LCC (2011) identifies that 18.44% of the Lithgow LGA is within the Sydney Drinking Water Catchment and development in these areas should be subject to additional criteria to establish a neutral or beneficial effect upon water quality before development approval is obtained.

The Applicant recognises that the Site lies within Sydney Drinking Water Catchment and submissions from the SCA have been included with other agency submissions with the DGRs. The submission from the Sydney Catchment Authority and potential impacts to water quality have been addressed in a comprehensive surface water assessment provided in Section 4.5. In summary, outside of extreme rainfall events the Proposal is not expected to have an impact on surface water quality on the Coxs River or its tributaries and would therefore not adversely impact the quality of water in the Sydney Drinking Water Catchment.

Environmentally Sensitive Land, Water and Biodiversity Resources

The land on which the Site is situated has been mapped by LCC (2011) as being within an area of environmentally sensitive land, of high to moderate biodiversity sensitivity and as potentially containing Endangered Ecological Communities (EEC). A Terrestrial Ecology Assessment completed for the Proposal (Niche, 2014a) has confirmed that while no EECs are present, one endangered plant *Eucalyptus pulverulenta* (Silver-leaved mountain gum) and six endangered fauna species have been recorded. The Proposal has been deemed a controlled activity under the EPBC Act 1999 and assessment requirements provided by the Commonwealth Department of the Environment.

The following sections of the EIS provide a discussion on the potential impacts to land, water and biodiversity and where required describe proposed management and mitigation measures to limit potential impacts.

- Section 2.14 describes the proposed biodiversity offset strategy which has been prepared in accordance with the NSW offset principles for major projects (State significant development and infrastructure) (OEH, 2013).
- Section 4.2.3 assesses the potential impacts to land resources including soil and land capability.
- Section 4.5 assesses the potential impact to surface water quality and supply including the Coxs River.
- Section 4.6 assesses potential impacts to local groundwater.
- Section 4.7 provides an assessment of the potential impacts to terrestrial ecology.
- Section 4.8 provides an assessment of the potential impacts to aquatic ecology.

Scenic Quality of Landscapes

LCC (2011) recognises the importance of the scenic landscape to the LGA and the existing and future economic impact of this attribute. Previous assessments of the Austen Quarry have identified and provided mitigation in relation to impacts associated with quarry visibility and the Applicant recognises this as an important issue to manage should approval be obtained for the Stage 2 Extension.

Protection of Primary Production Resources

The Strategy also highlights the potential land use conflict between residents seeking a rural lifestyle and the use of land for primary production (mineral resources, agriculture, forestry and wind resource).

Mineral Resources (including Extractive Industry)

LCC (2011) recognises the significant contribution the mining and extractive industries make to the LGA (employing 774 persons and represents 10.1% of the Lithgow LGA workforce - LCC, 2011)². These enterprises and the coal mines generate multiplier effects in engineering and the maintenance industries in the LGA. LCC (2011) considers that these will remain the mainstay of employment and economic drivers in the Lithgow LGA in the foreseeable future. Notably, the extractive industry is not subject to the same fluctuations in production as the coal and other mining industries and hence represents a more stable source of employment and economic contribution.

Agricultural Lands

The Lithgow LGA has negligible land areas classified as prime crop and pasture lands with only 64% of land within the General Rural zone is capable of some form of agriculture (LCC, 2011). It is reported in LCC (2011) that in 2006 there were only nine holdings within agriculturally capable land in the LGA large enough (1 000ha) to be considered self-sufficient agricultural enterprises. While proportionally, agriculture contributes less to the economy of the Lithgow LGA than surrounding regions, at \$14M annually the contribution is still considered important.

Forestry

Forestry-zoned lands represent 14.9% of land area within the Lithgow LGA, with a further 279.5ha of rural land located within a private forest. While not as significant to the Lithgow LGA, forestry represents a significant contribution to regional economy. Forests NSW (2006) report that the Central Tablelands, incorporating Lithgow City Council, hosts a timber industry with \$525 million in output, \$226 million in gross regional product, \$91 million in household income and almost 2 000 full time equivalent jobs representing 5.8% of the Central Tableland gross regional product.

Notably, there is no forestry zoned land within the immediate vicinity or area of likely impact surrounding the Site and hence the Stage 2 Extension would not impact on current or future forestry development.

Wind Resource

The Central Tablelands has been established by the NSW Government as a renewable energy precinct based on the relatively high wind resources of the area. Within the Lithgow LGA, the Hampton Wind Park has been established which supplies energy via 660kW turbines to ‘green power’ customers of the local energy producer. It is noted that higher average wind speeds generally occur to the west of Lithgow and therefore these areas would be more ideally suited to the development of wind resources. This notwithstanding, the Stage 2 Extension covers a relatively small area and there are no elements of it that would preclude the coexistence of a wind energy development in the immediate surrounds.

² The 2011 ABS Census identifies 997 persons employed in the ‘Mining’ sector which represents 12.4% of the population.

LCC (2011) highlights that the biggest threat to primary production resources within the LGA is continued fragmentation predominantly for rural lifestyle development. Notably, the Proposal would have little influence on this main threat to the primary production resources of the LGA. This notwithstanding, Section 4.2 and 4.14 consider the impact of the Proposal on agricultural lands, resources and enterprises.

