



Centennial Coal



Briefing Paper

Springvale Mine Extension Project

Springvale Colliery

September 2012

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ABBREVIATIONS

AHIMS	Aboriginal Heritage Information Management System
Banpu	Banpu Public Company Limited
BOM	Bureau of Meteorology
CCC	Community Consultative Committee
Centennial	Centennial Coal Company Ltd
CHP	Coal Handling Plant
DGRs	Director-General's Requirements
DP&I	Department of Planning and Infrastructure
DTIRIS	Department of Trade and Investment, Regional Infrastructure and Services
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPL	Environment Protection Licence
GDE	Groundwater Dependent Ecosystem
LCC	Lithgow City Council
LDP	Licensed Discharge Point
LEP	Local Environmental Plan
LGA	Local Government Area
MNES	Matters of National Environmental Significance
Mtpa	Million tonnes per annum
NGER Act	National Greenhouse and Energy Reporting Act 2007
NOW	NSW Office of Water
NPW Act	National Parks and Wildlife Act 1974
OEH	NSW Office of Environment and Heritage
PA	Project Approval
PEA	Preliminary Environmental Assessment
POEO Act	Protection of the Environment Operations Act 1997
ROM	Run of Mine
SDWTS	Springvale-Delta Water Transfer Scheme
SEPP	State Environmental Planning Policy
SEWPAC	Commonwealth Department of Sustainability, Environment, Water Population and Communities
Springvale	Springvale Colliery
TSP	Total Suspended Particulates

TSC Act
WMA

Threatened Species Conservation Act 1995
Water Management Act 2000

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1.0 INTRODUCTION

1.1 Overview

Springvale Coal Pty Ltd (the Applicant) proposes to extend its mining operations, using longwall mining techniques, to the east and the southwest of its existing operations at Springvale Colliery located 15 km northwest of Lithgow (refer **Figure 1**). The proposed mine extension (the Project) will fall within Springvale Colliery's existing Colliery Holding. The Project Application Area is shown in **Figure 2**.

Springvale Colliery's (Springvale) current development consent will expire on 28 September 2014, and the Applicant is seeking approval to continue mining beyond this date.

The Project is a State Significant Development in accordance with Clause 8 and Schedule 1 (Item 5) of *State Environmental Planning Policy (State and Regional Development) 2011*. As such the Applicant will be seeking approval under Part 4 Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This Briefing Paper describes the Project, and provides information on the key environmental issues that could potentially be impacted upon by the Project, the specialist studies that will be undertaken to assess the level of impacts, and the mitigation measures that will be implemented into the Project to minimise any impacts.

The Briefing Paper is intended to enable the Department of Planning and Infrastructure (DP&I) to issue Director-General's requirements (DGRs) for the preparation of the Environmental Impact Statement (EIS) required to support the Development Application.

1.2 The Applicant

Centennial Springvale Pty Ltd is the Applicant for this proposed Project.

Springvale Colliery is managed by Centennial Springvale Pty Ltd under a joint venture arrangement between Centennial Springvale Pty Ltd and Springvale SK Kores Pty Ltd. Centennial Springvale Pty Ltd is 100% owned by Centennial Coal Company Pty Ltd. Centennial Coal Company Pty Ltd is a wholly owned subsidiary of Banpu Public Company Ltd, listed on the Thailand Stock Exchange.

Centennial supplies thermal and semi soft coking coal to domestic and export markets, providing NSW with coal for approximately 40% of the State's coal fired electricity.

1.3 Background

Springvale Colliery's initial Development Consent (DA 11/92) was granted on 27 July 1992 pursuant to Section 101 of EP&A Act. Schedule 2, Condition 2 of DA 11/92) states:

'The duration of this consent is limited to twenty-one (21) years from the granting of the Coal Lease.'

The relevant 'coal lease' being referred to in the Development Consent DA 11/92 and the supporting Environmental Impact Statement is ML1326. ML1326 was issued on 28 September 1993 and expires on 18 August 2024. In light of Schedule 2, Condition 2 DA/92 will expire on 28 September 2014. Subsequent Section 102 modifications to DA 11/92 have also been approved and were primarily associated with modifications to the pit top, shaft sites, mine layout and surface coal conveyor installations.

Springvale is an underground coal mine producing high quality thermal coal which is supplied to both domestic and international markets. Domestically, Springvale has established long term contracts with two local power stations: Wallerawang and Mount Piper. All coal is distributed to these sites via

dedicated overland conveyors. The international market is accessed via Centennial's Lidsdale Siding rail loading facility.

The main components of Springvale operations are an underground longwall mine and development panels and supporting surface infrastructure within the Springvale pit top area and on the Newnes State Forest. Currently coal processing and distribution is managed by Springvale Coal Services, a separate Centennial business unit. Recently, a request for the issue of the DGRs has been lodged by Centennial to upgrade the existing Springvale Coal Services, located at Blackman's Flat. As part of this upgrade, it is proposed to amalgamate the existing coal processing and transport facilities, currently undertaken as part of Springvale's Development Consent, to the consent of the proposed Springvale Coal Services. This is an administrative transfer of the existing infrastructure between two of Centennial's business units.

Springvale currently employs approximately 280 full time employees and up to 70 contractors. Statistics from the Australian Bureau of Statistics show that, in 2006, 10% of the regional workforce is directly engaged in mining. This is second only to the retail trade at 11.2%. A higher proportion work in mining in this region than for NSW as a whole, at around 1%. Employment in the mining sector in the region grew by 14.2% from 1996 to 2006.

1.4 Project Objectives and Overview

The overall objective of this Project is to obtain approval for the Springvale Colliery Mine Extension Project for the continuation of mining at Springvale beyond 28 September 2014.

Specific objectives of the Project are as follows:

- Design the Project in accordance with the principles of ecologically sustainable development;
- Extract up to 4.5 million tonnes per annum (Mtpa) of run of mine (ROM) coal from the Lithgow Seam;
- Development of underground access headings and roadways from the current mining area initially eastwards then to the south and south-west as illustrated on **Figure 2**;
- Secondary extraction by longwall mining;
- Process ROM coal through a crusher and screening plant at Springvale pit top;
- Install and/or operate ancillary surface infrastructure for ventilation, electricity, water, materials supply, environmental monitoring and communications;
- Progressively rehabilitate any disturbed areas;
- Continue to operate 24 hours per day seven days per week;
- Employment to a full time workforce of up to 310 persons comprising 280 existing personnel and up to an additional 30 full time employees; and
- Transfer of the operational management of coal processing and distribution infrastructure to Springvale Coal Services.

