1. Introduction

In this Section the project and its proponent are introduced and the structure of this Environmental Assessment document and people responsible for preparing it are described.

1.1 Project in Brief

In 1995 the NSW Government invited competitive tenders for the Wyong Coal Development Areas, covering substantial coal resources in the Central Coast region of NSW. The successful tenderer was the Wyong Areas Coal Joint Venture (WACJV), the majority partner of which was, at the time, Coal Operations Australia Ltd. At this time, Kores Australia Pty Ltd ("Kores") and other Korean and Japanese interests represented minority partnerships in the WACJV. However, BHP Billiton subsequently became a majority shareholder in the joint venture through the acquisition of Coal Operations Australia Ltd.

Under the guidance of Coal Operations Australia, and subsequently BHP Billiton, extensive community consultation, environmental and economic feasibility studies were carried out for the Wyong Areas Coal Project. In 2005 BHP, the majority shareholder, sold its interest to the minority shareholders, and Kores Australia acquired a majority interest. This took Kores' equity in the venture to 82.25%. As a result, Kores is now the manager of the WACJV and is proposing to develop the coal resource through a revised and modified project now referred to as the Wallarah 2 Coal Project (W2CP).

Exploration, mine planning and environmental investigations undertaken over the past 14 years have defined significant coal resources beneath both the western areas (includes Yarramalong and Dooralong Valleys, Wyong and Olney State Forests, Jilliby State Conservation Area and surrounding ranges) and eastern areas (Tuggerah Lake and surrounding area). However, as a result of previous community consultation and environmental investigations, the W2CP will only seek approval to develop the western resource.

A potentially viable coal resource (referred to as the Primary Target Area) was identified which contains 375 million tonnes of coal within the total western resource of approximately 878 million tonnes. Over half of the primary target area resource lies beneath the forested hills and surrounding ranges, as shown on Figure 1.2. A significant proportion, however, lies beneath the Yarramalong and Dooralong Valleys and the Hue Hue area. Only a proportion of the primary target area (approximately half) has been selected to form the proposed mining area for the W2CP project application, based on a balance of environmental, social and economic factors.

The regional setting of the project and current exploration licence areas are shown in Figure 1.1 while the details of these existing titles are shown on Figure 1.2. Figure 1.3 shows the land owned by the proponent.

Project Approval is sought for the entire proposed mine area, as shown on Figure 1.4, for an initial duration of 28 years. Since the projected life of the mine is in the order of 42 years, a further planning approval will be required for Mining Years 29 to 42. Because the current project application covers the entire extent of the proposed

mine's surface and underground operations, environmental assessment studies and impact predictions have encompassed the entire project area.

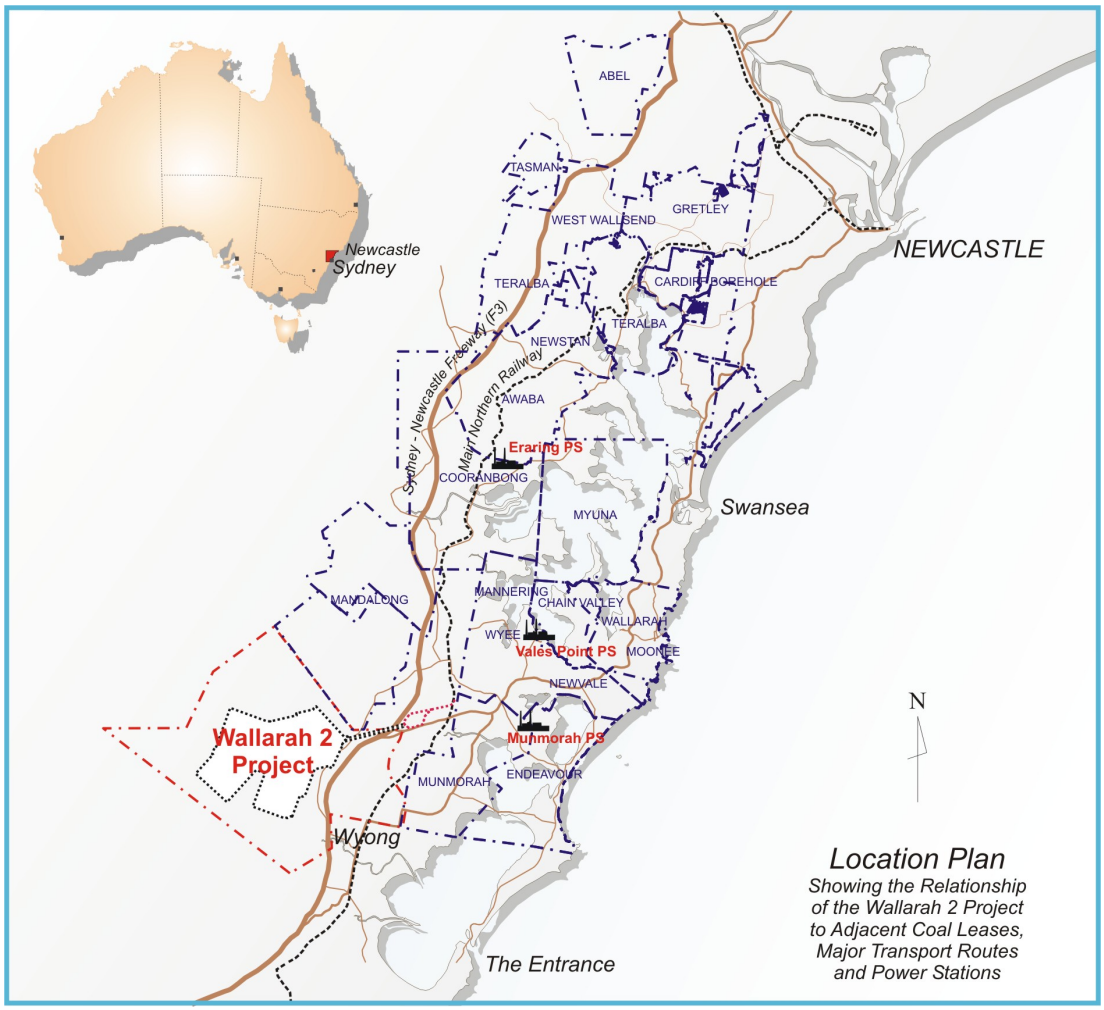

Figure 1.1 Project Location

Key features of the project are:

- ❒ The underground extraction of coal in the Wallarah-Great Northern seam by longwall methods at a depth of between approximately 345 m and 690 m below the surface within the area designated on Figure 1.2;

- ❒ Surface facilities on company owned and leasehold land (refer to Figure 1.3) between the Motorway Link Road and the F3 Freeway which will include rail loop, coal stockpiles, workshop and offices;

- ❒ Subdivision of land to allow a lease over a proposed rail loop easement;

- ❒ Surface facilities on company owned land off Hue Hue Road between Sparks Road and the Buttonderry Waste Management Facility. These facilities will include the main personnel access to the mine, offices and employee amenities as well as ventilation facilities;