3.2.3.5 Other Environmental Policies, Guidelines and Plans

The DGRs require that in assessing the identified key assessment requirements, reference be made to one or more guideline documents. In addition, a number of the government agencies consulted in relation to the Proposal required reference to other environment guideline documents. **Appendix 3** identifies each of the relevant guidelines referenced in the preparation of the EIS.

3.2.4 Review of Environmental Monitoring, Performance and Preliminary Constraints Assessment

3.2.4.1 Environmental Monitoring

Since the commencement of construction at the Austen Quarry, the Applicant has monitored the impact of the operations on a number of environmental parameters (see Section 1.7.3). The results of this monitoring, which includes water quality, dust, air overpressure (blast noise), flora and fauna, and aquatic ecology, is reported annually and has confirmed that standard quarry operations are being undertaken without significant adverse impact on these factors. In particular, the results of monitoring indicate that quarrying operations easily comply with the relevant air and noise emission criteria of EPL 12323.

As a result of the monitoring, the Applicant recognises the sensitive nature of operations with respect to the proximity to the Coxs River and potential impact on local water quality and aquatic ecosystem function. The presence of one threatened flora species, *Eucalyptus pulverulenta* (Silver-leafed mountain gum), and transient use of the Site by several threatened fauna species indicates that minimising, mitigating and managing impacts on flora, fauna and fauna habitat locally is a significant issue for the Proposal.

3.2.4.2 Environmental Performance

Section 1.7.4 provides a summary of overall environmental performance on the Site. The results of this summary, which considers annual compliance assessment, notable incidents and a record of complaints received indicates that the following are critical issues for assessment within the EIS.

- Surface water management, and in particular, prevention of uncontrolled discharges to Yorkeys Creek or the Coxs River.
- Management of product transportation to minimise inconvenience and hazard to other road users.
- Control of air emissions to minimise the potential for dust generation (although it is noted that dust deposition monitoring undertaken monthly indicates compliance with the relevant criteria).

3.2.4.3 Preliminary Assessment of Constraints

During the initial planning stage, an initial assessment of local or existing conditions and potential constraints was conducted (either by the specialist consultancy responsible for that particular environmental parameter or by RWC). The following provides a summary of the key environmental issues and potential constraints identified through this process.

- **Transportation.**

GTA Consultants identified that while the critical intersections used by trucks travelling to and from the Austen Quarry are currently rated as Good (Quarry Access Road – Jenolan Caves Road) or Satisfactory (Jenolan Caves Road – Great Western Highway), consideration as to how an increase in average and peak movements may affect intersection performance is required. It is recognised that while the potential increase in average and peak movements would not increase the volume of traffic on Jenolan Caves Road or the Great Western Highway significantly, the effect of this on road condition, road users and residences or businesses along these routes requires assessment.
- **Terrestrial Ecology.**

Following the establishment of an initial quarry extension footprint, Niche EHM completed detailed field investigations to assess the type and sensitivity of the flora and fauna habitat that would be disturbed. While the vegetation within the proposed disturbance footprint represents remnant native vegetation communities, requiring an offset to be established to compensate for this disturbance, none have been identified as threatened under the TSC Act or EPBC Act. The primary issue for consideration is therefore the potential impact on the TSC Act and EPBC Act listed Silver-leafed mountain gum and up to 12 additional threatened fauna species for which the proposed extension area represents potential habitat.
- **Aquatic Ecology.**

A review of annual monitoring of river conditions and macro-invertebrate assemblages of the Coxs River has indicated that conditions at the sites downstream of the Site have not been consistently poorer or more variable than those at the upstream control locations. Assuming the continued implementation of controls on Site operations with respect to water management, erosion and sediment control and rehabilitation, impacts on aquatic ecology are not anticipated to constrain the Proposal.
- **Cultural Heritage.**

A review of existing databases, previous heritage surveys and local conditions suggested that the presence of heritage sites or artefacts would be unlikely and therefore unlikely to constrain the Proposal (Niche, 2014b).
- **Visual Amenity.**

Following a comprehensive desktop review of potential visual vantage points surrounding the Site, a selection of these potential vantage points were visited. The results of this preliminary survey indicated that without modification to the

extraction area extension and sequence, the proposed extraction and overburden emplacement activities would be highly visible to the north (most notably from Hassans Walls Lookout and Hassans Walls Road) and to the northeast (most notably from Mount York and associated lookouts). Extraction plan modification and visual impact mitigation measures have subsequently been incorporated into the Proposal, however, the impact on visual amenity remains a key issue for consideration within the EIS.

- **Groundwater.**
An assessment of local conditions has determined that while the extraction area would be developed below the local groundwater table drawdown is not expected to propagate a significant distance due to the low permeability nature of the fractured rock and the presence of aquifer boundaries in all directions from the extraction area. Assuming appropriate licences are obtained for the ‘taking’ of water as the extraction area is developed, groundwater is unlikely to constrain the Proposal.
- **Surface Water.**
With reference to the environmental monitoring results and previous, environmental performance of the Applicant documented in Section 1.7.3 and 1.7.4, it is noted that while managing surface water appropriately is an important consideration, this has been and could be achieved through the implementation of appropriate design features, operation safeguards and controls. A review of these and likely effectiveness is identified as a key consideration for the EIS.
- **Air and Noise Emissions.**
Given the proposed activities on the Site are unlikely to differ significantly from those currently undertaken, and with reference to the monitoring completed by the Applicant, air and noise emissions are considered unlikely to constrain the Proposal.