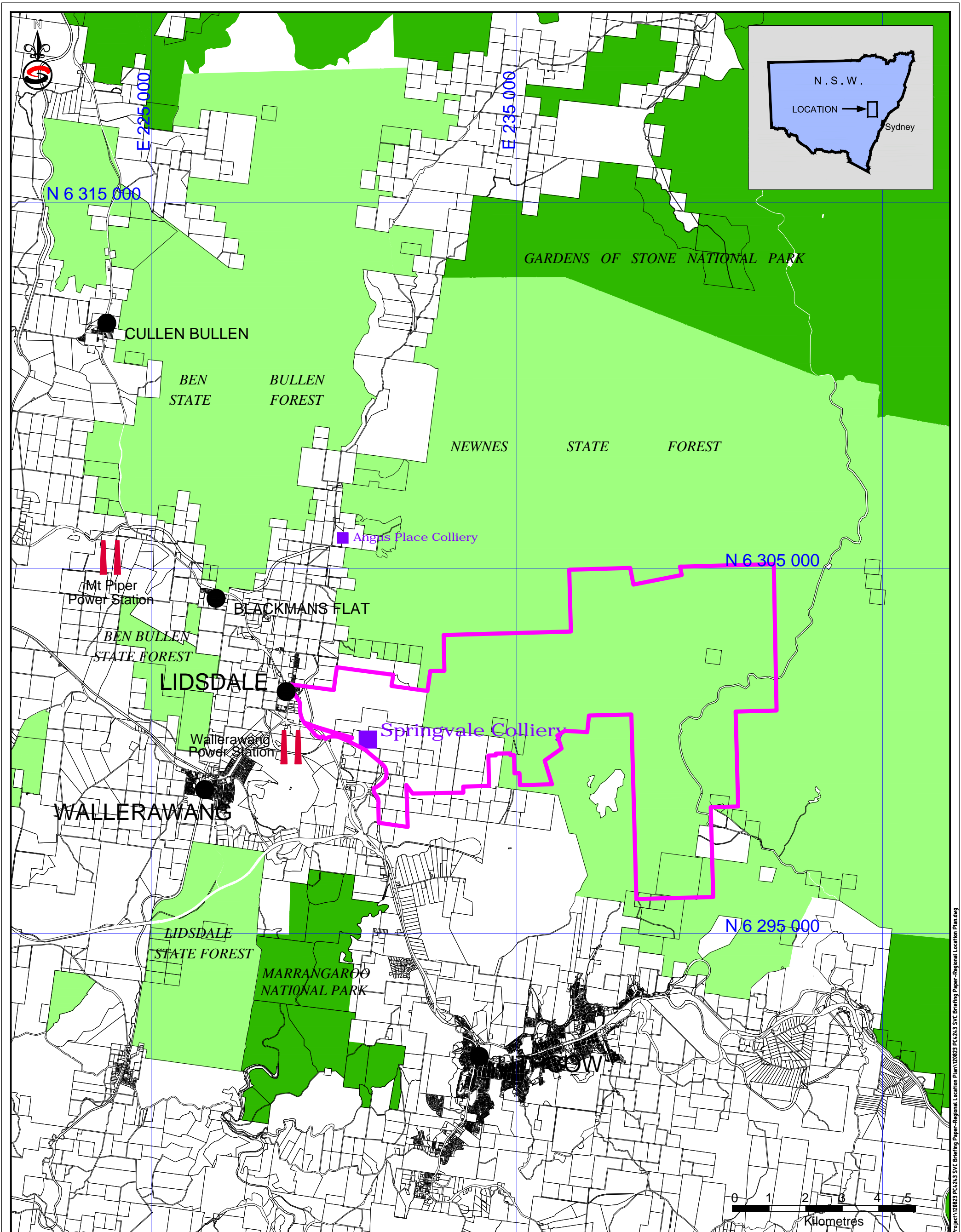
1.5 Briefing Paper Aims and Objectives

Overall this Briefing Paper aims to provide an adequate description of the proposed Project as well as a summary of existing operations. To achieve this aim, key objectives of this Briefing Paper are to inform all stakeholders of the components proposed within the Springvale Colliery Mine Extension Project. The Briefing Paper provides a general overview of the Project with reference to applicable legislation and

relevant planning policies. From the pre-project risk assessment, expected environment and community impacts are outlined alongside the proposed level of assessment required to address each risk. Anticipated stakeholder consultation requirements are outlined against the proposed stakeholder consultation plan to act as a framework through which to identify and appropriately consult with stakeholders who may be influenced by or have an interest in the Project.

The Briefing Paper is structured as follows:

- **Section 1** introduces the Project;
- **Section 2** provides a description of the site and an overview of the existing environment;
- **Section 3** provides an overview of the existing and approved mining operations of Springvale Colliery;
- **Section 4** provides a detailed description of the Project;
- **Section 5** summarises the legislation relevant to the Project;
- **Section 6** provides an overview of the preliminary environmental risks associated with the Project and describes the proposed assessment methodology for all key environmental issues identified in the preliminary environmental risk assessment for the Project;
- **Section 7** describes the stakeholder consultation program to be undertaken to ensure all interested parties are consulted with regard to the Project;
- **Section 8** provides the project justification; and
- **Section 9** provides concluding remarks.



LEGEND:

- Project Application Area
- Cadastral Boundary
- State Forest
- National Park

NOTES:

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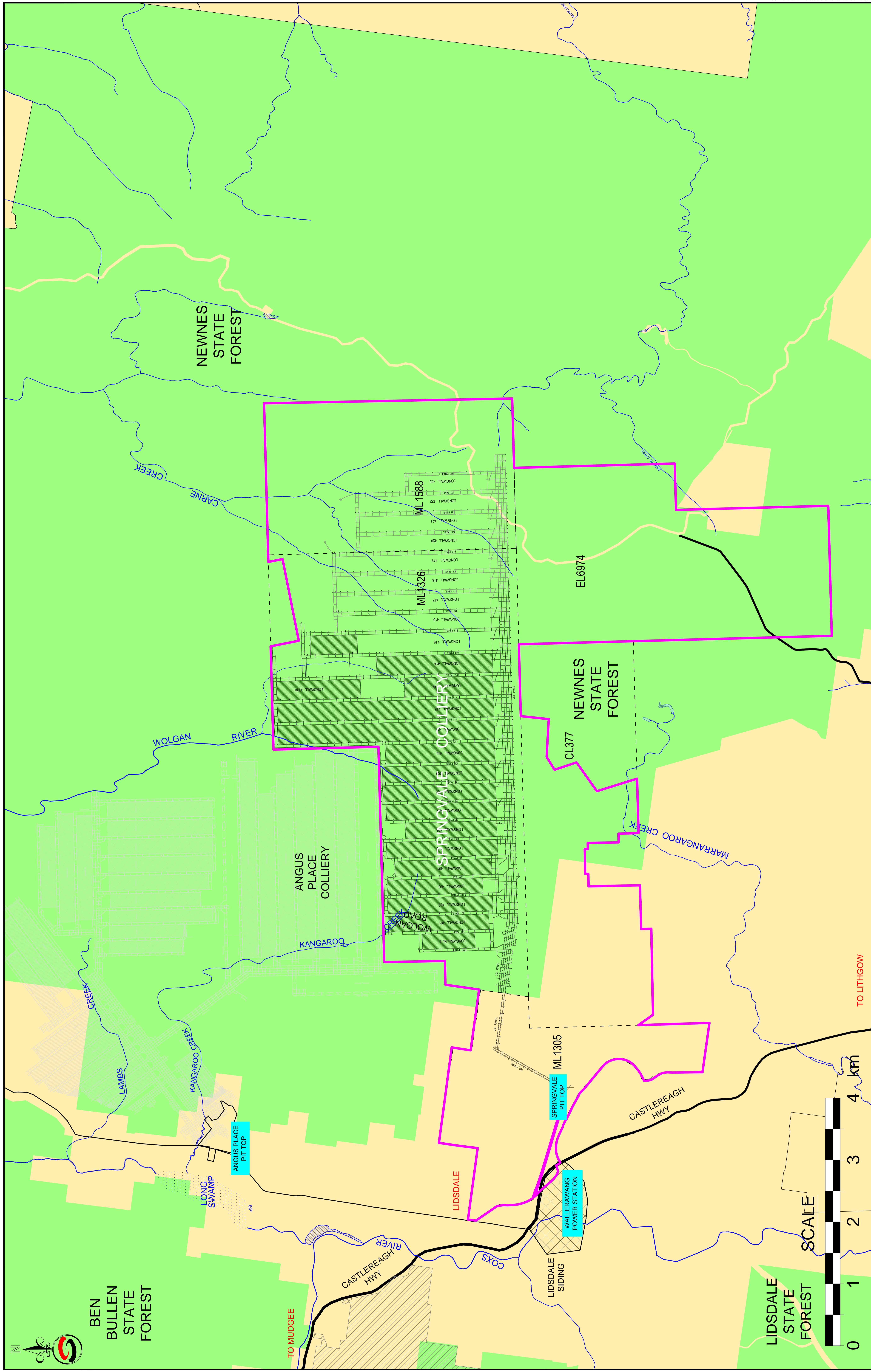
SPRINGVALE MINE

**Springvale Coal Mine
Extension Project**
Figure 1 - Locality Plan



SPRINGVALE MINE
Castlereagh HWY
Lidsdale NSW 2790
PO Box 198
Wallerawang NSW 2845
Phone: 02-63501600
Fax: 02-63551052

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LEGEND:

- Project Application Area
- Lease Boundaries
- Drainage Lines
- State Forest
- Springvale Coal Services
- Power Station

NOTES:

Other Coal Mines not shown are located within the plan area. Users of this plan should view mine records held at Industry & Investment NSW for full details of coal mines within this Locality.