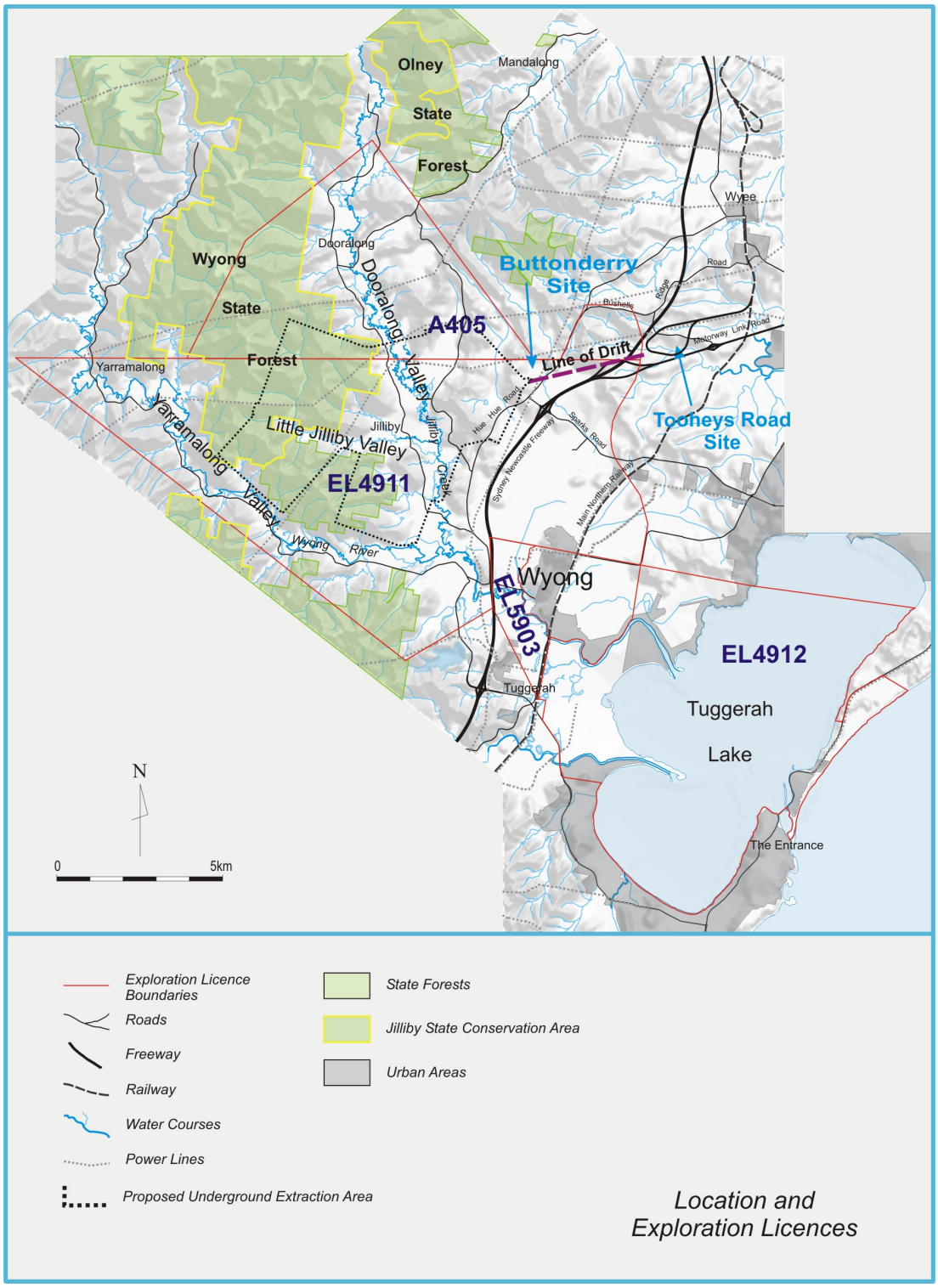

Figure 1.2 Project Location and Exploration Licences

- Construction of a second ventilation shaft to be located within the Wyong State Forest which will be an air intake only (downcast shaft) and will be constructed as mining moves to the west;

- Creation of 300 skilled permanent jobs directly and approximately 750 additional jobs created indirectly during operations, the majority of which will be sourced from the region;

- Construction phase stimulus of $1 billion to the Central Coast economy over three years and employment of over 1,800 people in the first year of construction alone;

- Local economic outputs (from direct and flow-on spending) in the region that ramp up to $200 million per year during operations;

- Total revenue to Governments of over $1 billion.

The proposed mine has been designed to minimise its impact on the environment, particularly on the local community and water supply system. The proposed underground mining area has been significantly reduced in response to identified geological and environmental constraints and the views of the community. The proposed mine plan (refer to Figure 1.4), extends from deep beneath a portion of the Hue Hue rural residential area and continues at deeper levels below the Dooralong Valley before progressively mining beneath the Wyong State Forest area. Mining will not take place directly beneath the Wyong River nor will longwall mining take place within the vast majority of the floodplain of the Yarramalong Valley.

The region's water supplies will be safeguarded. No mining will occur in or under the Mangrove Creek Dam catchment, or Mardi Dam, nor under the Wyong River, Wyong Weir, Ourimbah Creek, Porters Creek Wetland or related water facilities and infrastructure.

The project was the subject of intense scrutiny during August 2007 in the public hearings of the independent Strategic Inquiry into potential underground coal mining activities in the Wyong local government area. This Inquiry had a particular focus on the implications of mining on water supplies and water resources in the region. Although the Strategic Inquiry was not specifically designed to assess the W2CP, being the only major proposed new coal mine in the foreseeable future, it became by default a key topic of assessment.

The Inquiry Panel was chaired by Mrs Kerry Chikarovski with Professor Jim Galvin addressing subsidence, Associate Professor Noel Merrick assessing surface and groundwater and Mr Brian Elton addressing social and community issues. The Inquiry Panel was provided with detailed information on the W2CP as well as the concerns of the community. The Panel determined that with the implementation of sound mine planning and environmental controls, the project would not jeopardise the region's water supply system. A number of recommendations were made by the Panel which have been adopted by the W2CP. Details of these commitments are provided throughout this EA and are summarised in Chapter 16.

The project has incorporated a number of protection measures to safeguard against adverse impacts on the local community. The amount of coal to be extracted beneath the Hue Hue area has been significantly reduced to ensure that surface movement (referred to as subsidence) will readily comply with the levels stipulated for the declared Mine Subsidence District. Houses built in accordance with the Hue Hue Mine Subsidence District criteria will assist in catering for the effects of subsidence.

Similarly, when underground mining occurs deep beneath the Dooralong Valley floodplain, less coal will be extracted to reduce the subsidence effects and to ensure that the Jilliby Jilliby Creek watercourse and shallow aquifers are appropriately protected.

