Section 3

Issue Identification and Prioritisation

This section of the Environmental Assessment provides information outlining the steps undertaken to identify and prioritise the relevant environmental issues that are required to be addressed in the assessment of the Project.

The steps undertaken to identify environmental issues included:

- *consultation with the local community;*
- *consultation with State and local government agencies;*
- *a review of relevant statutory requirements, State and Local Planning policies and environmental guidelines; and*
- *a review of the preliminary environmental studies undertaken for the Project.*

The identified issues and potential impacts were then subjected to a risk analysis and the findings used to prioritise the assessment of the identified environmental issues within this Environmental Assessment.

This section concludes with a prioritisation of the identified environmental issues to be addressed.

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3.1 METHODOLOGY

In order to prepare a comprehensive *Environmental Assessment* for the Project, appropriate emphasis needs to be placed on those issues likely to be of greatest significance to the local environment and the surrounding local and wider community. The following sub-sections outline the results of the process undertaken to identify the most relevant environmental issues and potential impacts.

3.2 CONSULTATION

The process of consultation was initiated prior to, and was instrumental in the final selection of the site and elimination of alternative sites. The consultation process continued and broadened and provided information which was used to prioritise the assessment of the identified environmental issues within this *Environmental Assessment*.

3.2.1 Community Consultation

The Proponent has undertaken two community consultation programs regarding the proposed project. The first program commenced in August 2008 with a mail-out explaining the proposal as it was then envisaged and an invitation to respond with comments and questions. This was supplemented with telephone calls to ensure letters were received and ensuing discussions between property owners and representatives of the Proponent. Contact was made with 18 property owners in the near vicinity of the Project Site. A total of two persons responded during the first program with one person expressing support for the Project and the second person concerned about traffic, noise and visual amenity. The proposal at the time included a significantly larger extraction area with a project life in excess of 60 years. Following the Planning Focus Meeting for the project, the scope of the project involved a reduction in the proposed extraction area and a project life of 30 years.

The second program was undertaken during the period from November 2009 to January 2010, after the Planning Focus Meeting and receipt of Director-General's Requirements. The program involved the circulation of a newsletter incorporating an explanation of the revised project. The newsletter was sent by mail or hand delivered to 24 property owners in the near vicinity of the Project Site. This consultation program included property owners additional to recipients in the earlier program. A copy of the Newsletter and the Feedback form circulated to surrounding property owners is duplicated in **Appendix 3**.

A total of six persons responded during the second program. The issue of greatest concern to those surrounding property owners was traffic. Of the five comments raised regarding traffic impacts, two were in relation to traffic near the Project Site at the New Berrima end of the proposed route, two were in relation to traffic impacts at Bowral and Mittagong and one was in relation to traffic in general. The remaining concerns and the number of times raised were as follows.

- Noise (4)
- Surface Water (3)
- Visual Amenity (3)
- Air Quality (2)
- Ecology (2)
- Land use/Planning (2)
- Property Values (1)

3.2.2 Government Agency Consultation

Following the preparation of a *Preliminary Environmental Assessment*, the following government agencies and organisations were consulted by the Proponent and/or its specialist consultants.

- Department of Planning.
- Department of Water and Energy (now the Department of Environment, Climate Change and Water – NSW Office of Water).
- Wingecarribee Shire Council.
- Department of Primary Industries – Mineral Resources (now Industry and Investment NSW – Mineral Resources).
- Department of Environment and Climate Change (now the Department of Environment, Climate Change and Water).
- NSW Roads and Traffic Authority.
- Sydney Catchment Authority.
- Department of Lands.

Representatives of all the listed government agencies attended a Planning Focus Meeting convened by the Department of Planning on 18 September 2008. An initial indication of the issues considered being of primary concern and therefore requiring priority in the *Environmental Assessment* was gained at the Planning Focus Meeting. This was followed up by written requirements from each agency provided to the Department of Planning for incorporation into the Director-General's Requirements (DGRs) for the Project. The DGRs, were provided to the Proponent on 21 November 2008. The key issues within the DGRs are identified as follows. It is recognised that some aspects relating to these "key" issues are not relevant to the Project and are somewhat generic in nature.

Soil, Surface and Groundwater

Include a detailed description of the water management system for the site including water quality management, stormwater management, erosion and sediment control and monitoring programs. Identify and address any water supply, groundwater and water licencing issues. Outline potential pollution impacts and relevant management strategies.

Ecology

Include a detailed assessment of the potential impacts of the project on any terrestrial and aquatic threatened species, populations, ecological communities or their habitats and regional wildlife habitat corridors. Consider an offset strategy to address loss of riparian habitat.

Rehabilitation and Final Landform

Include a detailed description of the rehabilitation strategy for the site, taking into consideration any relevant strategic land use planning or resource management plans or policies.

Noise

Include a detailed assessment of the noise impacts associated with construction, quarry operation, and road traffic noise taking the entire proposed transport route into account.