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SCALE

0 1 2 3 4 km

TO MUDGEE

TO LITHGOW

DATE: 20-04-2012

DATE: 20-04-2012

DATE: 20-04-2012

PROJECT: SPRINGVALE MINE

TITLE: Springvale Coal Mine Extension Project

FIGURE: Figure 2 - Project Application Area

DATE: 20-04-2012

DATE: 20-04-2012

DATE: 20-04-2012

PROJECT: SPRINGVALE MINE

TITLE: Springvale Coal Mine Extension Project

FIGURE: Figure 2 - Project Application Area

DATE: 20-04-2012

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2.0 EXISTING SITE DESCRIPTION

2.1 Site Locality and Existing Land Uses

The Springvale pit top is located approximately 15 km north-west of the city of Lithgow and is accessed off the Castlereagh Highway at Lidsdale. Springvale is located within the Lithgow City Council Local Government Area (LGA). The underground longwall mine is situated directly below a sandstone plateau of undulating unpopulated bushland which is part of the Newnes State Forest.

Springvale Colliery is bordered by Angus Place Colliery (Centennial Coal Pty Ltd) to the north, the abandoned Lithgow State Mine to the south, and the Wolgan Valley and Newnes State Forest to the east. Collectively, existing land uses in the vicinity of the colliery include residential land, pastoral farming, open cut and underground coal mining, power generation and commercial forestry.

2.2 Topography and Hydrology

The surface lands adjacent to and above Springvale underground workings are situated on the Newnes State Forest, which comprises narrow gorges with high ridgelines, steep sided slopes and sandstone cliffs above incised valleys, hilly areas with relatively flat crests and spurs and moderately sloped ephemeral drainage lines. Marrangaroo Creek, the Wolgan River, Carne Creek and their tributaries can be found in the vicinity. Pastoral farming lands and private land exist above the eastern portion of the Project Application Area.

Springvale lies on the border of the upper catchment of the Wolgan River (within the Hawkesbury–Nepean Catchment) and the catchment of the Coxs River. The Wolgan River flows in a north north–westerly direction and is a tributary of the Capertee River, which ultimately joins the Colo River, the Hawkesbury River and Broken Bay. The Coxs River on the other hand flows in a southerly direction and its catchment is part of the greater Warragamba Dam Catchment. The Warragamba Dam Catchment lies within the Sydney drinking water catchment.

2.3 Climate

The climate for the Newnes State Forest is classified by the Bureau of Meteorology as warm temperate with an annual rainfall of 1,097 mm. Summers are mild with average maximum temperatures of 23.5°C and winters are cold with average minimum temperatures of –1.0°C.

Rainfall and temperature tends to be seasonally distributed with the highest falls and the highest temperatures occurring in the summer months, and the lowest rainfall and temperatures experienced during the winter months.

2.4 Geology and Coal Reserves

The Lithgow coal seam lies in the Cullen Bullen Subgroup of the Illawarra Coal Measures (**Table 1**). The Lithgow coal seam is the major economic coal seam in the Lithgow, Rylstone and Bylong areas and overlies the well-exposed, bench forming outcrops of the Marrangaroo Formation. In the western coalfield, the Lithgow seam ranges in thickness from less than 1 m to 9 m and consists generally of dull coal with minor bright layers, generally increasing towards the base and top of the formation. Some thin carbonaceous or tuffaceous claystone layers are present in the upper half. The coal measures are overlain by massive sandstone units and conglomerates. The sediments that form the Illawarra Coal Measures were deposited in the late Permian era. The seam is relatively horizontal, however, depth of cover varies considerably due to the surface topography.

Table 2 provides the Statement of Reserves at Springvale as at 31 March 2012.

Table 1 – Illawarra Coal Measures Stratigraphy

GROUP	FORMATION	COAL SEAMS / SIGNIFICANT UNITS
NARRABEEN GROUP		
ILLAWARRA COAL MEASURES	WALLERAWANG SUBGROUP	KATOOMBA SEAM Farmers Creek Formation MIDDLE RIVER COAL MEMBER
	CHARBON SUBGROUP	ANGUS PLACE SANDSTONE BAAL BONE FORMATION THE NEWNES FORMATION (Upper and Middle Irondale seams) IRONDALE SEAM LONG SWAMP FORMATION
	CULLEN BULLEN SUBGROUP	LIDSDALE SEAM BLACKMANS FLAT CONGLOMERATE LITHGOW SEAM MARANGAROO CONGLOMERATE
	NILE SUBGROUP	
SHOALHAVEN GROUP		

Table 2 – Statement of Reserves at Springvale as at 31 March 2012

Remaining Reserves (Mt)			
Proved	Probable	Total	Marketable
100.8	330.5	431.3	406.6
Source: Malcolm Ives and Mark Levey, <i>Coal Resource and Reserve Statement</i> , Centennial Coal Company Limited, 31 March 2012			

Two identified resource areas identified for the Project are as follows:

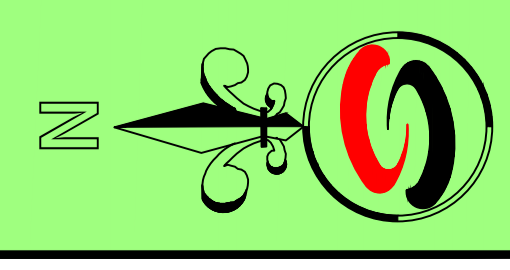
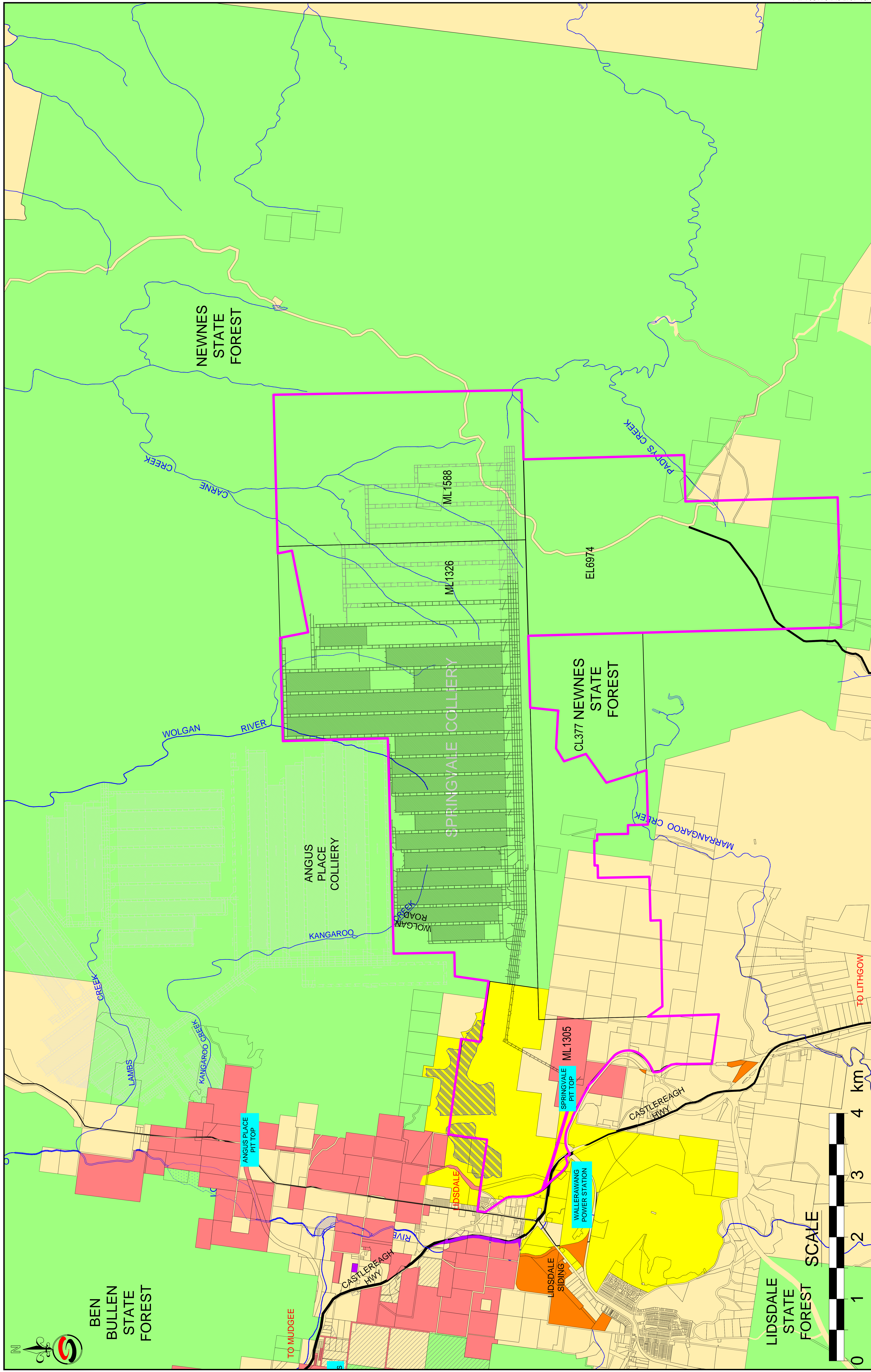
- A resource area situated directly to the south of the current mine could add up to 25 million tonnes of mineable reserve to Springvale’s current coal reserves.
- A second resource area situated to the east of the pit top could add approximately 3.73 million tonnes of mineable reserves.