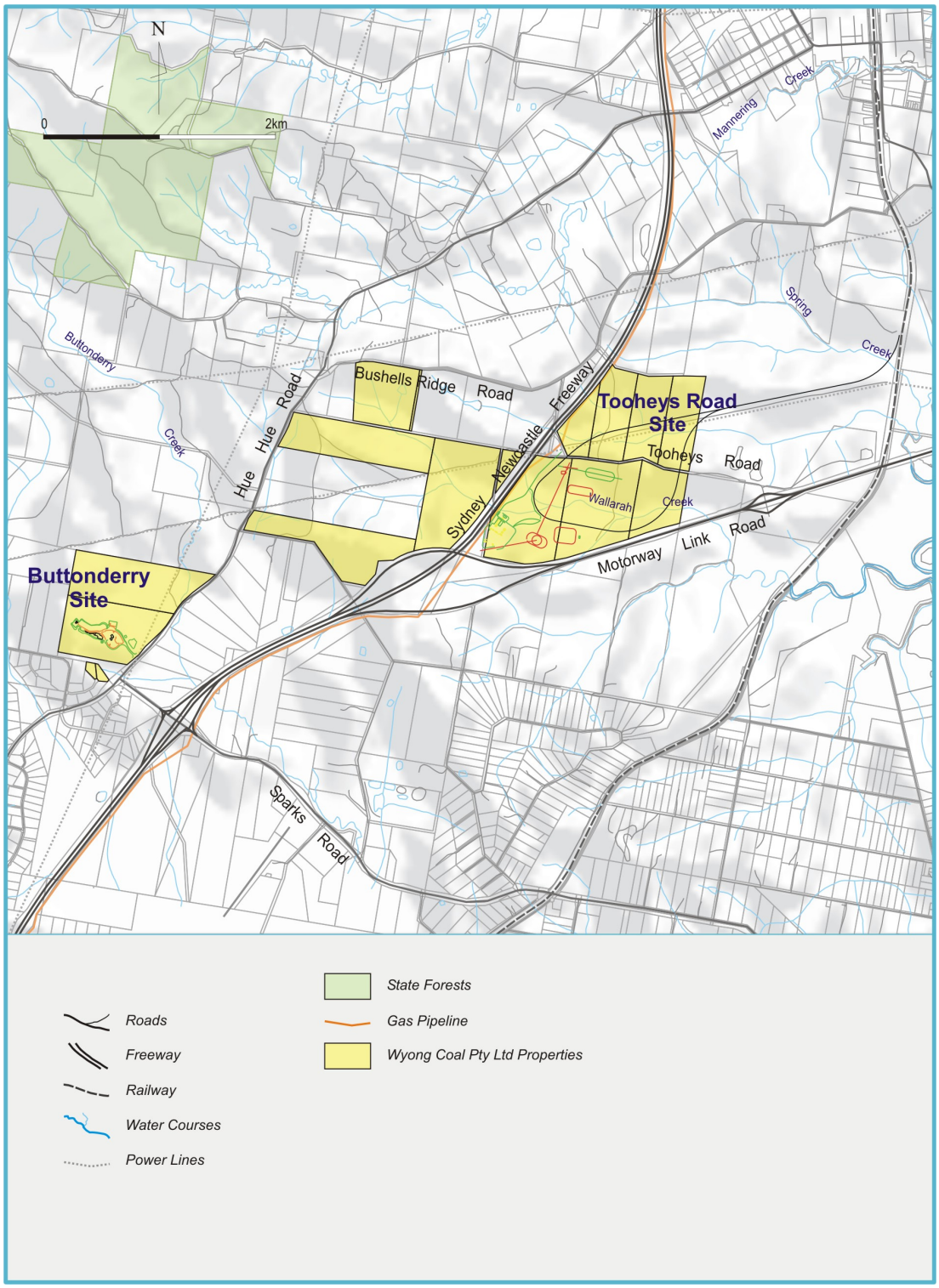

Figure 1.3 Proponent Owned Properties and Surface Facilities

There are various methods used to reduce the amount of coal extracted for the purposes of managing subsidence implications on surface features. These include narrowing or shortening the panels of coal extracted, increasing the width of coal pillars between panels and extracting a smaller vertical section of coal. When these measures are considered necessary, the term “subsidence protection zone” is used. Subsidence protection zones have been included in both the Yarramalong and

Dooralong Valley floodplain as well as the Hue Hue rural residential area. There is also a range of other initiatives designed to enhance the environment, the community amenity and ensure the effective use of resources. These include:

- Treating any surplus saline water which may be encountered by underground workings to a standard so that it can be used to either enhance the environmental flows of the surrounding waterways or be directed to the water supply system or other industrial users. This saline groundwater occurs at considerable depth, is naturally of poor quality and would otherwise be unavailable to either groundwater users, industrial water users or the drinking water catchment supply;

- Managing the gas resource affectively. The mine will encounter natural gas during the mining process. The gas is released from the strata into underground working areas during the mining operation and needs to be managed for both safety and environmental purposes. The gas will be extracted from within the underground mine workings and piped to the coal handling pit top for processing. Collected gas will be available for beneficial uses including electricity generation or other commercial uses;

- Dedicating land and management resources for biodiversity conservation purposes;

- Ongoing funding for local community projects;

- Carefully locating the main surface facilities within existing or future industrial lands and away from existing and planned residential areas. The location of both the Tooheys Road and Buttonderry sites conforms to the objectives of key land use planning strategies, including the proposals for the Wyong Employment Zone to the south and east of the respective surface facilities.

Details of the proposed development and operation of the W2CP are provided in following chapters of this Environmental Assessment document.

1.2 Project Objectives

The objectives of the W2CP include:

- To use modern mining and management practices to maximise the resource recovery of the deposit in a safe, efficient, economic and environmentally sound way;

- To generate new employment directly at the mine and to target 70% to sourced from the Central Coast – Lake Macquarie region, with additional opportunities evolving from the increased spending associated with the project in local, regional and state economies;

- To provide secure and long term employment for the workforce;

- To act as a responsible and valued member and contributor to the local community;

- To ensure continuous compliance with all relevant environmental legislation, conditions of consent, licences and industry standards;

- To ensure all employees and contractors operating on the site are appropriately trained so as to make them aware of relevant legislation and company environmental goals and objectives;

- To establish and monitor environmental performance standards;

- To minimise and manage waste generated from operations;

- To conduct appropriate community consultation and maintain a high level of communication whereby environmental issues may be raised and addressed in a timely and satisfactory manner;

- To maintain close liaison with relevant government authorities to ensure the operation continues to meet current standards;

- To identify environmental risks and ensure adequate management plans are in place to allow effective handling and resolution of potential environmental risks;

- To operate the site with regard to sustainable development principles; and,

- To have experienced and responsible personnel present on site to ensure environmental systems are being implemented and complied with.

1.3 Project Application Area

The Project Application Area is shown on Figure 1.4. The area covers:

- The Tooheys Road surface facilities including the rail loop and spur leading to the Main Northern Railway, access within the rail corridor, land owned by the Darkinjung Local Aboriginal Land Council which will be subject to a commercial lease and subdivision, all company owned land, Crown land and associated road and transmission line easements.

- Buttonderry surface facilities including all company owned land, Crown road easements and associated transmission line easements.

- A portion of company owned properties referred to as offset land but includes land required for services between the Buttonderry and Tooheys Road sites, potential intermediate ventilation shaft above the drift decline, and associated Crown roads and service easements.

- Private, public and company owned land within the underground extraction area including the Western Shaft site.

The Project Application Area covers the full mine plan which covers approximately 42 years of extraction. Although the approval period will be 28 years, a Mining Lease will be sought over the full extraction area. The project application area incorporates all key project elements including the mining zone and surface facilities and a modest but reasonable buffer around these elements.

A list of properties subject of the Project Application is provided in Attachment 1. The surface (defined as lands to a depth of 50 m from the surface) of the Jilliby State Conservation Area (as shown on Figure 1.4) are excluded from the Project

Application Area. Exclusion of the surface of these lands from the Project Application Area does not preclude these areas below 50 m from the surface being used for purposes associated with the underground mining project. It does not preclude the Project use of existing roads and surface land access for a variety of purposes in the surface area for monitoring, exploration and other surface activities as outlined in this Environmental Assessment report that are likely to be necessary to meet conditions of consent.