3.2.4.4 Key Environmental Issues

The Proposal would increase the overall footprint of disturbance associated with the Austen Quarry and on the basis of the environmental monitoring, performance and preliminary constraints assessments, it is evident that the following issues require the most detailed consideration.

1. The impact of the ongoing and forecast increase in average and maximum truck movements (only to the currently approved level) to and from the Austen Quarry on other road users and local residents and/or businesses along the transport route.
2. The potential for the operations on the Site to become more visible from public vantage points such as Hassans Walls and Mt York.
3. The actual or perceived impact of the Proposal on commercial enterprises and local amenity with the Lithgow and Blue Mountains LGAs.

4. The impact on the local population of Silver-leafed mountain gum and habitat for threatened fauna species.
5. The potential for impact on the water quality of the Coxs River (which forms part of the Sydney drinking water catchment) and subsequent impacts on the health of the aquatic ecosystems of the river.

3.2.5 Summary of Environmental Issues

Table 3.5 presents a summary of the environmental issues identified through consultation (both community and government), reviews of planning instruments and strategies and the results of environmental monitoring and studies undertaken on and immediately surrounding the Site as part of current quarry operations.

The frequency of identification provides an initial indication of those environmental aspects perceived to be at greatest risk and hence of greatest priority. The methodology and justification for the numbers displayed in **Table 3.5** follow the table.

Table 3.5
Summary of Identified Environmental Issues

Environmental Issue	Source and Frequency of Identification				Total
	Government Consultation	Community Consultation	Monitoring, Performance & Preliminary Studies	Policies & Guidelines	
Traffic and Transport	6	10	5	1	22
Visual amenity	2	10	5	2	19
Surface water / erosion & sediment control / flooding	7	4	4	4	19
Terrestrial Ecology	3	1	3	5	12
Groundwater	5		2	4	11
Rehabilitation & final landform	6	2	2	1	11
Aquatic Ecology	3		3	4	10
Socio-economic impacts	3	2	4		9
Soil resources / Management	3		1	4	8
Land Use / Planning / Permissibility	4			3	7
Hazards	5		1	1	7
Air Quality/Greenhouse Gas	2	1	2	1	6
Agricultural Resources	2		1	3	6
Consultation	2	4			6
Noise & Vibration	3		2		5
Waste Management	3		1	1	5
Cultural heritage	2		1		3
Health and Safety	1	1			2
Cumulative Impacts	2				2
Licensing	1				1

Government Consultation

A review of the DGRs (and attached correspondence to DP&I from the relevant government agencies consulted) was undertaken to calculate the number of times a specific environmental issue was raised to be discussed and assessed within the EIS. The review process simply counted how many times a particular environmental issue requiring assessment was mentioned per government agency (see **Table 3.1**).

Community Consultation

Following the conclusion of the community consultation documented in Section 3.2.2, the number of references to each particular issue was tallied. Where several specific issues related to a more general environmental parameter were raised within a single submission or feedback, e.g. various issues within the broader category of ‘traffic and transportation’, these were only scored once for the broader environmental parameter (so as not to skew the overall emphasis on this issue).

Environmental Monitoring, Performance and Preliminary Constraints Assessment

Each specialist consultancy was required to complete a preliminary assessment of potential constraints on the Proposal. These assessments considered the results of environmental monitoring undertaken by the Applicant at the quarry. RWC completed an assessment of constraints for those environmental parameters for which a specialist consultancy has not been commissioned, e.g. visual amenity, waste management and socio-economic setting. A review of these preliminary assessments was undertaken to determine an importance ranking for each of the environmental issues. The environmental issues were ranked on a sliding scale of ‘5’ being extremely important to ‘1’ being selectively important to the Proposal. The ranking of the environmental issues was undertaken in conjunction with each specialist consultant’s feedback, taking into consideration the local and regional importance of the issues, as well as the requirement for and difficulty of adopting appropriate mitigation measures.

Policies, Guidelines and Plans

A tally of the suggested policies, guideline documents and plans (see Section 3.2.3) with respect to each environmental issue was undertaken to provide an indication to the importance of each in relation to the Proposal.

3.3 ANALYSIS OF RISK AND ISSUE PRIORITISATION

3.3.1 Analysis of Risk

Risk relates to the possibility of something happening that will have an impact upon the objectives of a task, which in this case is the development and operation of the Proposal in an environmental responsible manner. Risk is measured in terms of consequence (severity) and likelihood (probability) of the event happening.

The allocation of a consequence rating was based on the definitions contained in **Table 3.6**. It is noted that the assigned consequence rating represents the highest level applicable, i.e. if a potential impact is assigned a level of 4 - Major based on impact to the environment and 2 - Minor based on area of impact, the consequence level assigned would be 4 - Major.