2.5 Land Ownership

Land ownership within and surrounding the Project Application Area includes (refer **Figure 3; Appendix 1**):

- Crown land;
- Privately owned land;
- Land owned and managed by Forests NSW.

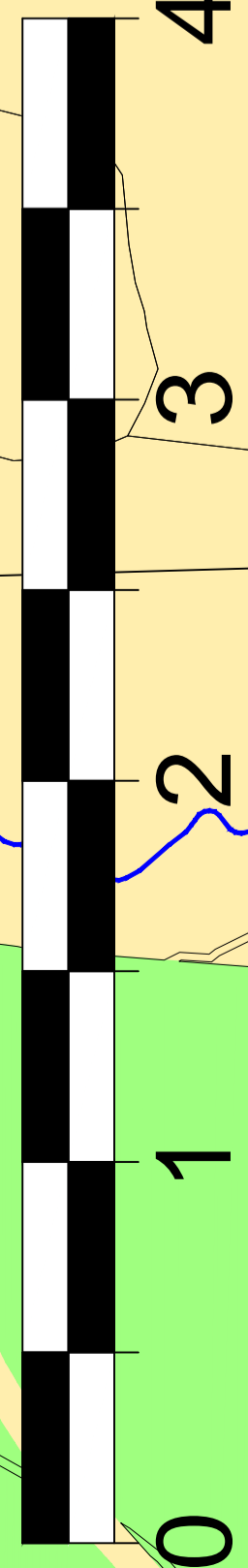
The majority of land within the Project Application Area is Crown Land managed by Forests NSW and privately owned land.



BEN BULLEN STATE FOREST

NEWNES STATE FOREST

LIDSDALE STATE FOREST



LEGEND:

- Project Application Area
- Lease Boundaries
- Delta Freehold
- Other Land Ownership
- State Rail Authority Land
- State Forest
- Drainage Lines

NOTES:

Other Coal Mines not shown are located within the plan area. Users of this plan should view mine records held at Industry & Investment NSW for full details of coal mines within this Locality.

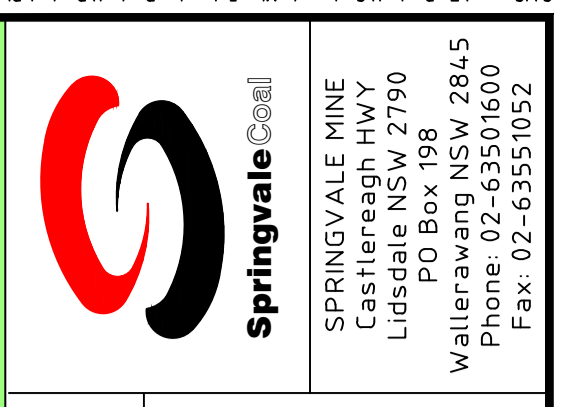
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SPRINGVALE MINE

Springvale Coal Mine
Extension Project

Figure 3 - Land Use



3.0 EXISTING OPERATIONS AND INFRASTRUCTURE

3.1 Existing Operations

Springvale undertakes the following activities:

- **Production** – Annual extraction limit of 3.4 million tonnes per annum of ROM coal.
- **Mining method** – Longwall mining methods are used for the extraction of each longwall block. Development headings are mined using continuous miner units, which also install roof and rib support.
- **Mining area** – Longwall blocks are mined in sequence. Within the current approved area, Longwalls (LW) 401 to 414 have been extracted. Mining currently occurs at Springvale in accordance with the Subsidence Management Plan for LW414 to LW418, approved on 22 October 2010.
- **Employment** – Springvale currently employs approximately 280 permanent staff and up to 70 contractors.
- **ROM stockpile** – When conveyed from the underground mine, the ROM coal is deposited on the pit top ROM stockpile prior to being crushed and conveyed off site.
- **Coal preparation** – Coal is crushed on site within the Coal Handling Plant. No reject material is generated at the pit top.
- **Land preparation** – As Springvale is a well-established underground mine with adequate supporting infrastructure, minimal land preparation occurs. In recent years, minor land preparation has been undertaken to facilitate the exploration drilling program to evaluate the mine's coal resource.
- **Mine access** – Access to Springvale is via a roadway from the Castlereagh Highway. Access into the mine is via existing workings. Access to infrastructure situated on the Newnes State Forest is via the Old Bells Line of Road from Clarence.
- **Product coal transport** – All ROM coal produced is loaded onto conveyors from the final product bin after stockpiling and sizing. The conveyors transfer the coal to the coal services site for further processing or directly to the two local power stations.
- **Site water management** – The surface water management system at Springvale relies on the separation of clean and dirty water and the treatment of dirty water prior to discharge. Treated water from the sewage treatment facility is irrigated onto the approved utilisation area. Current water management practice occurs in accordance with the Site Water Management Plan.
- **Rehabilitation** – Given that Springvale exists as an underground coal mine which tends not to alter significantly in footprint, rehabilitation undertaken is currently associated with the exploration program and dewatering bore sites on the Newnes State Forest following the cessation of the activities.
- **Operating times** – Springvale operates activities 24 hours per day, 7 days a week.

3.2 Existing Infrastructure and Operations

3.2.1 Surface Infrastructure

The existing Springvale surface facilities area is located off the Castlereagh Highway at Lidsdale and includes:

- Administration building and portable offices on the pit top site;
- Bathhouse with adequate facilities and services for the intended workforce;
- Coal Handling Plant and coal stockpile;
- Various workshops, service buildings and material storage sheds;
- Visitor and employee parking areas;
- Personnel and materials drift for access to underground workings;
- Coal conveyor drift and coal conveyor drive to transport coal from the underground workings to the surface;
- Diesel, solcenic hydraulic fluid and oil storage facilities;
- A dirty and clean water management control system; and
- Mine dewatering infrastructure.

3.2.2 Mining Method

The longwall mining method is utilised at Springvale. Longwall mining is a form of underground coal mining where a block of coal is mined using a longwall shearer. In the current mining area the longwall blocks have typically been approximately 3 km long by 315 m wide at a depth of cover of 280 – 420 m. The mine layout is constrained by the lease boundary and subsidence protection zones designed to protect sensitive surface escarpment areas.

The longwall mining method is supported by the development of underground roadways which enable access to future longwall extraction areas. Underground roadways are mined using continuous miners. Development activities require the installation of strata support (for example roof bolts and mesh) as part of the process of mining the underground roadways.

Entry to the mine is via two in-seam portals. These entries extend for approximately 2,500 m past the abandoned Renown Colliery workings prior to connecting with the five heading main roadways. The main mine entry is adjacent to the bathhouse and is a dedicated transport route; the other is used as a belt road with walking access as a second entry and or exit if required.

3.2.3 Mine Ventilation

The ventilation system at Springvale provides a continuous stream of fresh air to the underground mine workings. Fresh air is drawn into the mine workings through two surface portals located at the pit top as well as two separate intake shafts located off the pit top site on privately owned land. Air is exhausted to the atmosphere from the underground mine workings via a single 3.5 m diameter shaft (Ventilation Shaft No. 3) located on the Newnes State Forest. Air flow is provided by a main ventilation fan system positioned on top of the No. 3 exhaust shaft. Ventilation control devices installed throughout the underground mine ensure intake air is drawn to the production panels before it is exhausted as return air up the No.3 shaft.