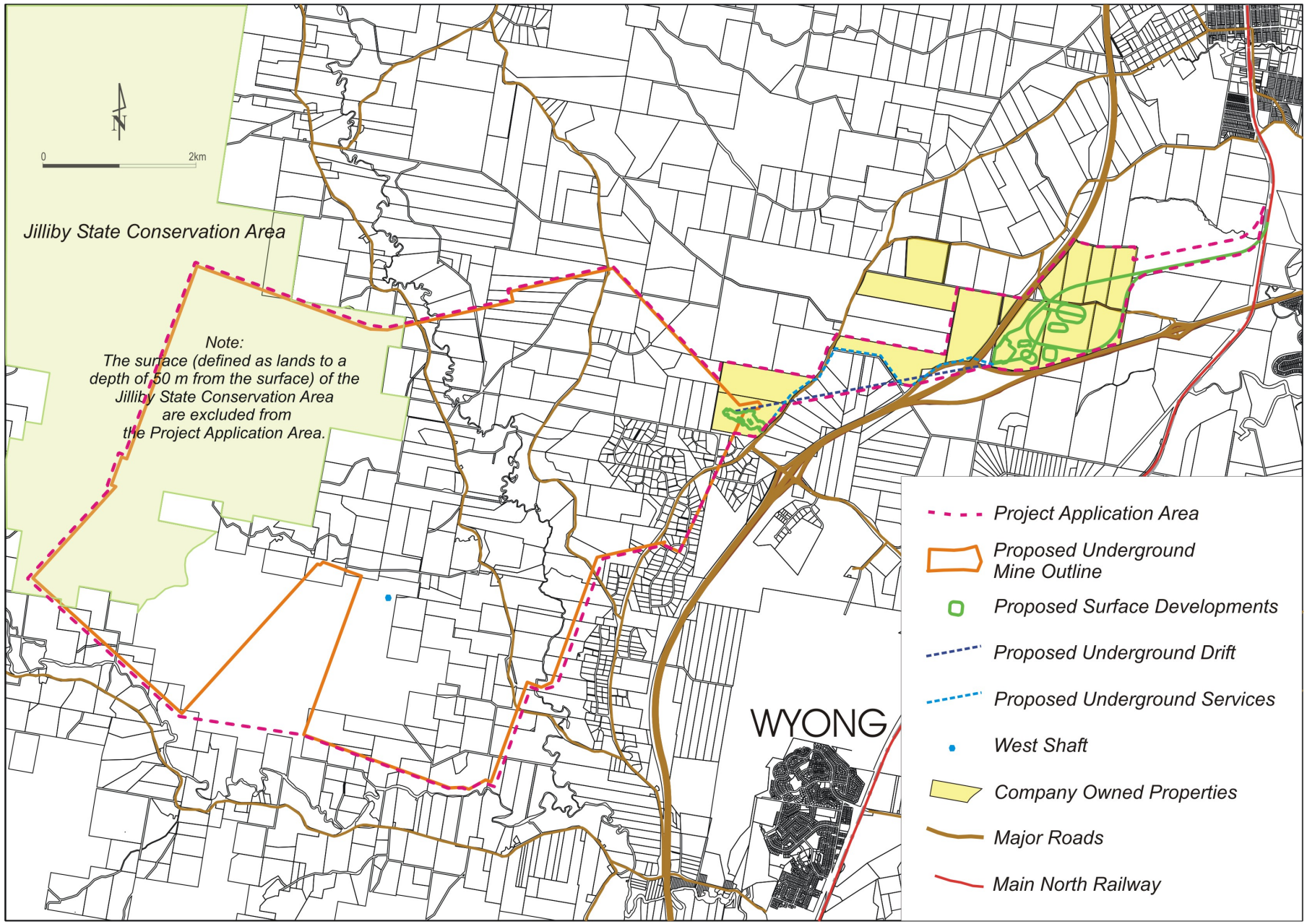

Figure 1.4 Project Application Area

1.4 Key Stakeholders

With the development of any new project, there are a number of key stakeholders. These are the companies, organisations, groups or individuals who have a specific interest or role to play in the proposal.

In formulating the W2CP, of utmost importance was identifying the key stakeholders and ascertaining their involvement in the project. Those stakeholders can generally be classified as those entities having a regulatory role such as government authorities at the three levels, potentially impacted communities, local and regional business and workforce, and the proponent.

1.4.1 Proponent

The Wyong Areas Coal Joint Venture (WACJV) was founded in 1995 at the invitation of the NSW Government to submit a competitive tender for the Wyong Coal Development Areas.

The majority partner in the successful tender was Coal Operations Australia Ltd (COAL), with minority partners including Kores Australia Pty Ltd ("Kores") and other Korean and Japanese interests. BHP Billiton subsequently became a majority shareholder through the acquisition of Coal Operations Australia Ltd.

In 2005, Kores acquired the BHP Billiton interest in the WACJV, lifting its equity in the venture to 82.25%. As a result, the ownership structure of WACJV now stands as follows:

Kores Australia Pty Ltd	82.25%
Catherine Hill Resources Pty Ltd	5.00%
Kyungdong Australia Pty Ltd	4.25%
SK Australia (Wyong) Pty Ltd	4.25%
SK Networks Resources Pty Ltd	4.25%

The WACJV proposes to develop the coal resource by a new project now referred to as the Wallarah 2 Coal Project (W2CP).

1.4.2 Government

The responsibility for ensuring that major mining projects are carried out in an environmentally acceptable manner rests with a number of government authorities that have primary regulatory roles. The proponent is committed to working with relevant government authorities that may have an interest in seeing that the proposed development is carried out in a sensitive and environmentally sustainable manner and limits the impact on the environment. These authorities include the Department of Planning (DOP), Department of Industry and Investment (I&I NSW) (formerly Department of Primary Industries), Department of Environment, Climate Change and Water (DECCW - which incorporates the Environment Protection Authority, National Parks and Wildlife Service and Office of Water), Department of Transport and Infrastructure, Department of Services, Technology and Administration, NSW Forests, RailCorp, Hunter-Central Rivers Catchment Management Authority, TransGrid, Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA), Gosford-Wyong Councils Water Authority, and Wyong Shire Council and related organizations.

The issues raised during consultation with government authorities at the initial stage of the project approvals process has been given due consideration in the formulation, design, and assessment of the W2CP. A summary of these issues is provided in Table 1.1.