Table 3.6
Qualitative Consequence Rating

Level	Severity Level	Consequence Types						
		Financial	Health and Safety	Natural Environment	Social /Cultural Heritage	Government Regulation	Public / Community Relations	Legal
1	Negligible	<\$10 000	No injury or review required	Minor impact on biological or physical environment	Minor social issues, repairable damage	Minor incident (Non-reportable) (passes the 'no material harm' assessment)	Minor adverse local public or media attention or complaints	
2	Minor	\$20 000 - \$100 000	First aid treatment required but no lost time or restricted duties	Short-term impact not affecting ecosystem functions	Minor medium-term social impacts on local population. Mostly repairable	Reportable incident (administrative or with minimal material harm) (minimal threat of action by regulator)	Attention from media and/or heightened concern by local community	Isolated complaint / incident with a threat of legal action
3	Moderate	\$100 000 - \$1M	Medical treatment leading to lost time or restricted duties	Short term impairment of ecosystem affecting function	On-going social issues, damage to items of cultural significance	Reportable incident (notable material harm or repeat of previous incident) (real threat of action by regulator)	Adverse media / public / NGO attention	Significant level of complaints / incidents with a high threat of legal action
4	Major	\$1M-\$5M	Hospitalisation required leading to permanent injury	Medium term impairment of an ecosystem	Significant social issues, significant damage to structures / items of cultural significance	Reportable incident (major material harm) (action by regulator almost certain)	Major public embarrassment / adverse media coverage	Serious breach of regulation leading to litigation
5	Severe	>\$5.0M	Fatality	Long-term impairment of ecosystem	On-going serious social issues, major permanent impact to cultural and heritage sites	Reportable incident (extensive material harm) (severe action by regulator almost certain)	Serious public or media outcry (national coverage) /major reputation impact	Significant prosecution and fines, litigation including class action

Source: Rating modified after HB 89:2012 and HB 203:2012

The likelihood or probability of an impact occurring was allocated based on the definitions contained in **Table 3.7**.

Table 3.7
Qualitative Likelihood Rating

Level	Descriptor	Description
A	Certain	Is an ongoing occurrence or will occur under all conditions
B	Almost Certain	Is expected to occur in most circumstances
C	Likely	Will probably occur in most circumstances
D	Possible	Will probably occur under favourable circumstances
E	Unlikely	May occur, but only under favourable circumstances
F	Rare	Not expected to occur, unless subject to exceptional circumstances
G	Very Rare	Theoretically possible but not expected to occur

Source: Rating modified after HB 89:2012 – Figure B7

The overall risk is then determined by considering the relative consequence and likelihood of an event occurring as defined by **Table 3.8**.

Table 3.8
Risk Rating Matrix

Likelihood	Consequences				
	1 Negligible	2 Minor	3 Moderate	4 Major	5 Severe
A Certain	M	H	H	VH	VH
B Almost Certain	M	M	H	VH	VH
C Likely	M	M	H	H	VH
D Possible	L	M	M	H	H
E Unlikely	L	L	M	M	H
F Rare	L	L	L	M	M
G Very Rare	L	L	L	L	M

Source: Modified after HB 89:2012 - Figure B8

The four levels of risk identified in **Table 3.8** are defined as follows³.

- Low (L): can be managed by routine procedures and unlikely to require specific application of resources.
- Medium (M): can be managed to minimise the potential for environmental harm by the implementation of specific monitoring programs and response procedures. Responsibility for the implementation of monitoring and management activities must be specified.
- High (H): requires the development of specific management or action plans identifying specific monitoring, trigger levels for contingency management and specification as to the roles and responsibilities of personnel to implement contingency management. Senior executive management attention is required to ensure appropriate resources are available to manage this risk.
- Very High (VH): presents a risk which may not be able to be satisfactorily managed by the development and implementation of management plans. Board attention needed to identify alternative methods of operation to reduce the risk to a level where it can be satisfactorily managed.

For this Proposal, the sources of risk, potentially affected receptor(s) or environment(s) and potential consequences were identified for each environmental parameter that could be affected by the proposed operations. For each risk source, receptor and potential consequence, **Table 3.9** defines a specific potential impact.

Through a review of the Proposal design, the local environment and other factors, the likely consequence, likelihood and overall risk associated with each potential impact were then allocated (on the basis of **Tables 3.6** to **3.8**) and are presented in **Table 3.9**. In assessing the likelihood and consequence of each potential impact, the adoption of operational safeguards, controls and mitigation measures that are currently adopted at the Austen Quarry, or are standard throughout the quarrying industry, have been assumed. This level of risk was referred to as the risk with standard control measures.

³ Modified after HB 203:2006 - Table 4(B)