3.2.4 Power Supply Infrastructure

Springvale currently operates an overhead 66 kV power line to power its No. 3 shaft site. This powerline originates from Centennial Clarence Colliery and travels along a separate easement which generally follows the Blackfellows Hand Trail and later Beecroft Track. This supply will be extended to provide power to the proposed dewatering boreholes (refer **Section 4.9.3**).

3.2.5 Mine Services

Existing compressor units exist at the pit top in addition to mine portal entrances to the men and materials drift and the main conveyor belt drift. Other mine services located at the pit top include dirty and clean water management systems, sewage treatment, licenced mine water discharge points, workshops, storage bays, bathhouse, administration buildings and parking facilities. Power reticulation and access tracks support the operation of these mine services. Additional compressor units and a concrete borehole are situated at the No. 3 shaft site on the Newnes State Forest.

3.2.6 Material and Service Supply Boreholes

Currently there is an existing delivery borehole situated at the No. 3 shaft site on the Newnes State Forest which is used for delivering concrete to the underground workings. Concrete is typically used in underground coal mines to reinforce roadway floors, construct ventilation overcasts as well as other civil construction works. Underground vehicles transport the concrete to the required destination from the base of the borehole.

3.2.7 Underground Mine Water Management

Groundwater is currently pumped from the underground workings to the surface by the existing dewatering borehole (Bore 6), for transfer, via the Springvale-Delta Water Transfer Scheme (SDWTS), to Wallerawang power station to be used as part of the cooling process. An additional dewatering borehole is situated at the No. 3 shaft site which also connects into the SDWTS. This importantly reduces the volume of water sourced by the power station from the regional surface rivers and lakes which feed into the Sydney water catchment. Two emergency licenced discharge points (LDP004 and LDP005) exist as contingencies when water is unable to be transferred via the SDWTS.

A pit top collection system is also used to source mine inflows for operational requirements (dust suppression for both underground and surface, cooling of machinery, and for fire fighting supplies). Surplus water is discharged to the Coxs River via LDP001.

3.3 Coal Handling and Transport

ROM coal is crushed and sized at the Springvale mine pit-top and is then transported using an overland conveyor system to either Mt Piper Power Station or Wallerawang Power Station; or it is stockpiled and washed within the Coal Preparation Plant (CPP) at the Springvale Coal Services site at Blackmans Flat. Coal for export is washed at the Springvale Coal Services prior to transfer to the Lidsdale Rail Siding, using the overland conveyor system.

3.4 Reject Management

Coal reject material, produced by the preparation of product coal in the CPP at the Springvale Coal Services, is managed at their site. Coarse reject material is transported via haul trucks to the Huon No. 6 REA or the 'A Pit' REA. It may also be used as part of general operations or made available for other projects.

Fine coal reject from the CPP is fed to the Co-disposal dam via slurry pipes. Decant pipes are positioned to collect pooled water after settling of the fine material. The water is discharged to the retention dam below the co-disposal unit for either reuse in the CPP as clarified process water or disposed off site under licence conditions. The area is designed to contain 382,000 m³ of material and is fully bunded to contain reject material. The fines may be dried and blended into product coal for both domestic and export markets.

3.5 Water Management and Supply

Water management at is undertaken in accordance with the Springvale Water Management Plan. The surface water management system at Springvale relies on the separation of clean and dirty water and the treatment of dirty water prior to discharge. A comprehensive Site Water Balance has been developed for Springvale.

Water for Springvale operations is sourced from groundwater ingress into the mine (for process water, dust suppression (surface and underground), and sand fire fighting) through the pit collection system bore (Licence number 10BL602017).

The mine inflows at Springvale are managed through operation of dewatering bores. All dewatering facilities have been located at low points in the mine along the northern (down dip) perimeter of the workings. Springvale mine workings are currently dewatered using three submersible pumps at the Bore 6 site. An in-seam pumping system is available at Ventilation Shaft 3 (in association with Springvale’s ventilation shaft) for further dewatering of mine inflows, and is used as required. Both of these dewatering facilities are licensed as mining dewatering bores by the NSW Office of Water (10BL601863 and 10BL603519) and discharge into the SDWTS for delivery to the Wallerawang Power Station for use in the cooling towers.

The SDWTS currently consists of a network of predominantly trenched pipes from Bore 6 and Ventilation Shaft 3 leading to the Wallerawang Power Station. The Bore 6 site (refer **Plate 1**) comprises three boreholes connected to submersible pumps and ancillary surface control equipment.

Water is discharged from Springvale through the licensed discharge points LDP001, LDP002, LDP004, LDP005, and LDP010 in accordance with EPL3607. Water is discharged at Springvale Coal Services site at LDP006 while LDP007 is used for discharge from the conveyor system into Coxs River; both LDP006 while LDP007 are also on Springvale’s EPL3607.

Potable water is sourced from Lithgow City Council and Lithgow Valley Springs\Neverfail Springwater.



Plate 1 – Example of a Mine Dewatering Compound Site

3.6 Consents, Leases and Licences

Springvale's Development Consent DA 11/92 was approved by the then Minister for Planning on the 17 July 1992, pursuant to Section 101 of the EP&A Act, permitting the construction and operation of an underground coal mine, and associated CPP and overland conveyor system at Springvale. Two modifications to the consent (DA 11/92) have been approved since 1992, along with the granting of two approvals through Lithgow City Council, all of which are summarised in **Table 1**.

Springvale operates under Environment Protection Licence (EPL) 3607, which authorises mining for coal to a scale of up to 3.5 Mtpa and coal works up to a scale of 5 Mt loaded per annum.

Springvale additionally holds a Mining Leases, a Coal Lease, Mining Purposes Lease, Exploration Licences, Subsidence Management Plan approval, Groundwater Licences, Occupation Permits, Section 95 Certificates, a Dangerous Goods Licences and a Radiation Licence.

Tables 3, 4 and 5 contain lists of the current consents, leases and licences relevant to Springvale Colliery.

Table 3 – Springvale Development Consents

Ref No.	Description	Issued By	Issue/Consent Date	Expiry/ Review Date
S91/06569/001 (DA 11/92)	Original development consent under Section 101 of EP&A Act permitting the construction and operation of an underground coal mine, overland conveyor and CPP.	Department of Planning (now Department of Planning and Infrastructure (DP&I))	27 Jul 1992	28 Sept 2014
S91/06569/Z01	Modification to the original development consent under Section 102 of the EP&A Act to allow the following: <ul style="list-style-type: none"> • Modifications to the pit top layout; • Modifications to storm water controls; • New mine entry point; • Relocation of mine ventilation shafts; • Extension of existing road to access shafts; • Use of the existing Western Main Colliery CPP; and • Relocation of existing conveyor route to the Western Main CPP. 	Department of Planning (now DP&I)	29 Jun 1993	28 Sept 2014
S91/06569/Z01	Modification to the original development consent under Section 102 of the EP&A Act for the replacement of Attachment A (the land description) with Attachment 1 (Schedule of Lands and Tenements).	Department of Planning (now DP&I)	11 Apr 2004	28 Sept 2014
EPBC 2011/5949	Mining of Longwalls 415, 416 and 417 at Springvale Colliery, NSW	Commonwealth Department of Sustainability, Environment, Water, Populations and Communities	14 Mar 2012	19 Mar 2032

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Ref No.	Description	Issued By	Issue/Consent Date	Expiry/ Review Date
DA 326/02	Application under Section 81(1)(a) of the EP&A Act for the construction and operation of a coal conveyor from Castlereagh Highway to Wallerawang Power Station.	Lithgow City Council	20 Sept 2002	20 Sept 2007 (if not commenced)
DA 461/02	Application under Section 81(1)(a) of the EP&A Act for the construction and operation of a Ventilation Shaft 3 facility on the Newnes Plateau.	Lithgow City Council	23 Jan 2003	23 Jan 2008 (if not commenced)
DA 461/02 S96 002/12	Upgrade of Ventilation Shaft 3 facility	Lithgow City Council	30 May 2012	23 Jan 2008 (if not commenced)