Air Quality

No specific requirements were nominated.

Heritage

Both Aboriginal and non-Aboriginal issues need to be addressed.

Transport

Include a detailed assessment of the potential impacts of the project on the safety and performance of the surrounding road network and entire transport route. Include a detailed description of any proposed road or intersection upgrades.

Visual

Address minimisation of the visibility of the site from the surrounding area, particularly from likely affected residences.

Waste

Include a detailed description of the measures that would be implemented to minimise, re-use, recycle and dispose of any waste produced on site.

Strategic Planning

Assess the project against the strategic land use planning objectives for the area, including those contained in the draft *Wingecarribee Local Environmental Plan 2007* and the *Drinking Water Catchments Regional Environmental Plan No. 1*.

A full copy of the DGRs, along with a tabulated summary of all government agency requirements is presented as **Appendix 2**. **Table 3.1** presents a summary of the frequency with which particular environmental issues were identified by the government agencies consulted.

It is noted that the Planning Focus Meeting comments, recommendations made by the various government agencies and the DGRs themselves relate to the initially proposed project which comprised a considerably larger project site and a 60 year project life.

Table 3.1
NSW Government Agency Issue Identification

Government Agency	Issue[1]												
	Air Quality	Noise	Ecology	Groundwater	Surface Water (including ESCP)	Aboriginal Heritage	Rehabilitation & Final Land Use	Planning / Land Use / Statutory	Visual Amenity	Soils / Land Capability / Agricultural Suitability	Transport / Traffic	Socio-economic Impacts / Property Values	Waste and Chemicals
DECC (now DECCW)	✓	✓	✓		✓	✓		✓					
DWE (now DECCW)			✓	✓	✓		✓						✓
DoL			✓					✓					
SCA				✓	✓								
WCC								✓	✓		✓		
Total	**1**	**1**	**3**	**2**	**3**	**1**	**1**	**3**	**1**	**0**	**1**	**0**	**1**

3.3 LEGISLATIVE REQUIREMENTS PLANNING INSTRUMENTS AND ENVIRONMENTAL GUIDELINES

3.3.1 Introduction

Several pieces of Commonwealth and NSW legislation and State and local planning instruments apply to the proposed quarry. These acts, regulations and planning instruments were reviewed to identify any relevant environmental aspects requiring consideration in the *Environmental Assessment*. In addition, the DGRs identified a number of guideline documents to be referenced/reviewed during the preparation of the *Environmental Assessment* (see **Table A2-1**).

A brief summary of each relevant statutory provision and planning instrument is provided in the following sections. Additionally, the application and relevance of planning instruments related to specific environmental issues have been assessed in the relevant specialist consultant assessments.

3.3.2 Legislative Requirements

3.3.2.1 *Environment Protection and Biodiversity Conservation Act 1999*

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) a person must not, without an approval under the Act, take an action that has or would have, or is likely to have, a significant impact on a Matter of National Environmental Significance (MNES). A project is determined a Controlled Action when it is considered likely that it has had or is likely to have a significant impact on any MNES. MNES are defined under Part 3 of the EPBC Act and include the following.

- World heritage sites.
- National heritage places.

- Ramsar wetlands or wetlands of international importance.
- Nationally listed threatened species and ecological communities.
- Migratory species.
- Commonwealth marine areas.
- Nuclear actions.

Under the EPBC Act, where a proposed development has the potential to have a significant impact on a MNES, the proposal is required to be referred to the Commonwealth Department of the Environment, Water, Heritage and the Arts for assessment of the likelihood of a significant impact requiring assessment under the Act.

The preliminary flora and fauna and cultural heritage assessments found that the activities related to the proposed Project were not likely to have a significant impact on any MNES or Commonwealth lands and therefore would not need Commonwealth approval (refer to Sections 5.4 and 5.5).

3.3.2.2 *Environmental Planning and Assessment Act 1979*

The principal Act in NSW relating to the control and environmental assessment of development is the *Environmental Planning and Assessment Act 1979* (EP&A Act). The EP&A Act establishes a legislative framework for the assessment of development proposals and proposals which are for major projects.

The framework for development assessment and land use planning in NSW is primarily established under environmental planning instruments (EPIs) formed under Part 3 of the EP&A Act. EPIs comprise:

- State Environmental Planning Policies (SEPPs); and
- Local Environment Plans (LEPs).

EPIs may identify whether a development is permissible without consent, permissible with consent or is prohibited.

Part 3A of the EP&A Act would apply where the development is determined to be a major project, either by the Minister for Planning, or by definition within a SEPP. Under *State Environmental Planning Policy (Major Development) 2005,* this proposed project is deemed to be a major project for which project approval under Part 3A of the (EP&A Act) is required.

3.3.2.3 Other State Legislation

The relevance of other pieces of NSW legislation to the Project is provided in **Table 3.2**.