Table 3.9
Analysis of Environmental Risk

Environmental Parameter	Risk Source(s)	Receptor / Surrounding Environment	Potential Consequence	Potential Impact	Consequence	Likelihood	Risk
					Standard Control Measures		
Air Quality	<ul style="list-style-type: none"> Dust from extraction and processing operations, stockpiles and exposed quarry surfaces. Dust from vehicle movements on site and off site. 	<ul style="list-style-type: none"> Residences and other local buildings. 	<ul style="list-style-type: none"> Increased deposited dust and associated nuisance for local residents and business. 	<ul style="list-style-type: none"> Nuisance/amenity impacts from dust deposited on window sills, cars, etc. 	Minor (2)	Likely (C)	M
		<ul style="list-style-type: none"> Local residents, business and land owners. 	<ul style="list-style-type: none"> Increased particulate matter (in particular PM₁₀) in the atmosphere. 	<ul style="list-style-type: none"> Adverse health impacts (if PM₁₀ levels are excessive). 	Moderate (3)	Unlikely (E)	M
			<ul style="list-style-type: none"> Increased complaints to Hy-Tec by community. 	<ul style="list-style-type: none"> Increased community and regulatory scrutiny. 	Minor (2)	Possible (D)	M
		<ul style="list-style-type: none"> Surface water bodies. 	<ul style="list-style-type: none"> Reduction in local water quality. 	<ul style="list-style-type: none"> Exceedance of nominated water quality criteria. 	Moderate (3)	Possible (D)	M
	<ul style="list-style-type: none"> Surrounding native vegetation. 	<ul style="list-style-type: none"> Reduction in vegetation or mortality. 	<ul style="list-style-type: none"> Reduced condition of local vegetation or value as fauna habitat. 	Moderate (3)	Rare (F)	L	
	<ul style="list-style-type: none"> Particulate and greenhouse emissions from vehicles, fixed plant and blasting. 	<ul style="list-style-type: none"> Local and regional air shed. 	<ul style="list-style-type: none"> Increased in greenhouse gas emissions to atmosphere. 	<ul style="list-style-type: none"> Contribution to greenhouse effect. 	Negligible (1)	Certain (A)	M
Noise and Vibration	<ul style="list-style-type: none"> Noise from fixed and mobile plant. 	<ul style="list-style-type: none"> Local residents, business and land owners. 	<ul style="list-style-type: none"> Increased noise levels. 	<ul style="list-style-type: none"> Noise levels cause annoyance and/or distractions 	Moderate (3)	Possible (D)	M
			<ul style="list-style-type: none"> Impacts on the health and well-being of local residents. 	<ul style="list-style-type: none"> Noise levels cause adverse effects on physical or mental health. 	Major (4)	Unlikely (E)	M
			<ul style="list-style-type: none"> Increased complaints to Hy-Tec by community. 	<ul style="list-style-type: none"> Increased community and regulatory scrutiny. 	Moderate (3)	Possible (D)	M
		<ul style="list-style-type: none"> Native fauna. 	<ul style="list-style-type: none"> Detrimental effects on local fauna. 	<ul style="list-style-type: none"> Relocation of and/or reduction of local native fauna species due to noise disturbance. 	Moderate (3)	Unlikely (E)	M
	<ul style="list-style-type: none"> Possible loss of species in the local area. 		<ul style="list-style-type: none"> Possible loss of species in the local area. 	Moderate (3)	Possible (D)	M	

Table 3.9 (Cont'd)
Analysis of Environmental Risk

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Environmental Parameter	Risk Source(s)	Receptor / Surrounding Environment	Potential Consequence	Potential Impact	Consequence	Likelihood	Risk
					Standard Control Measures		
Noise and Vibration (Cont'd)	• Noise from trucks transporting quarry products off-site.	• Local residents, business and land owners.	• Increased noise levels.	• Noise levels cause annoyance and/or distractions	Moderate (3)	Possible (D)	M
			• Impacts on the health and well-being of local residents.	• Noise levels cause adverse effects on physical or mental health.	Major (4)	Unlikely (E)	M
			• Increased complaints to Hy-Tec by community.	• Increased community and regulatory scrutiny.	Moderate (3)	Unlikely (E)	M
	• Noise from blasting.	• Local residents, business and land owners.	• Impacts on the health and well-being of local residents.	• Noise levels cause adverse effects on physical or mental health.	Major (4)	Rare (F)	M
		• Local livestock	• Impact on livestock health and/or productivity.	• Reduced agricultural productivity.	Minor (2)	Rare (F)	L
	• Vibration from blasting and other extraction operations on site.	• Local residents, business and land owners.	• Nuisance/amenity impacts on surrounding landowners / residents.	• Reduced local amenity	Moderate (3)	Unlikely (E)	M
			• Structural damage to buildings and structures.	• Structural damage to buildings and structures	Moderate (3)	Rare (F)	L
			• Increased complaints to Hy-Tec by community.	• Increased community and regulatory scrutiny.	Moderate (3)	Unlikely (E)	M
	Traffic	• Ongoing traffic levels on public road network. (increasing to current approved levels).	• Road users of Jenolan Caves Road and the Great Western Highway.	• Ongoing truck traffic and possible congestion.	• Inconvenience to commuters.	Minor (2)	Possible (D)
• Increased risk of accidents occurring.					Moderate (3)	Unlikely (E)	M
• Deterioration of road surface.				• Accelerated road pavement deterioration.	Minor (2)	Rare (F)	L
• Business owners and tourist facility operators of the Blue Mountains.			• Ongoing truck traffic.	• Decreased patronage of businesses and tourist facilities.	Moderate (3)	Rare (F)	L