Table 1.1 Issues Raised by Government Authorities

Department	Issue	Assessment in this Document
Department of Planning (DOP)	Structure of the EA document to include:	
	• An Executive Summary	This Chapter.
	• A detailed description of the project including:	Chapter 2
	- the need for the project	Section 3.1
	- alternatives considered	Sections 3.2 and 3.3 Chapter 2 Sections 2.5.2 and 3.7
	- various components and stages of the project.	Chapter 2
	• Consideration of any relevant statutory provisions.	Chapter 4
	• A general overview of the environmental impacts of the project, identifying the key issues for further assessment, and taking into consideration the issues raised during consultation.	A general overview of environmental impacts is contained in the Executive Summary. Identification of key issues is contained in Chapter 5.
	• A detailed assessment of the key issues specified below and any other significant issues identified in the general overview of environmental impacts of the project which includes:	Detailed descriptions of the environment and an assessment of the potential impacts are provided in Chapters 6 – 15.
	- a description of the existing environment; and	
	- an assessment of the potential impacts of the project.	
	• A description of the measures that would be implemented to avoid, minimise, mitigate, offset, manage and/or monitor the impacts of the project.	Details of mitigation strategies are provided in the relevant chapters 6 – 16 Section 17.4
	• A draft Statement of Commitments.	Chapter 16
	• A signed statement from the author of the EA certifying that the information in the report is neither false nor misleading.	Contained at the start of this document.
	• Surface and Groundwater – include detailed modelling of potential surface and	Chapter 8

Table 1.1 Issues Raised by Government Authorities

Department	Issue	Assessment in this Document
	groundwater impacts, site water balance and salinity balance. A surface and groundwater contingency strategy to be prepared.	Section 2.12 Sections 8.3, 9.6 and 16.4
	• Subsidence – include impacts on surface and groundwater resources; and other sensitive surface features.	Chapter 6
	• Flora and Fauna – include impacts on critical habitats, threatened species, populations or ecological communities, groundwater dependent ecosystems, native vegetation and the Jilliby State Conservation Area. An offset strategy must be included.	Chapter 13
	• Rehabilitation and Final Landform – include a justification of the proposed final land use and describe what measures would be put in place for the long term protection and management of the site following cessation of mining.	Sections 2.14, 6.7 and 16.10
	• Noise – including construction, operation, and on-site and off-site road and rail noise impacts.	Section 11.2 to 11.7
	• Greenhouse Gases – a full greenhouse gas assessment.	Sections 12.7 to 12.10
	• Heritage – both Aboriginal and non-Aboriginal.	Chapter 14
	• Air Quality	Chapter 12
	• Blasting and Vibration	No Blasting, vibration discussed in Section 11.4
	• Traffic and Transportation	Section 11.1
	• Visual Impact	Section 15.1
	• Social and Economic	Chapter 10 and Section 3.9
	The EA must take into account relevant State and Government technical and policy guidelines.	Chapter 4, Chapter 16
	During the preparation of the EA, consult with relevant local, State or Commonwealth	Section 10.1

Table 1.1 Issues Raised by Government Authorities

Department	Issue	Assessment in this Document
	government authorities, service providers, community groups or affected landowners. Describe the consultation in the EA.	
Department of Primary Industries (DPI) (now the Department of Industry and Investment – Mineral Resources	Coal seam geology and coal quality.	Section 2.2, Table 2.2
	Estimated in situ coal resources for all seams.	Section 2.7, Table 2.2
	Recoverable and marketable coal reserves.	Section 2.7, Table 2.2
	Limits of proposed mining and parameters used to define these limits.	Section 2.3
	Exploration and geology of the area.	Section 2.7
	A commitment to compliance with the *Coal Mine Health and Safety Act 2002* and *Coal Mines Regulation Act 1982.*	Section 4.2
	Details of the procedures to adopt in addressing any safety issues identified by an Inspector or Mine Safety Officer or an authorised Government Official as specified in the *Coal Mine Health and Safety Act 2002.*	W2CP has made a commitment to adhere to all relevant mining legislation governing safety, environmental and mining systems
	Description of Specific mining activities.	Chapter 2
	Description of coal crushing and coal handling activities.	Sections 2.8 and 2.9
	Surface facilities and storage requirements.	Section 2.8
	Ventilation and mine gas management infrastructure.	Section 2.5.1, Section 2.8 and Section 2.11
	Rock spoil handling, stockpiling in position, stabilisation and rehabilitation.	Sections 2.8.7 and 2.13
	Assessment of subsidence levels associated with mining.	Chapter 6 and Appendix A
	Identify if the predicted subsidence will result in fracture connectivity to the surface, and the environmental consequences. Identify environmental features at risk, and appropriate	Chapter 6 and Appendix A. Other chapters outline specific environmental consequences of subsidence effects

Table 1.1 Issues Raised by Government Authorities

Department	Issue	Assessment in this Document
	setback or protection zones necessary.	
	Detailed description of water courses and hydrology study of the impacted catchment areas.	Section 9.6 and 9.7 Appendix D
	Control and management of mine water and runoff water.	Section 2.12
	Stabilisation of drainage lines.	Appendix D and Sections, 6.7 and 6.8, Section 2.12, 2.13, 9.4 and 9.6.14
	Details of infrastructure removal after mining and completion criteria for impacted areas.	Section 2.14
	Plans used in the EA should clearly identify the Wyong State Forest and Jilliby Conservation Area.	Noted
Department of Environment, and Climate Change (DECC now the Department of Environment, Climate Change and Water DECCW)	The impact on air quality, noise amenity, water quality and quantity.	Chapter 12, (air quality) Section 11.2 (noise) Chapters 7,8 & 9 (water)
	The impacts on threatened species and their habitat.	Chapter 13
	The impacts on Aboriginal cultural heritage values.	Chapter 14
	The design and layout of facilities to minimise the potential impacts and the actions that will be taken to avoid or mitigate environmental impacts or compensatory measures to minimise unavoidable impacts.	Section 2.8 (design and layout of facilities). Various mitigation strategies included in the assessment and discussion of relevant issues throughout this document and specialist reports. A summary of these mitigation strategies is provided in Chapter 16 and Section 17.4
	A strategic examination predicting the impacts of mine subsidence and potential ameliorative and preventative actions.	Chapter 6 and Appendix A describe subsidence effects and impacts. Other chapters outline specific environmental consequences of subsidence effects and mitigation measures.
Department of Natural Resources (now Office of Water, part of DECCW)	Licence under Part 5 of the *Water Act 1912* (WA) required for any proposed use or interception of groundwater.	A Water Licence is required. Section 4.5.7

Table 1.1 Issues Raised by Government Authorities

Department	Issue	Assessment in this Document
	Licence under Part 2 of the WA required for any proposed use of surface water from the Wyong River catchment.	Section 4.5.7 Sections 7.5 to 7.7
	Access licence under the *Water Management Act 2000* (WMA) for any proposed use of surface water from the Jilliby Jilliby Creek catchment.	Section 4.5.7 Section 4.13.1 Section 7.7
	Address the following policies: - NSW State Rivers and Estuaries Policy - NSW Wetlands Management Policy - NSW Flood Prone Land Policy - NSW Groundwater Policy Framework Document - General - NSW Groundwater Quantity Management Policy - NSW Groundwater Quality Protection Policy - NSW Groundwater Dependent Ecosystem Policy	 Section 4.15.5 Section 4.7.10. Covered in the NSW Floodplain Development Manual – Section 4.7.9 Section 4.7.11 Section 4.7.11 Section 4.7.11 Section 4.7.11
	Address the rules of the *Water Sharing Plan for the Jilliby Jilliby Creek Water Source 2003.*	Section 4.13
	Consider the *Geomorphic Categorisation of the streams within the Central Coast Catchment Management Board Area* (Cook, 2004).	Section 9.6 and Appendix D
	Consider the *Rehabilitation Manual for Australian Streams* (Land and Water Resources Research and Development Corporation, 2000).	Section 9.6
	Consider the *Groundwater – Groundwater flow modelling guidelines* (Murray-Darling Basin Commission, 2001).	Considered not relevant to local groundwater systems
	Consider the *Floodplain Development Manual* (NSW Government, 2005).	Section 1.3 of Specialist flood study contained in Appendix C.
	Groundwater modelling	Chapter 8