Table 3.2
Applicability of State Legislation

Act	Purpose	Relevance to the Project
Protection of the Environment Operations Act 1997 (POEO Act)	The purpose of the POEO Act is to protect the environment from degradation and pollution. Chapter 3 of the POEO Act provides for a single licensing arrangement to replace the different licences and approvals that were required under separate Acts relating to air pollution, water pollution, noise pollution and waste management. Schedule 1 of the POEO Act lists activities for which a licence is required ("scheduled activities"). Sections 120 and 142 of the POEO Act establish that it is an offence to cause pollution to water or land.	Schedule 1 of the POEO Act establishes that the proposed Project is a scheduled activity because more than 30 000 tonnes of extractive materials would be extracted. An Environment Protection Licence is therefore required.
Water Management Act 2000 (WMA), Water Act 1912 (WA)	The objective of the *WMA 2000* is the sustainable and integrated management of the State's water for the benefit of both present and future generations. It is progressively replacing the Water Act 1912 as more water sharing plans become gazetted. The WMA also controls development in close proximity to waterways. The WA requires that an approval be held for any works which would intercept groundwater and a licence be held for any use of water from the dams on the property which is beyond the Harvestable Rights limits.	The proposal does not require a water supply other than Harvestable Rights supply for which a licence or approval is not required. Also no activities associated with the project would be conducted within 40m of a waterway and interception of groundwater is not expected. The "Mandurama" property is not subjected to a Water Sharing Plan.
National Parks and Wildlife Act 1974	Section 87 of the Act identifies that a permit is required to disturb or destroy objects of Aboriginal heritage significance. However, Section 75U of the EP&A Act states that such an approval is not required for a Project under Part 3A of that Act.	The Heritage assessment has not identified any Aboriginal sites or objects on the Project Site and suggests that the discovery of these is unlikely. No request for approval to disturb or destroy objects of Aboriginal significance is required.,
Roads Act 1993	Under Section 138 of the Act, works must not be conducted or a structure erected in a public road without the consent of the road authority and concurrence with the RTA, if it is a classified road.	Road works would be undertaken at the intersection of Berrima Road and the site access road. Concurrence from RTA and approval from Wingecarribee Council would be required.
Threatened Species Conservation Act 1995 (TSC Act)	The TSC Act sets out provisions for planning and assessment of impacts on threatened species, populations and ecological communities. The TSC Act lists a number of factors to be taken into account in deciding whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats.	The Flora and Fauna assessments were undertaken in accordance with this Act. They determined that threatened species, populations or ecological communities are not located or likely to be located on the Project Site or impacted by the proposed activities.

3.3.3 Planning Instruments

3.3.3.1 State Environmental Planning Policy (Major Development) 2005

This SEPP, gazetted on 25 May 2005, identifies projects of significance to NSW, which are required to be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979.* It applies to all projects satisfying nominated criteria contained within the schedules of the SEPP. Under Schedule 1 of the SEPP, the project would be classified as a Group 2 development, i.e. mining, petroleum production, extractive industries and related industries given the size of the extractive material resource is greater than 5 million tonnes. The proposed New Berrima Clay/Shale Quarry project would draw upon a total resource of approximately 8 million tonnes of shale.

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

This SEPP was gazetted on 17 February 2007, in recognition of the importance to New South Wales of mining, petroleum production and extractive industries. The quoted aims of the SEPP are as follows.

a) "To provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State.

b) To facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources.

c) To establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources."

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 a consent authority needs to consider when assessing a new or modified proposal (Part 3 - Clauses 12 to 17 of the SEPP) is as follows.

Clause 12: Compatibility of proposed mine, petroleum production or extractive industry with other land uses.

Consideration must be given to:

- the existing uses and approved uses of land in the vicinity of the development;
- the potential impact on the preferred land uses (as considered by the consent authority) in the vicinity of the development; and
- 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 must be evaluated and compared, along with any measures proposed by the Proponent to avoid or minimise the incompatibility.

Clause 13: Compatibility of the project with mining, petroleum production or extractive industry.

Consideration must be 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. Measures taken by the Proponent to avoid or minimise any incompatibility are to be considered. The public benefits of the development and any existing or approved mining, petroleum production or extractive industry must be evaluated and compared.

Clause 14: Natural resource management and environmental management.

Consideration must be given to ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure:

- impacts on significant water resources, including surface and groundwater resources, are avoided or minimised;
- impacts on threatened species and biodiversity, are avoided or minimised; and
- greenhouse gas emissions are minimised and an assessment of the greenhouse gas emissions (including downstream emissions) of the development is provided.

Clause 15: Resource recovery.

This clause requires the efficiency of resource recovery, including the reuse or recycling of material and minimisation of the creation of waste, be considered.

Clause 16: Transportation.

Consideration must be given to alternative means of product transportation other than by road and that a code of conduct for the transport of materials on public roads is prepared.

Clause 17: Rehabilitation.

The rehabilitation of the land affected by the development must be considered including:

- the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated;
- the appropriate management of waste generated by the development;
- remediation of any soil contaminated as a result of the development; and
- 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.