Table 4 – Springvale Mining Authorities

Reference	Title	Issue Date	Expiry Date	Area (Ha)
Springvale				
CL 377	Coal Lease 377	24 Feb 1992	9 Apr 2025	1,105
A 460	Authorisation 460	07 Jul 1992	6 Jun 2015	1,105
ML 1303	Mining Lease 1303	15 Dec 1992	14 Dec 2013	713
ML 1323	Mining Lease 1323	3 Aug 1993	3 Aug 2014	30.24
ML 1326	Mining Lease 1326	28 Sept 1993	18 Aug 2024	2,157
EL 6974	Exploration Licence 6974	13 Dec 2007	13 Dec 2012	4,385
ML 1537	Mining Lease 1537	16 Jun 2003	25 Jun 2024	4.13
ML 1588	Mining Lease 1588	19 Oct 2006	19 Oct 2027	975.5
ML 1670	Mining Lease 1670	17 Feb 2012	17 Feb 2033	0.3
Springvale Coal Services				
CCL 733	Consolidated Coal Lease 733	23 May 1990	3 July 2027	723.5
ML 204	Mining Lease 204	27 May 1910	27 May 2012	10.12
ML 564	Mining Lease 564	2 May 1922	2 May 2023	19.75
PLL 133	Private Lands Lease 133	10 Aug 1922	10 Aug 2024	16.51
ML 1319	Mining Lease 1319	5 July 1993	5 July 2014	5.71
ML 1352	Mining Lease 1352	23 Jun 1994	23 Jun 2015	8.2 in 2 parts
ML 1448	Mining Lease 1448	31 May 1999	31 May 2020	95.16
CL 361	Coal Lease 361	17 Jul 1990	16 July 2032	14.26
CL 394	Coal Lease 394	27 May 1992	27 May 2013	17.0
MPL 314	Mining Purposes Lease 314	3 Aug 1993	2 Aug 2014	96.4 in 2 parts

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Table 5 – Other Approvals Applicable to Springvale

Type	File/Approval Number	Regulatory Authority	Issue Date	Details
Mining Operations Plan (MOP)	09/8465	Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS)	24 May 2010	Variation Approval for MOP – 2009 to 2016.
Groundwater Licences (<i>Water Act 1912</i>)	10BL603519	NSW Office of Water	24 Feb 2010	Dewatering Bore 6.
	10BL602017	NSW Office of Water	04 Sept 2007	Pit Top Collection System.
	10BL601863	NSW Office of Water	04 Sept 2007	Dewatering borehole at Ventilation Shaft 3 compound.
Subsidence Management Plan	04/1673	DTIRIS	22 Oct 2010	Approval for LW411-LW418.
	08/8497			SMP LW414 variation
Section 138 Approval (<i>Coal Mines Regulation Act 1982</i>)	C05/6330	DTIRIS	04 Jan 2006	Approval to extract LW411 and LW412 within the Lithgow Seam.
Clause 88 Approval (<i>Coal Mines Health and Safety Regulation 2006</i>)	09/2010	DTIRIS	27 Oct 2009	Variation approval to extract LW414 within the Lithgow Seam.
Section 95 Certificate (<i>Threatened Species Conservation Act 1995</i>)	1117191	OEH	02 Aug 2010	Undertake geotechnical and geophysical investigations within Newnes Plateau Shrub Swamp.
Section 95 Certificate (<i>Threatened Species Conservation Act 1995</i>)	1111270	OEH	10 Feb 2010	Hand removal of weeds within Newnes Plateau Shrub Swamp.
Occupation Permit (<i>Forestry Act 1916</i>)	2349	Forests NSW	26 Nov 2009	Permit to occupy Newnes State Forest for activities associated with mineral exploration and construction and operation of dewatering bores (Bore 5 decommissioned and operational Bore 6).
Dangerous Goods Licence	35/027897	WorkCover NSW	-	Dangerous goods on premises.
Radiation Gauge	29346		12 Feb 2004	Licence to sell/possess.

3.7 Environmental Management System

Springvale has an established Environmental Management System (EMS) that has been developed in accordance with the Centennial Coal Environmental Management System Framework.

The EMS has been developed and implemented to ensure the effective management of environmental aspects and impacts and compliance with regulatory requirements while providing a means for continued improvement in the environmental performance of Springvale. The EMS incorporates a number of environmental management plans that are designed to assist in meeting community and regulatory expectations.

Table 6 lists Springvale’s management plans and systems. These documents provide a framework for the planning of mining operations while considering potential environmental issues and their management on site.

Table 6 – Management Plans and Systems of Springvale Colliery

Management Plan or System	Purpose
<ul style="list-style-type: none"> • Public Safety Management Plan 	This describes the processes developed to ensure Public Safety in any surface areas that may be affected by subsidence arising from longwall mining in the SMP area at Springvale Colliery. The Management Plan fulfils the requirements of Condition 19 of the <u>Springvale Colliery Subsidence Management Plan Approval</u> .
<ul style="list-style-type: none"> • Infrastructure Management Plan 	The Infrastructure Management Plan has been developed to manage the risks to infrastructure as a result of surface subsidence and mining operations. The Management Plan fulfils the requirements of Condition 17 of the <u>Springvale Colliery Subsidence Management Plan Approval</u> .
<ul style="list-style-type: none"> • Land Management Plan 	The purpose is to ensure adequate management of any impacts associated with surface cracking, erosion, soil slumping and land degradation caused by subsidence due to longwall mining and/or activities associated with subsidence monitoring or other management actions by Springvale Colliery in the Subsidence Management Plan area. The Land Management Plan has been developed and implemented to comply with the requirements of Condition 18 of the <u>SMP Approval</u> .
<ul style="list-style-type: none"> • Environmental Monitoring Program 	The Environmental Monitoring Program provides the details of monitoring work and reporting functions in response to the various management plans. The purpose of environmental monitoring is to gather data on the performance of the operation and determine the need for improvements or additional mitigation measures in order to achieve the assessment criteria for the operation.
<ul style="list-style-type: none"> • Subsidence Management Plan 	Approval granted from DTIRIS. Several variations of the SMP have been approved by DTIRIS since the initial approval.
<ul style="list-style-type: none"> • Subsidence Community Consultation Process 	The SCCP fulfils the requirements of Condition 13 of Springvale Colliery’s SMP approval. The objectives of this SCCP include: <ul style="list-style-type: none"> • Developing an effective process to communicate with relevant stakeholders regarding the subsidence from Springvale Colliery’s activities on the Newnes Plateau; • Defining the responsibilities in respect of the communication paths and forums; • Implementing a system to monitor and manage issues from relevant stakeholders; and • Providing the complaints protocols.
<ul style="list-style-type: none"> • Subsidence Management and Reporting Program 	The purpose is to provide a subsidence monitoring and reporting program to measure how the effects of subsidence are proposed to be monitored. The program includes monitoring both pre and post mining in the SMP area.
<ul style="list-style-type: none"> • Newnes Plateau Shrub Swamp Management Plan 	The purpose of this Management Plan is to measure and manage potential subsidence impacts from longwall mining (within the Subsidence Management Plan (SMP) area) on the Newnes Plateau Shrub Swamps at Springvale.