Table 3.9 (Cont'd)
Analysis of Environmental Risk

Environmental Parameter	Risk Source(s)	Receptor / Surrounding Environment	Potential Consequence	Potential Impact	Consequence	Likelihood	Risk
					Standard Control Measures		
Traffic (Cont'd)	<ul style="list-style-type: none"> Ongoing traffic levels on public road network. (increasing to current approved levels). (Cont'd) 	<ul style="list-style-type: none"> Residences adjoining the Great Western Highway. 	<ul style="list-style-type: none"> Ongoing truck traffic and vehicle noise/emissions. 	<ul style="list-style-type: none"> Reduced amenity of local area. 	Minor (2)	Possible (D)	M
		<ul style="list-style-type: none"> Native fauna. 	<ul style="list-style-type: none"> Death or injury to Native animals on the road network. 	<ul style="list-style-type: none"> Loss of species in local area. 	Negligible (1)	Likely (C)	M
Soil Resources and Erosion	<ul style="list-style-type: none"> Loss of soil resources as a result of land preparation activities. 	<ul style="list-style-type: none"> Site soil resources. 	<ul style="list-style-type: none"> Reduced soil resource to undertake appropriate rehabilitation program. 	<ul style="list-style-type: none"> Rehabilitation outcomes not meeting objectives. 	Moderate (3)	Possible (D)	M
	<ul style="list-style-type: none"> Degradation of soils resources as a result of stockpiling. 	<ul style="list-style-type: none"> Site soil resources. 	<ul style="list-style-type: none"> Compromised soil quality leads to poor vegetation regrowth on site. 	<ul style="list-style-type: none"> Reduced productivity on final landform. 	Moderate (3)	Possible (D)	M
	<ul style="list-style-type: none"> Erosion as a result of vegetation clearing, from stockpiles or following soil replacement during rehabilitation. 	<ul style="list-style-type: none"> Site soil resources 	<ul style="list-style-type: none"> Loss of soil resources. 	<ul style="list-style-type: none"> Rehabilitation outcomes not meeting objectives. 	Moderate (3)	Possible (D)	M
		<ul style="list-style-type: none"> On and off site surface water bodies. 	<ul style="list-style-type: none"> Sedimentation of on-site and local surface water bodies resulting in poor water quality. 	<ul style="list-style-type: none"> Increased erosion on the final landform. 	Minor (2)	Possible (D)	M
Surface water resources and quality	<ul style="list-style-type: none"> Reduction in environmental flows through on-site capture of water. 	<ul style="list-style-type: none"> Yorkeys Creek and Coxs River 	<ul style="list-style-type: none"> Reduced natural surface water flows. 	<ul style="list-style-type: none"> Reduced flows to Yorkeys Creek and Coxs River. 	Minor (2)	Almost Certain (B)	M
		<ul style="list-style-type: none"> Downstream water users 	<ul style="list-style-type: none"> Reduced natural surface water flows. 	<ul style="list-style-type: none"> Reduced availability of water to downstream users. 	Minor (2)	Unlikely (E)	L
		<ul style="list-style-type: none"> Local flora, terrestrial and aquatic fauna 	<ul style="list-style-type: none"> Reduced volume of water available to local flora and fauna. 	<ul style="list-style-type: none"> Stress and possible reduction in viability of native vegetation. 	Moderate (3)	Rare (F)	L
			<ul style="list-style-type: none"> Degradation of riparian or aquatic vegetation / ecosystems 	<ul style="list-style-type: none"> Degradation of riparian or aquatic vegetation / ecosystems 	<ul style="list-style-type: none"> Degradation of riparian or aquatic vegetation / ecosystems 	Moderate (3)	Unlikely (E)

Table 3.9 (Cont'd)
Analysis of Environmental Risk

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Environmental Parameter	Risk Source(s)	Receptor / Surrounding Environment	Potential Consequence	Potential Impact	Consequence	Likelihood	Risk
					Standard Control Measures		
Surface water resources and quality (Cont'd)	<ul style="list-style-type: none"> Discharge of dirty or contaminated water. Erosive actions of water 	Local creeks and tributaries	Decreased water quality.	Temporary sedimentation or hydrocarbon pollution of downstream waters.	Moderate (3)	Possible (D)	M
				Ongoing sedimentation or major hydrocarbon pollution event impacting on aquatic ecosystem for medium to long term.	Major (4)	Rare (F)	M
		Site soils and vegetation.	Contamination of soil resources.	Reduced potential for future land uses.	Minor (2)	Unlikely (E)	L
		Local and regional catchment ecosystem	Introduction of a toxic compound to the environment.	Health related impacts (people) due to consumption of contaminated water.	Moderate (3)	Very Rare (G)	L
				Pollution of local waterways resulting in detrimental effects to flora and fauna.	Moderate (3)	Unlikely (E)	M
		Livestock	Contamination of soil and water resources.	Health related impacts (stock) due to consumption of contaminated water.	Moderate (3)	Rare (F)	L
		Site soils	Loss of topsoil.	Soil erosion and loss of agriculturally productive capacity.	Minor (2)	Possible (D)	M
				Decreased availability of soil for rehabilitation.	Moderate (3)	Possible (D)	M

Table 3.9 (Cont'd)
Analysis of Environmental Risk

Environmental Parameter	Risk Source(s)	Receptor / Surrounding Environment	Potential Consequence	Potential Impact	Consequence	Likelihood	Risk
					Standard Control Measures		
Groundwater resources and quality	• Dewatering of aquifer.	• Local groundwater users.	• Reduction in the volume of water contained within the local aquifer / availability.	• Reduced yields of groundwater bores.	Minor (2)	Very Rare (G)	L
		• Local streams, creeks and rivers.	• Material reduction in base flows.	• Reduced discharge to gully colluvium.	Negligible (1)	Possible (D)	L
				• Degradation of riparian or aquatic vegetation / ecosystems	Moderate (3)	Very Rare (G)	L
				• Reduced availability of water to downstream users.	Minor (2)	Rare (F)	L
	• Groundwater dependent ecosystems.	• Reduced availability of groundwater.	• Degradation of groundwater dependent ecosystems.	Moderate (3)	Very Rare (G)	L	
	• Groundwater contaminated with fuel, oil or nitrates (from blasting).	• Local users of groundwater for resident/business purposes.	• Reduced groundwater quality.	• Reduced availability to local users.	Minor (2)	Very Rare (G)	L
		• Groundwater dependent ecosystems.	• Reduced groundwater quality.	• Degradation of groundwater dependent ecosystems	Moderate (3)	Very Rare (G)	L
		• Local streams, creeks, rivers and aquatic habitat.	• Local surface water bodies become contaminated.	• Reduced availability of water to downstream users.	Minor (2)	Very Rare (G)	L
			• Degradation of habitat quality.	• Degradation of riparian or aquatic vegetation / ecosystems.	Moderate (3)	Very Rare (G)	L