3.3.3.3 State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

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.

In accordance with SEPP 33, the hazardous substances and dangerous goods to be held or used on the Project Site are required to be identified and classified in accordance with the risk screening method contained within the document entitled "Applying SEPP 33 2nd edition", (DUAP, 1997). Hazardous materials are defined within DUAP (1997) as substances falling within the classification of the Australian Code for Transportation of Dangerous Goods by Road and Rail (Dangerous Goods Code).

The project would not involve the storage of diesel fuel because it would be delivered by small mobile tankers, as required. No substantive servicing of equipment would be conducted on site. Consequently, the storage of other hydrocarbons including lubricating oils and grease would be very limited.

No assessment or screening thresholds are provided in relation to the transport of Class 3 C1 or C2 combustible liquids. However, experience with determinations for projects transporting similar quantities of Class 3 hazardous materials, via comparable transportation routes suggests transportation of diesel to the Project Site would not be considered potentially hazardous.

Based on the risk screening method of DUAP (1997), no activities on the Project Site would result in the project being considered potentially hazardous under SEPP 33. As such, there is no requirement to undertake a Preliminary Hazard Analysis for the Project.

3.3.3.4 State Environmental Planning Policy No. 44 – Koala Habitat Protection

The Wingecarribee Local Government Area (LGA) is identified in Schedule 1 of this policy as an area that could provide habitat for Koalas. The policy requires an investigation be carried out to determine if core or potential Koala habitat is present on the areas of the Project Site likely to be disturbed. Core Koala habitat comprises land with a resident population of Koalas whereas potential Koala habitat comprises land with native vegetation with known Koala feed trees constituting at least 15% of the total number of trees present on a site.

As required by the SEPP, an investigation was carried out to determine if the Project Site contains potential Koala habitat. Due to the disturbed nature of the site and isolation from remnant bushland the "Mandurama" property was found not to contain any core or potential Koala habitat.

3.3.3.5 Drinking Water Catchments Regional Environmental Plan No. 1

This plan (deemed a SEPP in July 2009), which commenced on 1 January 2007, addresses water quality in the catchments that supply drinking water to Sydney, Blue Mountains and the Illawarra. It has the following key elements of:

- setting water quality objectives;
- requiring new developments to have a neutral or beneficial effect on water quality;
- introducing strategic land and water capability assessments;
- developing rectification action plans.

The Sydney Catchment Authority administers the Plan. Being a Major Project to be determined under Part 3A of the EP&A Act, the Proponent's project is not formally subject to the requirements of the Drinking Water Catchments Regional Environmental Plan No. 1. Nevertheless, the proposal has been developed having regard to the water quality objectives of the Plan. Section 5.2 outlines the potential impacts to surface water and determines that the proposed project would have a neutral effect on water quality in the sub-catchment of the Wingecarribee River.

3.3.3.6 Wingecarribee Local Environment Plan

The Wingecarribee Local Environmental Plan (LEP) 2010 is the principal environmental planning instrument governing land use within the Wingecarribee LGA. The aim of the Wingecarribee LEP is to provide for appropriate planning and environmental control over the use and development of land within the local government area, in order to uphold and promote the objectives of the *Environmental Planning and Assessment Act, 1979*.

The proposed clay/shale quarry is situated in Zone E3 (Environmental Management) (**Figure 3.1)**. The objectives of this zone are:

- to protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values;
- to provide for a limited range of development that does not have an adverse effect on those values;
- to encourage the retention of the remaining evidence of significant historic and social values expressed in existing landscape and land use patterns;
- to minimise the proliferation of buildings and other structures in these sensitive landscape areas;
- to prevent the further clearing of remnant native vegetation and further modification of the natural landform except in a limited number of prescribed circumstances;
- to provide for a restricted range of development and land use activities that provide for rural settlement, sustainable agriculture, other types of economic and employment;
- development, recreation and community amenity in identified drinking water catchment areas;
- to protect significant agricultural resources (soil, water and vegetation) in recognition of their value to Wingecarribee's longer term economic sustainability;
- to conserve and enhance the quality of potentially valuable environmental assets, including waterways, riparian land, wetlands and other surface and groundwater resources, remnant native vegetation and fauna movement corridors as part of all new development and land use;