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Management Plan or System	Purpose
<ul style="list-style-type: none"> • Surface Water Management System 	<p>This Management Plan aims to coordinate the management of all surface water and groundwater within the Springvale Colliery Holding Boundary in an efficient and sustainable manner.</p>
<ul style="list-style-type: none"> • Bushfire Procedure 	<p>These set out the procedures for reporting fire and locations of all assets at Springvale Colliery and on the Newnes Plateau.</p>
<ul style="list-style-type: none"> • Erosion and Sediment Control Procedure 	<p>The ESCP has been prepared to manage the following:</p> <ul style="list-style-type: none"> ▪ Identification of potential sources of sediment; ▪ Description of management principles to be implemented; ▪ Description of the erosion sediment control structures in place; and ▪ Description of measures to be implemented to decommission structures over time.
<ul style="list-style-type: none"> • Ventilation Management System 	<p>In accordance with Clause 21 of the <i>Coal Mine Health and Safety Regulation 2006</i>, Springvale has implemented a Ventilation Management System. The objectives of this management system are to ensure as far as reasonably practicable the safety of all persons present at the coal operation with regard to mine ventilation.</p>
<ul style="list-style-type: none"> • Strata Failure Management System 	<p>In accordance with Clause 28b (ii) of the <i>Coal Mine Health and Safety Regulation 2006</i>, Springvale has implemented a Ventilation Management System. The objectives of this management system are to ensure as far as reasonably practicable the safety of all persons present at the coal operation with regard to underground strata.</p>

4.0 PROPOSED PROJECT

4.1 Background

Springvale is seeking approval for its Mine Extension Plan based on resource modeling within the Springvale Colliery Mining Lease and Exploration Licence areas. This involves an extension to current longwall mining practices supported by roadway development activities. The Project will continue to use existing surface and underground facilities and would extend the mine life by approximately 13 years. Principally, the Project seeks to gain approval for continued mining operations. Additionally, new facilities and modifications to existing facilities are required to support the Project. The proposed new facilities typically will assist with ensuring adequate underground mine ventilation in accordance with Clause 13(h) of *the Coal Mine Health and Safety Regulation 2006* and the mine dewatering bores and ancillary support such as power.

4.2 Project Application Area

The Project Application Area is identified in **Figure 2**.

4.3 Production Limit Increase

It is proposed to extract up to 4.5 Mtpa of ROM coal. Springvale will install new longwall equipment at the start of proposed LW416. Production increase will arise due to the absence of the longwall changeover period between LW415 and LW416; a longwall changeover could typically last eight weeks. The increased productivity is also likely to be due to less downtime and overall process improvements by using the new longwall equipment.

4.4 Mining Method

Mining is proposed to be undertaken using retreat longwall mining method. Detailed mine designs will be undertaken during the preparation of the EIS to take into consideration potential social and environmental impacts as well as potential impacts on surface infrastructure.

Longwall mining is feasible within the proposed area because the depth of cover and underground geotechnical conditions are suitable only to utilising longwall mining techniques. The roof is weak and tends to cave in shortly after the coal seam is extracted. The weak roof facilitates longwall mining as the only viable method of extraction at depths of cover exceeding 200 m. A detailed geotechnical assessment which confirms the suitability of the longwall mining method is to be included within the EIS.

Computer generated models have indicated that this orientation is preferable from a geotechnical perspective and maximises the resource recovery.

4.5 Infrastructure

The proposed Project will utilise the existing and, if approved, upgraded infrastructure at both the Springvale Coal Services Site and the Lidsdale Siding.

4.6 Coal Handling and Transport

ROM coal will continue to be transported underground from the longwall face to the Springvale surface ROM stockpile by a high capacity conveyor system. Coal will then be sized using the existing Crushing and Screening Plant located at Springvale pit top and dispatched off site using the overland conveyor system (infrastructure that is being proposed to become part of the proposed Springvale Coal Services

consent) to the Mount Piper and Wallerawang Power Stations, or to the Coal Preparation Plant located at the Springvale Coal Services site for washing for export by rail (refer **Appendix 2**) from Lidsdale Siding.

4.7 Reject Management

No coarse or fine reject materials will be produced in the Project within the Project Application Area. These materials will be produced and handled at the Springvale Coal Services site, in accordance with any future development consent.

4.8 Water Management

No change is proposed to the surface water management system at the Springvale pit top, which will continue to utilise the existing infrastructure. Appropriately sized water and sediment management infrastructure will be constructed for any proposed surface infrastructure if required (for example for the Mine Services Borehole Compound), and will be discussed in the EIS.

Mine inflows will continue to be fed into the existing SDWTS (refer **Section 4.9.3**).

LDP006 and LDP007, currently on Springvale's EPL3607, will be proposed to be transferred to Springvale Coal Services site's EPL if the Springvale Coal Services Project is approved.

4.9 Ancillary Infrastructure

An assessment of the requirements for ancillary equipment (including ventilation, mine dewatering, the supply of electricity and communications, environmental monitoring and other mine services, will be undertaken during the preparation of the EIS for the Project. Appropriate protective fencing and signage, in line with relevant standards, will be installed as public and personnel safety measures regarding all surface infrastructure.

The pieces of infrastructure described in **Sections 4.9.1 – 4.9.3** will be established or upgraded.

4.9.1 Ventilation and Ancillary Services

Mine planning has identified that additional ventilation capacity may be required to ensure compliance with Clause 13(h) of the *NSW Coal Mine Health and Safety Regulation 2006*. To optimise the existing ventilation system an additional air intake borehole at one of the dewatering borehole sites may be constructed (refer **Figure 4**) to deliver fresh air to the underground mine.

The shaft drivage options are being investigated of which the selection criterion is dependent on development time constraints, geotechnical risk, cost and environmental impacts. The shaft drivage methods being evaluated are conventional shaft sinking, blind boring and raise boring.

Whether an additional downcast shaft will be constructed as part of the Project will be discussed in the EIS.

4.9.2 Mine Services Borehole Compound

A mine services borehole review has been undertaken by Springvale. The review identified that additional mine services boreholes are required to be located on the Newnes State Forest.

The review considered a number of options in relation to the location of the mine services borehole compound with the current site chosen on Newnes Plateau due to mining, environmental and surface topographic constraints. The Mine Service Borehole compound (refer **Figure 4**) will consist of a cleared

area, a dirty water capture pond during the drilling phase and a shed or housing to contain a telephone and associated concreting equipment. The compound will be fenced to ensure public safety and integrity of site assets.

It is proposed to drill and case four surface to seam boreholes of which the diameters will not exceed 500 mm. It is envisaged to use the boreholes to convey materials such as ballast and concrete to the underground mine.

4.9.3 Dewatering Provisions

Dewatering bores will continue to be used for the management of mine inflows as part of safety and operational requirements. The existing Ventilation Shaft No 3 bore will continue to be utilized. Dewatering bores are proposed for the Project. As discussed in **Section 3.5** mine inflows at Springvale are managed by the existing Bore 6. This site will be decommissioned in July 2013 when the proposed Bore 8 has been commissioned and becomes operational. Springvale has submitted an application to Department of Planning and Infrastructure to modify its consent for the construction and operation of the dewatering Bore 8. If approved the Bore 8 will operate until such time a new bore is required for operational requirements. The EIS will discuss the total number of dewatering bores that would be required for the Project; two indicative locations for the proposed bores are shown in **Figure 4**.

All proposed dewatering boreholes will continue to deliver water into the SDWTS. To facilitate operations at these proposed borehole sites, extension of the SDWTS pipeline network would be required as part of this Project. The proposed pipeline routes, the power and the switchroom facilities to be required for the operation of boreholes will be described in the EIS.

Centennial is working towards a regional water strategy involving beneficial reuse of mine water from the Springvale Coal Services Site, Springvale Mine, Angus Place Colliery and other future Centennial operations. This will be discussed further in the EIS.

4.9.4 Power Supply Infrastructure

Power supply infrastructure required to operate the proposed dewatering bore sites will comprise construction of a power supply extension from the existing powerlines (refer **Figure 4**) along existing tracks wherever possible. Similarly, power to the Mine Services Borehole Compound will be required, and will be discussed further in the EIS.

4.10 Exploration Drilling

Springvale will continue to undertake exploration drilling activities within its EL6974 and A460 boundaries.