Table 3.9 (Cont'd)
Analysis of Environmental Risk

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Environmental Parameter	Risk Source(s)	Receptor / Surrounding Environment	Potential Consequence	Potential Impact	Consequence	Likelihood	Risk
					Standard Control Measures		
Flora and Fauna	<ul style="list-style-type: none"> Clearing of vegetation. 	<ul style="list-style-type: none"> Site biota. 	<ul style="list-style-type: none"> Reduction in remnant native vegetation. 	<ul style="list-style-type: none"> Reduction in local biodiversity. 	Moderate (3)	Certain (A)	H
			<ul style="list-style-type: none"> Loss of local and regionally important threatened species (flora and fauna). 	<ul style="list-style-type: none"> Local or regional reduction in distribution of threatened species, populations and EEC's. 	Moderate (3)	Almost Certain (B)	H
			<ul style="list-style-type: none"> Reduced local and regional biodiversity. 	<ul style="list-style-type: none"> Loss of biodiversity and alteration to existing habitat. 	Moderate (3)	Almost Certain (B)	H
	<ul style="list-style-type: none"> Detrimental effects of indirect Proposal impacts, e.g. noise, dust, lighting 	<ul style="list-style-type: none"> Locally occurring species, populations and communities. 	<ul style="list-style-type: none"> Dispersal of locally occurring species and populations away from the site. 	<ul style="list-style-type: none"> Reduced biodiversity value of the Site and local setting. 	Moderate (3)	Possible (D)	M
			<ul style="list-style-type: none"> Reduced potential for use of the site by threatened species, populations and EECs. 	<ul style="list-style-type: none"> Reduced local distribution of threatened species, populations and EECs. 	Moderate (3)	Possible (D)	M
Aboriginal Heritage	<ul style="list-style-type: none"> Removal or destruction of known Aboriginal sites and/or artefacts 	<ul style="list-style-type: none"> Local archaeological setting 	<ul style="list-style-type: none"> Damage or destruction of Aboriginal artefacts or site. 	<ul style="list-style-type: none"> Destruction of identified site 	Moderate (3)	Very Rare (G)	L
				<ul style="list-style-type: none"> Cumulative reduction of the in-situ archaeological record 	Moderate (3)	Very Rare (G)	L
	<ul style="list-style-type: none"> Removal or destruction of currently unidentified Aboriginal sites and/or artefacts 	<ul style="list-style-type: none"> Local archaeological setting 	<ul style="list-style-type: none"> Damage or destruction of Aboriginal artefacts or site. 	<ul style="list-style-type: none"> Destruction of site not yet identified on archaeological record. 	Moderate (3)	Rare (F)	L
				<ul style="list-style-type: none"> Cumulative reduction of the in-situ archaeological record 	Moderate (3)	Rare (F)	L
European Heritage	<ul style="list-style-type: none"> Removal or destruction of sites of heritage significance due to proposed activities 	<ul style="list-style-type: none"> Local archaeological setting 	<ul style="list-style-type: none"> Loss or damage to heritage sites. 	<ul style="list-style-type: none"> Loss or destruction of items of heritage significance 	Moderate (3)	Very Rare (G)	L

Table 3.9 (Cont'd)
Analysis of Environmental Risk

Environmental Parameter	Risk Source(s)	Receptor / Surrounding Environment	Potential Consequence	Potential Impact	Consequence	Likelihood	Risk
					Standard Control Measures		
Visual Amenity	<ul style="list-style-type: none"> Changes in the visual character of the locality 	<ul style="list-style-type: none"> Surrounding residents. 	<ul style="list-style-type: none"> Increased visibility of the quarry from local residents. 	<ul style="list-style-type: none"> Decreased visual amenity of local setting. 	Moderate (3)	Likely (C)	H
		<ul style="list-style-type: none"> Road users (Great Western Highway and Hassans Walls Road). 	<ul style="list-style-type: none"> Increased visibility of the quarry from local roads. 	<ul style="list-style-type: none"> Decreased visual amenity of the LGA as a whole. 	Moderate (3)	Possible (D)	M
		<ul style="list-style-type: none"> Lookouts within Lithgow City LGA (Hassans Walls, Second Lookout and others off Hassans Walls Road). 	<ul style="list-style-type: none"> Increased visibility of the quarry from local lookouts. 	<ul style="list-style-type: none"> Reduced aesthetic value of lookouts. 	Moderate (3)	Likely (C)	H
			<ul style="list-style-type: none"> Reduced patronage of local lookouts 	<ul style="list-style-type: none"> Reduction in local tourism. 	Moderate (3)	Possible (D)	M
		<ul style="list-style-type: none"> Lookouts within Blue Mountains City LGA (Mt York, Bardens and others). 	<ul style="list-style-type: none"> Increased visibility of the quarry from local lookouts. 	<ul style="list-style-type: none"> Reduced aesthetic value of lookouts. 	Moderate (3)	Likely (C)	H
			<ul style="list-style-type: none"> Reduced patronage of local lookouts 	<ul style="list-style-type: none"> Reduction in local tourism. 	Moderate (3)	Possible (D)	M
Rehabilitation and final landform	<ul style="list-style-type: none"> Rehabilitated soils and vegetation of the Site. 	<ul style="list-style-type: none"> Future land use. 	<ul style="list-style-type: none"> Soils and vegetation quality and suitability for future use is compromised or restricted. 	<ul style="list-style-type: none"> Rehabilitation outcomes do not meet objectives. 	Moderate (3)	Possible (D)	M
		<ul style="list-style-type: none"> Surrounding residences. 	<ul style="list-style-type: none"> Poor rehabilitation. 	<ul style="list-style-type: none"> Reduced amenity of the final landform. 	Moderate (3)	Possible (D)	M
	<ul style="list-style-type: none"> Final landform and topography of the site. 	<ul style="list-style-type: none"> Surrounding residences. 	<ul style="list-style-type: none"> Altered landforms. 	<ul style="list-style-type: none"> Reduced amenity of the final landform resultant from altered topography. 	Minor (2)	Likely (C)	M
		<ul style="list-style-type: none"> Future land use. 	<ul style="list-style-type: none"> Landform unsuitable for proposed final land use. 	<ul style="list-style-type: none"> Final landform and land use incompatible with surrounding landscape. 	Moderate (3)	Possible (D)	M