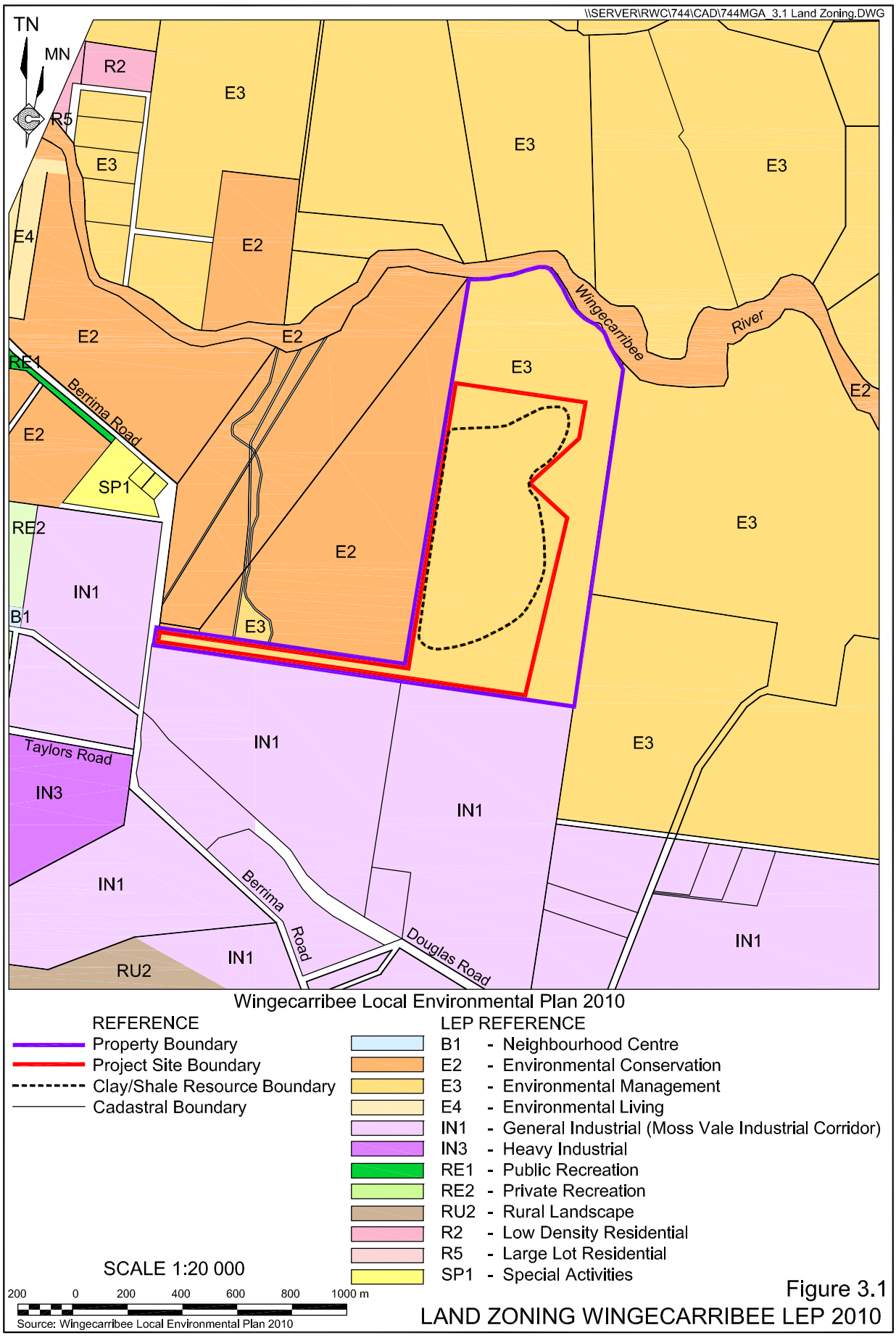

Figure 3.1
LAND ZONING WINGECARRIBEE LEP 2010

- to retain, protect and enhance fauna movement corridors across rural lands linking fragmented core fauna habitat areas;
- to provide for the effective management of remnant native vegetation, including native vegetation regeneration, noxious and environmental weed eradication, and bush fire hazard reduction; and
- to manage land in a way that minimises impacts on its environmental and scenic value from adjacent and nearby development and land use activity.

Extractive industries and all other industries are not permitted on land within this zone. *Mining*, however, is a permitted land use with consent. Notwithstanding, the non-permissibility under the WLEP 2010, the proposed Project is a permissible use given the provisions of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* as agricultural activities are a permissible land use in the subject zone.

3.3.3.7 Adjacent Land Use Strategies

The Wingecarribee LEP 2010 provides for the zoning of land adjacent to the south of the Project Site as IN1 General Industrial. These lands are described as the Moss Vale Enterprise Corridor. The proposed quarry activities would be consistent with the purposes of this adjacent industrial corridor.

The Crown land to the west of the Project Site is zoned E2 – Environmental Conservation. This document assesses the proposed quarry activities would not adversely impact upon this land.

3.3.4 Environmental Guidelines

The Director-General's Requirements include a list of policies, guidelines and plans which should be considered for applicability to the environmental impact assessment of the project. The following have been identified as reference documents which are of greatest significance to the environmental assessment of this project.