Table 1.1 Issues Raised by Government Authorities

Department	Issue	Assessment in this Document
	Surface water impacts	Chapters 7 and 9
	Details of the potential for methane to affect water quality, habitat, GDE, macrophytes and macroinvertebrates.	Section 2.11, Section 9.6
	Water balance	Section 2.12.7 and Appendix E
	Flooding	Chapter 9
	Similarities with the Cataract River.	Addressed by the Southern Coalfields Inquiry summary – Section 4.20
Wyong Shire Council	Groundwater modelling.	Chapter 8
	Surface water modelling.	Chapter 9
	Independent interpretation of results.	All specialist studies have been undertaken by reputable and experienced professionals in accordance with relevant industry standards. An Expert Panel (PAC) will be appointed by the Minister for Planning to review the EA.
	Extensive baseline data on the catchment and groundwater.	Chapters 8 and 9
	Monitoring throughout the lifetime of the project.	Contained within various chapters under the relevant issue and a summary provided in Section 17.5
	Subsidence modelling.	Chapter 6 and Appendix A
	Stream erosion modelling including assessment of increased bank erosion, stream bed instability, stream bank tree loss.	Hydromorphological study contained in Section 9.6 and Appendix D
	Extensive baseline data on subsidence.	Chapter 6
	Detailed vegetation analysis over the surface of the entire extraction area and all servicing routes into and out of the project.	Summarised in Chapter 13, specialist report contained in Appendix R.
	Strategies to minimise habitat alteration.	Section 13.1 and 13.2
	Vegetation management programs, monitoring and funding for the duration of the project.	Chapter 13, Section 13.1, Chapter 16
	Identification of conservation offsets.	Sections 13.1 and 16.9
	Funding for a conservation corridor program for the valleys.	Sections 16.3 and 16.9
	Detailed fauna analysis over the surface of the	Summarised in Chapter 13, specialist report contained

Table 1.1 Issues Raised by Government Authorities

Department	Issue	Assessment in this Document
	entire extraction area and all servicing routes into and out of the project.	in Appendix R.
	Detailed visual analysis of all works and infrastructure.	Section 15.1 and Appendix K
	Landscape guidelines to be incorporated into the detailed plans to accompany development applications.	Sections 2.8, 2.13.11, 15.1 and Appendix K
	A landscape concept plan.	Section 2.8, Section 2.13.11, Section 15.1 including Figures 15.12 and 15.13
	Clarification of access to the rail line by other potential industries.	Section 2.8.5
	Identification of returns of the proposal to the local area in terms of jobs, infrastructure and services.	Section 10.6
	Identification of employment generating land that can be developed on Kores land to provide opportunities for industrial expansion.	A general commitment has been provided to facilitate both conservation and development opportunities on land owned by WACJV
	Transport study.	Section 11.1
	Detailed water balance during construction and over the full lifetime of the project.	Section 2.12
	Clarification of the use of and amounts required of Council recycled effluent.	Section 2.12 and 16.4
	Clarification of the potential provision for water for domestic use either in the project or to the Council.	Section 2.12
	Power requirements including the potential impact of providing electricity, gas and other forms of power.	Sections 2.8.10 and 2.11
	Details of proposal for engineering services to be fed back into systems, such as, the provision of potable water, methane gas, environmentally sustainable energy production.	Chapter 16, Section 2.11
	Identify public concerns and values.	Chapters 5 and 10
	Examine possible impacts on demographic/population change, community services and facilities,	Chapter 10

Table 1.1 Issues Raised by Government Authorities

Department	Issue	Assessment in this Document
	community structures and networks, residential amenity, community health and safety, land use aspirations and property values.	
	A commitment to local employment.	Section 2.6.4, Section 10.6.2 and Chapter 16.
	A commitment to infrastructure, such as schools, scholarships, cultural and sporting facilities.	Section 16.3
	A commitment to local training apprenticeships and scholarship programs.	Section 16.3
	Extensive community consultation program and outline mitigation measures proposed.	Section 10.1 and Section 17.4
	Baseline data on air quality over extended period of time.	Section 12.3
	Health analysis of potential air quality impacts.	Section 10.8
	A greenhouse gas analysis.	Section 12.10
	Programs to link methane extraction to that being carried out at Buttonderry Tip.	A commitment will be made to investigate the potential use of methane gas from Buttonderry Tip however no firm proposals are available at this stage because of separation distance of operations, different gas streams and the strict regulatory and safety issues applying to coal mining
	Long term monitoring of air quality throughout the duration of the project.	Section 16.8 and Section 17.5
	Detailed noise and vibration modelling.	Chapter 11 and Appendix N
	A dilapidation report for all structures in the area of mining operations, infrastructure and the rail link.	Section 16.11 and 16.12
	Mitigation measures proposed for noise and vibration.	Chapter 11, Section 16.7 and Section 17.4
	Extensive baseline data on noise.	Chapter 11 and Appendix N
	Monitoring of noise and vibration for the duration of the project.	Chapter 11, Section 16.7 and Section 17.4
	Before and after	Chapter 9 and Appendix C

Table 1.1 Issues Raised by Government Authorities

Department	Issue	Assessment in this Document
	subsidence flood modelling.	
	Compensation programs for flood impacts arising.	Section 9.5.5
	Emergency evacuation programs for flood affected properties.	There will be no change to existing evacuation programs
	Extensive baseline flood data.	Section 9.2
	Early liaison with Aboriginal owners and consent especially for the rail loop.	Section 2.15 and 14.1
	A commitment to genuinely address Aboriginal archaeological concerns.	Sections 14.1 and 14.4.2, Section 16.17
	A commitment to local Aboriginal employment opportunities in appropriate parts of the construction and operation.	Section 16.17
	Assess the collective effects of small impacts which individually may be acceptable but not as a cumulative effect.	Section 17.2, Chapter 16
	Identify infrastructure elements that can be integrated into the development with a commitment to allow access for others to use such infrastructure.	Section 2.8.5, Section 2.12 and Section 15.2 and Section 16.5
	Long term funding for restoration and re-use to cover the full costs following mine closure.	Section 16.10
	Identification of potential social impacts arising from mine closure and measures to mitigate the social effects.	Section 16.10
Hunter – Central Rivers Catchment Management Authority	A detailed evaluation of the conservation value of the onsite vegetation communities and how any clearing could “improve or maintain environmental outcomes”.	Section 13.1 and Section 16.9
	Take into consideration the Draft Catchment Action Plan.	Section 4.12

The requirements of the Director-General of the Department of Planning, referred to as Environmental Assessment Requirements or EARs, were issued to the proponent on 10 August 2009 (refer to Attachment 2 of this EA).

The EARs are listed below in Table 1.2 along with references to where these issues are addressed in this EA report.