Table 3.9 (Cont'd)
Analysis of Environmental Risk

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Environmental Parameter	Risk Source(s)	Receptor / Surrounding Environment	Potential Consequence	Potential Impact	Consequence	Likelihood	Risk
					Standard Control Measures		
Bushfire	<ul style="list-style-type: none"> Initiation of bushfire due to on Site activities. 	<ul style="list-style-type: none"> Local residents, business and land owners. 	<ul style="list-style-type: none"> Health and safety impacts to Proposal personnel 	<ul style="list-style-type: none"> Loss of life, assets and property on site and in surrounding area. 	Major (4)	Rare (F)	M
			<ul style="list-style-type: none"> Reduction of operating performance for site and surrounding businesses. 	<ul style="list-style-type: none"> Property damage and impacts on production. 	Major (4)	Rare (F)	M
		<ul style="list-style-type: none"> Native flora and fauna. 	<ul style="list-style-type: none"> Destruction and damage of native flora and fauna. 	<ul style="list-style-type: none"> Reduced biodiversity value of the site. 	Moderate (3)	Rare (F)	L
Socio-economic	<ul style="list-style-type: none"> Increase in local employment. 	<ul style="list-style-type: none"> Local community and residents 	<ul style="list-style-type: none"> Increased employment levels. 	<ul style="list-style-type: none"> Increase in economic well being within the LGA. 	Positive Impact		
				<ul style="list-style-type: none"> Change in local community structure as a result of income disparity. 	Minor (2)	Unlikely (E)	L
	<ul style="list-style-type: none"> Proximity of quarry to local and neighbouring properties 	<ul style="list-style-type: none"> Local community and residents 	<ul style="list-style-type: none"> Perceived / loss of amenity at local and neighbouring properties. 	<ul style="list-style-type: none"> Change of social activities in local communities and impact on feelings of well being derived from associated location. 	Moderate (3)	Possible (D)	M
		<ul style="list-style-type: none"> Local tourist related business 	<ul style="list-style-type: none"> Perceived loss of amenity at local accommodation locations. 	<ul style="list-style-type: none"> Impacts to business viability. 	Moderate (3)	Possible (D)	M

The objective of the Applicant is to reduce the risk associated with the potential impacts of the Proposal, where possible. In order to achieve this, further controls, mitigation measures and offsets have been proposed to manage additional impacts relating to the Proposal. These are described (along with the current and standard control measures) throughout Section 4. This level of impact after the adoption of the additional controls is referred to as residual risk and is presented in **Table 6.1** of Section 6.

The results of both risk analyses (Standard Control and Residual) have been reviewed and confirmed by the National Planning & Development Manager and Quarry Manager, and are presented in **Table 3.9**.

3.3.2 Environmental Issue Prioritisation

The prioritisation of the key environmental issues, and hence their general order of presentation in this document, has been established through reference to the following.

- The results of the issue identification process recorded in Section 3.2.
- The risk analysis outlined in Section 3.3.
- The benefit of sequentially presenting issues with inter-related subjects.
- The experience of the document's author in assembling Environmental Impact Statements.

The key environmental issues are presented in Section 4 in the following order.

1. Land Resources (landform and topography, soil and land capability, land use and extractive material resources)
2. Traffic and Transportation
3. Visibility
4. Surface Water
5. Groundwater
6. Terrestrial Ecology
7. Aquatic Ecology
8. Noise, Vibration and Blasting
9. Air Quality
10. Indigenous Cultural Heritage
11. Non-Indigenous Heritage
12. Hazards
13. Agricultural Resources
14. Socio-Economic

It is noted that the positioning of the Land Resources Assessment precedes other assessments with higher associated risk levels as the information presented in this section provides baseline information for these. It is also noted that the positioning of the Socio-economic Assessment within the above order is not a direct consequence of the prioritisation assessment. Rather, from the assessment of the risk sources, potential consequences and nature of the existing environment, it was apparent that the majority of other environmental issues identified included actual or perceived social or socio-economic risks and, as such, it was appropriate that socio-economic issues be addressed following the discussion of the contributing issues.