- Aboriginal Cultural Heritage Standards and Guidelines Kit (DECC)
- Interim Community Consultation Requirements for Applicants
- Managing Urban Stormwater: Soils and Construction (Landcom)
- National Greenhouse Accounts (NGA) Factors
- Waste Classification Guidelines
- Guide to Traffic Generating Development
- NSW Industrial Noise Policy
- Environmental Criteria for Road Traffic Noise
- National Water Quality Management Strategy: Australian Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ)

3.4 PRELIMINARY ENVIRONMENTAL STUDIES

During the planning phase for the Project, the following preliminary environmental studies were undertaken by the specialist consultants listed below to identify the constraints posed by the local environment and what elements of the local environment would require further consideration and assessment during preparation of the *Environmental Assessment*.

- Surface water (SEEC).
- Noise (Spectrum Acoustics).
- Air Quality (Heggies Pty Ltd).
- Soil Land and Capability (Geoff Cunningham Natural Resource Consultants Pty Ltd)
- Traffic and Transportation (Traffic Solutions Pty Ltd).
- Fauna (Aquila Ecological Surveys).
- Flora (Geoff Cunningham Natural Resource Consultants Pty Ltd
- Cultural Heritage (Archaeological Surveys and Reports Pty Ltd).

The results of each of the above studies were incorporated into the *Preliminary Environmental Assessment* that was prepared to accompany the Major Projects Application for the Project.

The preliminary studies identified the following issues within these fields which could potentially constrain the Project and have therefore been considered issues of priority.

Surface Water

Preliminary studies identified a Category 2 watercourse crossing beneath the site access road on the Project Site. The existing site access road crosses this watercourse via a timber bridge. All extraction would be at least 600m from this creek and located in a separate catchment. Additionally, no bridge or road related work is planned for near this creek and therefore the impacts of the project on this surface water feature is not likely. The Project Site contains five dams and several ephemeral Category 3 watercourses which drain to the Wingecarribee River after heavy rains. The degree of impact of the Project on these surface water features and the risk of sediment transportation into Wingecarribee River has therefore been identified as requiring detailed assessment.

Groundwater

Negligible groundwater was encountered during the exploratory drilling to depths as great as 35m (630mAHD) i.e. well below the level of the nearby Wingecarribee River and hence groundwater resources are considered not to be a key issue for the project.

Traffic

Traffic Solutions undertook an assessment of the existing road network and traffic volumes to assess whether the Project may be constrained by the proposed traffic generation. They also assessed sight distances and intersection suitability and concluded:

- the proposed transport route would include regional and local roads, all of which are classified to take 19m vehicles which are proposed for the Project;
- existing traffic volumes are very low; and
- sight distances to and from the entrance to the Project Site are very good and exceed AS 2890.1 and 2 requirements.

Traffic generation is unlikely to constrain the Project, however, the possible impact on road condition, traffic levels and congestion, and general road safety has been identified as an issue requiring further assessment as part of this *Environmental Assessment.*

Noise

Ambient noise levels were measured by Spectrum Acoustics at two residences on properties near the Project Site as part of preliminary investigations. The measurements established that the daytime noise levels are comparatively low. The proposed extraction operations should be sufficiently distant from surrounding residences to ensure that noise generated lies well within noise criteria. The need for a comprehensive noise assessment, in accordance with the *NSW Industrial Noise Policy* and *Environmental Criteria for Road Traffic Noise* was identified.

Air Quality

Sources of particulate matter on and around the Project Site are currently generated from a number of sources that include the Berrima Cement Works, traffic on unsealed roads, local building and construction activities, grazing activities and to a lesser extent traffic on local roads. Generation of deposited dust and PM_{10} dust from on-site activities is expected to be minor. Emissions of nitrogen dioxide (NO_2), sulphur dioxide (SO_2) and carbon monoxide (CO) would be associated with on-site operations through the combustion of diesel by mobile earth-moving equipment.

The impact of dust and emissions generated from the Project Site and cumulative impacts from the surrounding industries have been identified as requiring further assessment, in accordance with Approved Methods for the atmospheric dispersion Modelling and Assessment of Air Pollutants in NSW (Department of Environment, Climate Change and Water).

Flora

A search on the NSW Wildlife Atlas, as part of the preliminary investigations, found that a total of 11 species and the *Southern Highlands Shale Woodlands,* an *endangered ecological community* are listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) are likely to occur within the local area of the Project Site. A search on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) also found nine species, listed under the Act, that are likely to occur within the local area of the Project Site. At the time of writing, this has increased to 12 species.

The potential impact to threatened flora species has been identified as an issue requiring further assessment.

Fauna

A search on the NSW Wildlife Atlas found that a total of seven fauna species are listed under the TSC Act and no species listed under the EPBC Act occur within the local area incorporating the "Mandurama" property.

The potential impact to threatened fauna species has been identified as an issue requiring further assessment.

Aboriginal Heritage

Archaeological Surveys and Reports Pty Ltd (ASR) initiated an archaeological assessment of the "Mandurama" property. They advertised seeking contact from potential interested stakeholders with an interest in the "Mandurama" property in accordance with the "Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation" (July 2005), Part 6 Approval of the *National Parks & Wildlife Act 1974* (as amended). ASR also undertook a search of the Aboriginal Sites Register (Aboriginal Heritage Information Management System – AHIMS) within a 64km^2 area surrounding the property.