Table 1.2 Environmental Assessment Requirements

Issue	Details	Addressed
General items to be included in the EA	An executive summary	Contained in this document
	A detailed description of the project including the: • Need for the project; • Alternatives considered, including detailed justification for the proposed mine plan/s; • Likely staging of the project; and • Plans of any proposed building works.	 Chapter 3 Chapters 2 and 3 Sections 2.2 to 2.6 Chapter 2 (section 2.5) Mining sequence shown on Figures 2.4 and 2.5. Chapter 2
	A comprehensive risk assessment of the potential environmental impacts of the project, identifying the key issues for further assessment.	Chapter 5 and Attachment 3
	A detailed assessment of the key issues specified below, and any other significant issues identified in the risk assessment of the project: • A description of the existing environment and its values, using sufficient baseline data; • An assessment of the potential impacts of all stages of the project on this environment, including any cumulative impacts, taking into consideration any relevant guidelines, policies, plans, and statutory previsions, as well as the recommendations of the strategic inquiry into the *Impacts of Potential Underground Coal Mining in the Wyong LGA;* • A description of the measures that would be implemented to avoid, minimise and, if necessary, offset the potential impacts of the	 Chapters 6 to 15 Appendix A to T Impacts of the W2CP on all aspects of the environment are included throughout this document (Chapters 6 to 15 and Appendices A to T). The relevance of the Strategic Inquiry is discussed with reference to each of the issues at the end of each chapter and is separately but generally addressed at Section 4.19. Mitigation measures are discussed in each chapter following the assessment of impacts (Chapters 6 to 15 and Appendices A to T). A Biodiversity Offset package

Table 1.2 Environmental Assessment Requirements

Issue	Details	Addressed
	project, and ensure that the project is in the public interest and meets the net benefit test; • A description of the measures that would be implemented to manage and monitor the potential impacts of the project, paying particular attention to emerging best practice within the mining industry in the field of adaptive management.	has been developed and is discussed in Section 16.9. The net benefit of the project is discussed in Chapter 3 and summarised in Chapter 17. Details of the monitoring of each issue is discussed throughout the EA document following impact assessments (Chapters 6 to 15 and Appendices A to T). A commitment to develop a monitoring program for the project is provided in Section 16.21. Best practice in environmental management is a commitment made in Section 16.21.2.
	A statement of commitments.	Chapter 16
	A conclusion justifying the project, taking into consideration the suitability of the site; the economic, social and environmental impacts of the project as a whole; and whether it is consistent with the objects of the EP&A Act, including the principles of ESD.	Section 3.5 justifies the project, section 3.8 considers the project's consistency with the objects of the EP&A Act, including the principles of ESD. Chapter 17 provides the conclusions of the project, how it will impact on the social and natural environment, and compatibility with legislation and planning policies.
	A signed statement from the author of the EA certifying that the information contained within the report is neither false nor misleading.	Contained at the front of this EA document.
Subsidence	A detailed quantitative and qualitative assessment of the potential conventional and non-conventional subsidence impacts of the project, including: • The identification of the natural and built features within the area that could be affected by the subsidence associated with the proposed mining operations, and an assessment of the respective values of	Summarised in Chapter 6 with the full specialist report contained in Appendix A.

Table 1.2 Environmental Assessment Requirements

Issue	Details	Addressed
	these features using any relevant statutory or policy documents; • Accurate predictions of the potential subsidence effects and impacts of the project, including a robust sensitivity analysis of these predictions; • A detailed assessment of the potential environmental consequences of these effects and impacts on both the natural and built environment, paying particular attention to those features that are considered to have significant economic, social or environmental values; and • A detailed description of the measures that would be implemented to avoid, minimise, remediate and/or offset the subsidence impacts of the project, paying particular attention to the proposed adaptive management strategy, and dealing with any uncertainties or potentially significant risks associated with the project.	Subsidence predictions are summarised in Section 6.5 and detailed in the specialist report contained in Appendix A. Subsidence related impacts are discussed in Section 6.6, and the potential environmental consequences of these impacts are discussed as they arise in the following chapters (Chapters 7 to 15 and their corresponding technical appendices). Chapter 6 and Appendix A. Mitigation and management strategies for each of the aspects predicted to be impacted by subsidence are detailed in the relevant chapters of this EA document (Chapters 7 to 15 and their corresponding technical appendices).
Soil and Water	Detailed modelling of potential surface and groundwater impacts of the project.	Detailed groundwater modelling summarised in Chapter 8 with the full specialist report contained in Appendix B. Chapter 9 summarises the impacts of surface waters in terms of flooding and hydromorphology, with full reports in Appendices C and D.
	A detailed water balance for the project, including a description of the measures that would be implemented to minimise water use on site.	Section 2.12.7 contains a water balance for the site. The W2CP is predicted to be a net water producer, creating a need for water disposal rather than water conservation (refer to

Table 1.2 Environmental Assessment Requirements

Issue	Details	Addressed
		Section 2.12.7). A site water management strategy is in Appendix E.
	A detailed assessment of the potential impacts of the project on: • The quantity and quality of regional water supplies, and in particular the supply of water to the Gosford-Wyong Water Supply Scheme; • Regional water supply infrastructure; • Water users, both within and downstream of the project area, including detailed consideration of applicable water sharing plans; • The riparian and ecological values of the watercourses within the project area, and in particular any significant groundwater dependent ecosystems; and • Environmental flows.	Chapter 7 and Section 9.6 Section 7.1 Sections 7.5 and 7.6 and Jilliby Water Sharing Plan discussed in Section 4.13. In terms of groundwater, assessed in Chapter 8 and Appendix B. Hydromorphology discussion in Section 9.6 and Section 9.7 discusses the condition and impact on riparian vegetation. Section 13.2.3 details the groundwater dependent ecosystems. Section 9.6 and 9.7, Appendix C and D.
	A detailed description of the proposed water management system on site, outlining the proposed erosion and sediment control measures, stormwater management measures, and wastewater management measures.	The water management system and pollution control systems are discussed in Section 2.12.
	A detailed assessment of the potential regional and local flooding impacts of the project, with a particular emphasis on public safety, using suitable robust assumptions that take into account the potential impacts of climate change, and are consistent with DECC's most recent guidance on this matter.	Chapter 9 provides a summary of the impacts of flooding, the specialist report is contained in Appendix C.
Biodiversity	A detailed assessment of the impacts of the project on: • Threatened species,	Chapter 13 discusses

Table 1.2 Environmental Assessment Requirements

Issue	Details	Addressed
	populations or ecological communities (including the following EPBC threatened species: *Angophora inopina, Cryptostylis hunteriana, Mixophyes iterates, Mixophyes balbus, Litoria littlejohnni*);	threatened species, population or ecological communities. The specialist report is contained in Appendix Q and Appendix R.
	• CAMBA, JAMBA, and ROKAMBA migratory bird species;	Sections 4.3 and 13.3
	• Critical habitats; and	Section 13.1
	• Regionally significant remnant vegetation, or vegetation corridors;	Section 13.1.10
	Have regard to the NSW Scientific Committee's determination that 'longwall mining is a "key threatening process".	Section 13.1.7
	Include an offset strategy to ensure the project maintains or improves the biodiversity values of the region in the medium to long term.	Sections 13.1.15 and 13.1.16, Section 16.9
Noise and Vibration	Include quantitative assessments of the potential construction, operation, and off-site road and rail noise impacts of the project on existing and proposed development in the vicinity of the site, including the proposed Warnervale Town Centre and the Wyong employment Zone.	Chapter 11 and Appendix O.
Air	Include a quantitative assessment of the potential air quality impacts of the project that explicitly includes consideration of both potential PM_{10}, $PM_{2.5}$ and silica emissions of the project.	Section 10.8, Chapter 12, and Appendix L and Appendix M
Greenhouse Gas	A quantitative assessment of the potential scope 1, 2 and 3 greenhouse gas emissions of the project, including fugitive emissions.	Section 12.7 and Appendix L.
	A qualitative assessment of the potential impacts of these emissions on the environment.	Sections 12.6 and 12.7