The potential impact to Aboriginal heritage has been identified as an issue requiring further assessment.

Soils, Land Capability and Agricultural Suitability

Site investigations by Geoff Cunningham Natural Resources Consultants Pty Ltd established the physical and chemical nature of the soil within the proposed areas of disturbance to assist in the assessment of the risk of erosion and the suitability for revegetation. The investigation included the classification of the land capability and agricultural suitability of the Project Site.

The potential risk of erosion and sediment transportation into watercourses was identified as an important issue, requiring further assessment.

3.5 ENVIRONMENTAL RISK ANALYSIS

Risk is the chance of something happening that would have an impact upon the objectives of the Project, namely to operate the New Berrima Clay/Shale Quarry with minimal effect on the local environment. Risk is measured in terms of consequence (severity) and likelihood (probability) of the event happening. For each environmental issue identified in **Table 3.6**, the potential environmental impacts have been allocated a risk rating based on the potential consequences and likelihood of occurrence and in accordance with Australian Standards HB 203:2006 and AS/NZS 4360:2004.

The allocation of a consequence rating was based on the definitions contained in **Table 3.3**. 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. The likelihood or probability of each impact occurring was then rated according to the definitions contained in **Table 3.4**.

The risk associated with each environmental impact was assessed **without** the inclusion of any operational controls or safeguards in place and based on the qualitative assessment of consequence and likelihood, a risk ranking of either; low, medium, high or extreme was assigned to each potential impact based on the matrix of **Table 3.5**.

Table 3.3
Qualitative Consequence Rating

Level	Descriptor	Description
5	Catastrophic	• Massive and permanent detrimental impacts on the environment. • Very large area of impact. • Massive remediation costs. • Reportable to government agencies. • Large fines and prosecution resulting in potential closure of operation. • Severe injuries or death.
4	Major	• Extensive and/or permanent detrimental impacts on the environment. • Large area of impact. • Very large remediation costs. • Reportable to government agencies. • Possible prosecution and fine. • Serious injuries requiring medical treatment.
3	Moderate	• Substantial temporary or minor long term detrimental impact to the environment. • Moderately large area of impact. • Moderate remediation costs. • Reportable to government agencies. • Further action may be requested by government agency. • Injuries requiring medical treatment.
2	Minor	• Minor detrimental impact on the environment. • Affects a small area. • Minimal remediation costs. • Reportable to internal management only. • No operational constraints posed. • Minor injuries which would require basic first aid treatment.
1	Insignificant	• Negligible and temporary detrimental impact on the environment. • Affects an isolated area. • No remediation costs. • Reportable to internal management only. • No operational constraints posed. • No injuries or health impacts.
Source: modified after HB 203:2006 - Table 4(B)		

Table 3.4
Qualitative Likelihood Rating

Level	Descriptor	Description
A	Almost Certain	Is expected to occur in most circumstances.
B	Likely	Would probably occur in most circumstances.
C	Possible	Could occur.
D	Unlikely	Could occur but not expected.
E	Rare	Occurs only in exceptional circumstances.
Source: HB 203:2006 - Table 4(A)		

Table 3.5
Risk Rating

Likelihood	Consequences				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
A (Almost Certain)	H	H	E	E	E
B (Likely)	M	H	H	E	E
C (Possible)	L	M	H	E	E
D (Unlikely)	L	L	M	H	E
E (Rare)	L	L	M	H	H

Note: Rating modified after HB 203:2006 - Table 4(C)

The four risk rankings are defined as follows.

Low (L): requiring a basic assessment of proposed controls and residual impacts. Any residual impacts are unlikely to have any major impact on the local environment or stakeholders.

Moderate (M): requiring a medium level assessment of proposed controls and residual impacts. It is unlikely to preclude the development of the project but may result in impacts deemed unacceptable to some local or government stakeholders.

High (H): requiring in-depth assessment and high level documentation of the proposed controls and mitigation measures. Ultimately, this level of risk may preclude the development of the project.

Extreme (E): requiring in-depth assessment and high level documentation of the proposed controls and mitigation measures and possible preparation of a specialised management plan. Unless considered to be adequately managed by the controls and/or management plan, this level of risk is likely to preclude the development of the project.

Table 3.6 provides an assessment of the **unmitigated** risk for each potential environmental impact based on the classifications and definitions provided.

Table 3.6
Analysis of Unmitigated Risk

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Potential Impact	Consequence	Likelihood	Risk Rating
Transport / Traffic			
Increased traffic on roads – congestion and delays nuisance	1	A	H
Increased deterioration of road pavement	1	A	H
Increased risk of accident – major accident	5	E	H
Increased risk of accident – serious accident	4	E	H
Increased risk of accident – minor accident	3	E	M

Table 3.6 (Cont'd)
Analysis of Unmitigated Risk

Potential Impact	Consequence	Likelihood	Risk Rating
Noise			
Increased noise impacts at receptors – occasional minor exceedance (1-2 dBA)	1	C	L
Increased noise impacts at receptors – regular minor exceedance (1-2 dBA)	2	D	L
Increased noise impacts at receptors – occasional high exceedance (3-5 dBA)	2	D	L
Increased noise impacts at receptors – regular high exceedance (3-5 dBA)	3	E	M
Increased traffic noise	2	A	H
Air Quality			
Deposited dust impact on native vegetation off site (no native vegetation on site)	1	E	L
Deposited dust – nuisance to residences	3	C	H
TSP – nuisance to residences	2	E	L
PM10 – health impacts at residences	2	E	L
Significant emissions of greenhouse gases	2	D	L
Visual Amenity			
Temporary (<2 years) view of disturbed areas	1	A	H
Medium-term (>2, <15 years) view of disturbed areas	2	C	M
Long-term >15 years) view of disturbed areas	2	B	H
Highly identifiable permanent impact	1	B	M
Surface Water			
Reduced water quality in Wingecarribee River	2	B	H
Reduced flows into Wingecarribee River	2	C	M
Groundwater			
Reduced water quality of groundwater	2	E	L
Impacted levels of groundwater table	2	E	L
Soils and Land Capability			
Loss of soil by erosion	2	D	L
Sedimentation impacting land and water	2	D	L
Degradation of soil quality	2	C	M
Reduction in land capability / agricultural land	3	C	H
Ecology			
Death or injury to native species	2	E	L
Loss of habitat for native species	2	E	L
Disruption to breeding cycle of native species	2	E	L
Reduced biodiversity	2	E	L

Table 3.6 (Cont'd)
Analysis of Unmitigated Risk

Page 3 of 3

Potential Impact	Consequence	Likelihood	Risk Rating
Cultural Heritage			
Destruction of Aboriginal sites, artefacts, objects	3	E	M
Damage to Aboriginal sites, artefacts, objects	2	E	L
Destruction of non-Aboriginal sites, artefacts, objects	2	E	L
Damage to non-Aboriginal sites, artefacts, objects	2	E	L
Land Contamination			
Contamination by hydrocarbons	1	D	L
Waste			
Litter and waste accumulation	1	D	L
Loss of resources	2	A	H
Socio-economic impacts, property values			
Increased employment	2	A	H
Loss of property values of neighbouring properties	3	C	H

3.6 ENVIRONMENTAL ISSUE PRIORITISATION

The consultation and review process described in Sections 3.2, 3.3, 3.4 and 3.5 resulted in the identification of a range of environmental issues that require consideration within the *Environmental Assessment*. The issues identified as requiring assessment within the *Environmental Assessment* have been prioritised based upon the following.

- The key assessment requirements of the DGRs (see **Appendix 2**).
- The frequency of identification during community and government consultation and preliminary investigations (**Tables 3.1** and **3.2**).
- Issues identified with a high or extreme risk rating (see **Table 3.6**).

Table 3.7 presents a summary of the identified environmental issues, the frequency with which each was identified and the frequency of an assigned "High" risk rating following the risk analysis described in Section 3.5.

Table 3.7
Summary of Identified Environmental Issues

Page 1 of 2

Environmental Issue	Source and Frequency of Identification				
	Community Consultation[1]	Government Consultation[2]	Preliminary Environmental Studies[3]	High or Extreme Risk Rating	TOTAL
Transport / Traffic	5	1	1	4	11
Surface Water	3	3	1	1	8
Noise	4	1	1	1	7
Ecology	2	3	1	0	6

Table 3.7 (Cont'd)
Summary of Identified Environmental Issues

Environmental Issue	Source and Frequency of Identification				
	Community Consultation[1]	Government Consultation[2]	Preliminary Environmental Studies[3]	High or Extreme Risk Rating	TOTAL
Visual Amenity	3	1	-	2	6
Air Quality	2	1	1	1	5
Planning / Land Use / Statutory	2	3	-	-	5
Socio-economic impacts / Property Values	1	-	-	2	3
Soils and Land Capability	-	-	1	1	2
Cultural Heritage	-	1	1	0	2
Groundwater	-	2	-	0	2
Waste[4]	-	1	-	1	2
Land Contamination[4]	-	1	-	0	1
Rehabilitation, final landform[4]	-	1	-	-	1

Note 1: Summarised from verbal and written feedback from surrounding property owners.
Note 2: Summarised from the Director-General's Requirements and attached correspondence to DoP from consulted government agencies (see Appendix 2).
Note 3: Based on the identified constraints of preliminary environmental studies conducted by the specialist consultants for the Project.
Note 4: The nominated issue is separately covered as part of the Project description or in the appropriate titled section of this document.

Based on the above, the identified environmental issues have been prioritised in order of decreasing priority. This order of priority has been used to inform the level of assessment undertaken for each identified environmental issue and the order in which each issue is addressed in Section 5 of this *Environmental Assessment.*