Table 1.2 Environmental Assessment Requirements

Issue	Details	Addressed
	An assessment of all reasonable and feasible measures that could be implemented to minimise the generation of greenhouse gas emissions associated with the project.	Section 2.12, Section 12.7, and Section 16.19
Transport	Include a detailed assessment of the project on the capacity, safety and efficiency of the: • Surrounding rail network, having regard to the strategic objectives for passenger and freight rail network (such as the Northern Sydney Freight Rail Corridor project); and • Surrounding road network, with particular regard to the Wallarah interchange (F3 Freeway and Sparks Road), Motorway Link Road / Tooheys Road intersection and the Sparks Road / Hue Hue Road intersection.	Rail transport is discussed in Section 2.9. Chapter 11 and Appendix O.
Heritage	Both Aboriginal and non-Aboriginal, including Aboriginal rock art sites.	Chapter 14 discusses Aboriginal and European Heritage. Detailed specialist reports contained in Appendix S and Appendix T.
Visual	An assessment of the potential visual impacts of the proposed surface facilities of the project on the amenity of the surrounding area, and particularly the proposed Warnervale Town Centre, Wyong Employment Zone, and the major elements of the public domain linking these two areas.	Section 15.1 provides a visual impact assessment of the proposed surface facilities. The specialist report is contained in Appendix K.
	A detailed description of the measures that would be implemented to minimise the potential visual impacts of the project, including the proposed landscaping to screen the surface facilities and stockpiles, and the proposed measures to	Section 15.1 details mitigation measures to reduce the visual impact. The specialist report is contained in Appendix K.

Table 1.2 Environmental Assessment Requirements

Issue	Details	Addressed
	minimise the lighting and signage impacts of the surface facilities.	
Health Risk	Include a detailed Human Health Risk Assessment addressing how the project's environmental impacts (particularly in relation to air quality, noise and drinking water quality) may impact the health of the local community. The assessment should include both impacts directly created by the project and the impacts indirectly created by the project such as additional rail and road movements in the local area.	Chapter 10 and Appendix M
Hazards	Paying particular attention to public safety.	Chapter 5 and Section 9.4. A risk screening of potential hazards has been undertaken (Appendix P).
Waste	Include accurate estimates of quantity, and nature, of the potential waste streams of the project.	Sections 2.8.7 and 2.9 contain details of the waste materials to be generated and how they will be handled.
	A detailed description of the measures that would be implemented to minimise, reuse, recycle and dispose of any waste produced on site.	Section 2.12 contains information on water management, treatment reuse and recycling and solid waste management.
Rehabilitation	Include a detailed description of the proposed rehabilitation strategy, having regard to the key principles in the strategic framework for mine closure and any relevant strategic land use planning plans or policies.	Sections 2.14, 6.7 and 16.10.
Socio-economic	Include a comprehensive assessment of the potential economic and social impacts and benefits of the project that demonstrates that the project as a whole would result in a net benefit to the community, having particular regard to the strategic objectives for the region outlined in relevant policy documents such as the *State Plan* and *Central*	Chapter 3 (Section 3.9) and Appendix H assess the net benefit of the W2CP, which includes a consideration of the CPRS. Chapter 10 summarises the social and economic consequences of the project. The State Plan and CC Regional Strategy and other policy documents are addressed in Chapter 4 and

Table 1.2 Environmental Assessment Requirements

Issue	Details	Addressed
	Coast Regional Strategy, and including consideration of the economic implications of the Commonwealth's proposed Carbon Pollution Reduction Scheme.	Section 15.2. Appendix F, G, H, I and J detail these issues.
References	The EA must take into account relevant State Government guidelines, policies and plans.	Chapter 4 considers the applicability of the various policies, guidelines and legislation relevant to the project. Other references occur throughout EA
Consultation	During the preparation of the EA, consult with the relevant local, State or Commonwealth government authorities as well as service providers, community groups and affected landowners.	Outline of the consultation undertaken is provided in Section 1.4 and further expanded in Section 10.1.
	Both the consultation process, and the issues raised during this consultation process, must be described in the EA.	Sections 1.4 and Chapter 10

1.4.3 Community

Essentially, the community can be categorised into three groups:

- Those that will benefit from the project through economic benefits and employment;
- Individuals and families who live and work in the areas where there may be an impact from the mine; and
- Environmentally and socially aware groups or organizations.

Each of these groups has demonstrated a keen interest in the proposed development during the course of the project development and assessment.

The proponent has sought to determine the key issues of all stakeholders through a variety of surveys, discussions, and other communication means as described in Section 5.1. Details of community issues and attitudes are provided in Section 10.6 while Section 4.21 includes community views raised in the Strategic Inquiry into impacts of potential underground coal mining in the Wyong LGA.

1.5 EA Structure

This Environmental Assessment (EA) document has been prepared with the accumulation of data and reports from the previous 14 years of studies on the

project, and review, updating and reassessment by specialist consultants who are experts in their fields.

The document is organised to provide a comprehensive summary of the important issues in plain English to make it as reader friendly for the wider community as possible. The chapters have been organised to provide details of the project, legislative setting, and environmental assessments. The assessment chapters have been structured to ensure that the issues that represent the greater concern to stakeholders (both the community and government authorities) appear first, based on comprehensive risk assessments and identification of issues.

Specialist reports have been provided in separate volumes to provide further details and demonstrate the clear and transparent process of assessment that has been carried out by independent and professional experts.

The structure of this document meets the requirements of government authorities, as detailed in Table 1.1 and the Environmental Assessment Requirements (EARs) of the Director-General of the Department of Planning as presented in Table 1.2.

Project Team

WACJV has employed a diverse and highly qualified team of consultants to assist in the design of the proposal, environmental assessment and consultation process. Key personnel involved in the proposal are listed below.

Management Team

In-Sik Kim – Wyong Areas Coal Joint Venture
David Lee – Wyong Areas Coal Joint Venture
Sang-Gil Kim – Wyong Areas Coal Joint Venture
Sam Lee – Wyong Areas Coal Joint Venture
Ron Hansen – Team Leader
Peter Hayes – Mining Manager
Peter Smith – Environment and Community Manager
Robert Byrnes – Environmental Assessment Co-Ordinator
Keith Bartlett – Geology and Information Manager
John Edwards – Subsidence Study Co-Ordinator
Chris Webb – Infrastructure Design
Andrew Swanson – Materials Handling and Process Design
Kerry Heywood – Mine Planning and Rail Transport

Consultants Engaged

Minarco Asia Pacific Pty Limited/Minarco-Mineconsult
International Environmental Consultants Pty Limited
Mining Subsidence Engineering Consultants Pty Limited
Strata Control Technologies Pty Ltd
Mackie Environmental Research Pty Limited
QCC Resources
Parsons Brinckerhoff Limited
ERM Limited
OzArk Environmental and Heritage Consultants Pty Ltd
East Coast Flora Survey Pty Ltd
Hunter Valley Research Foundation / Central Coast Research Foundation
Martin and Associates Pty Ltd

Atkins Acoustics Pty Limited
PAE Holmes Air Sciences Pty Ltd
Comur Consulting Pty Limited
Larry Cook and Associates Pty Ltd
GeoGas Pty Ltd
Andrews Neil Pty Limited
Purser Corporate Communications Pty Ltd
Modon Graphics
Hydroilex Pty Ltd
Monteath and Powys Pty Ltd
AAM-Hatch Pty Ltd
Peter Andrews and Associates