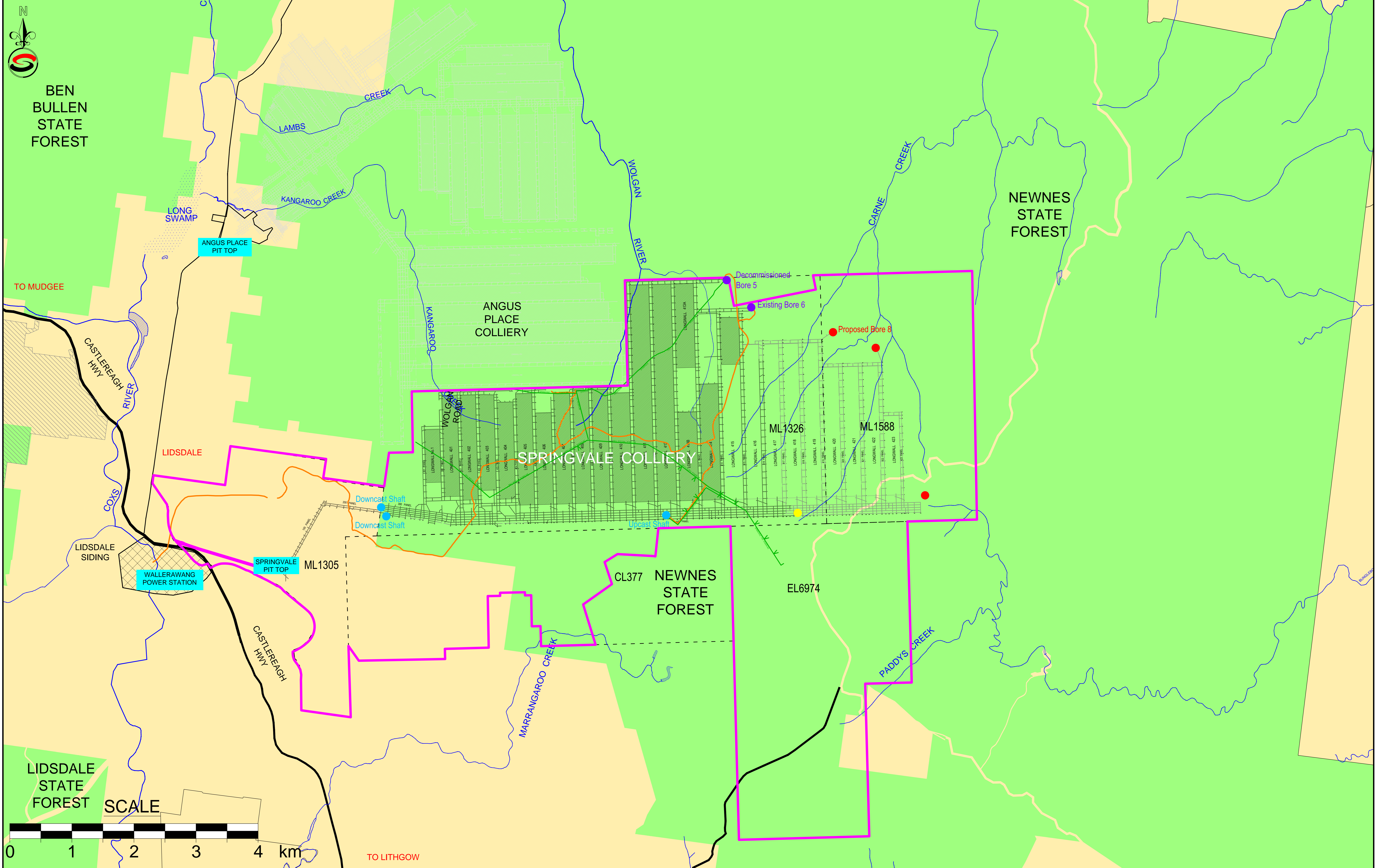
4.11 Hours of Operation and Personnel

Springvale will continue to operate 24 hours a day, seven days a week, 52 weeks per year.

Springvale will provide employment to a full time workforce of up to 310 persons comprising 280 existing personnel and up to an additional 30 full time employees.

4.12 Consequences of Not Proceeding

In the event that the proposed Project does not proceed, Springvale will cease operations after 28 September 2014, when the current development consent lapses.



LEGEND:	
	Project Application Area
	Lease Boundaries
	Power Supply
	Drainage Lines
	Springvale/Delta Water transfer Scheme
	State Forest
	Springvale Coal Services
	Power Station
	Proposed Dewatering Bore
	Current Ventilation Devices
	Existing Dewatering Bore
	Proposed Services Borehole

NOTES:
 Other Coal Mines not shown are located within the plan area. Users of this plan should view mine records held at Industry & Investment NSW for full details of coal mines within this Locality.

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DESIGN: Zac Burley	DATE: 20-04-2012
PLAN No: SVY00776/5	COMPUTER PATH: S:\Survey\Z_Plans
INFORMATION SUPPLIED BY:	
SCALE: DIAGRAM ONLY	AOH Sheet 1 of 1

SPRINGVALE MINE

Springvale Coal Mine

Extension Project

Figure 4 - Proposed Infrastructure



SPRINGVALE MINE
 Castlereagh HWY
 Liddale NSW 2790
 PO Box 198
 Wallerawang NSW 2845
 Phone: 02-63501600
 Fax: 02-63551052

5.0 PERMISSIBILITY AND STRATEGIC PLANNING

5.1 Introduction

This section sets out the planning and environmental regulatory framework applicable to the Project, including the identification of relevant strategic planning documents, environmental planning instruments and key development standards. Both NSW and Commonwealth legislation are identified.

5.2 Commonwealth Legislation

5.2.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) came into effect on 16 July 2000 and is administered by the Commonwealth Department of the Sustainability, Environment, Water, Population and Communities (SEWPaC). Part 3 of the EPBC Act states that an action that has, will have or is likely to have a significant impact on a Matter of National Environmental Significance (MNES), may not be undertaken without prior approval of the Minister for SEWPaC. MNES include:

- Listed threatened species, ecological communities and migratory species; and
- Protected areas such as Ramsar wetlands of international significance and world heritage properties.

An assessment of whether the Project will have, or is likely to have, a significant impact on MNES will be undertaken as part of the environmental assessment process. If required, a referral will be submitted to SEWPaC to determine if the Project is a controlled action under the EPBC Act.

5.2.2 Native Title Act 1993

The *Native Title Act 1993* recognises that Aboriginal people have rights and interests to land which derives from their traditional laws and customs. Native title rights can include rights to: live on the land, access the land for traditional purposes, protect important places and sites, collect food and medicinal resources from native plants, hunt and fish, teach traditional law and customs, and to have input into land use practices and development planning. Native title can be negotiated in two ways; through a Native Title Claim (applications and determinations), or through an Indigenous Land Use Agreement (ILUA).

An ILUA is an agreement between a native title group and other parties who use or manage the land and waters. The ILUA process allows for negotiation between indigenous groups and other parties over the use and management of land and water resources, and the ability to establish a formal agreement. An ILUA is binding once it has been registered on the Native Title Tribunal's Register of Indigenous Land Use Agreements.

To the extent native title has not been extinguished over the Project Application Area, the Applicant will need to comply with the applicable requirements of the *Native Title Act 1993* before obtaining any additional mining leases necessary for the proposed Project.

5.3 New South Wales State Legislation

5.3.1 Environmental Planning and Assessment Act 1979

The development assessment and approval system in NSW is set out in Parts 4 and 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Minister for Planning and Infrastructure (or his delegate, such as the NSW Planning Assessment Commission) determines development applications for State significant development under Part 4 of the EP&A Act.

5.3.1.1 Application of Division 4.1 in Part 4 of the EP&A Act and the Permissibility of the Project

Upon the repeal of Part 3A of the EP&A Act on 1 October 2011, the *Environmental Planning and Assessment Amendment (Part 3A Repeal) Act 2011* inserted a new Division 4.1 in Part 4 of the EP&A Act. This Division provides for a new planning assessment and determination regime for "Stage significant development".

Under section 89C of the EP&A Act, development will be "State significant development" if it is declared to be such by the new *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP). Clause 8(1) of the SRD SEPP provides:

8 Declaration of State significant development: section 89C

- (1) Development is declared to be State significant development for the purposes of the Act if:
- (a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and
 - (b) the development is specified in Schedule 1 or 2.
 - The Project is "State significant development" because it meets each of the two limbs in clause 8(1) of the SRD SEPP – that is:
 - the Project is not permissible without development consent on the land on which the Project will be carried out; and
 - the Project is development that is specified in Schedule 1 to the SRD SEPP.

Each limb is briefly discussed in turn below.

Permissibility of the Project

Clause 7(1) of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (Mining SEPP) provides:

7 Development permissible with consent

(1) Mining

Development for any of the following purposes may be carried out only with development consent:

- (a) underground mining carried out on any land.;
- ...
- (e) mining on land that is reserved as a state conservation area under the *National Parks and Wildlife Act 1974*,

The Mining SEPP applies to the whole of NSW and pursuant to clause 5(3) of the Mining SEPP, prevails over any other environmental planning instrument to the extent of any inconsistency (except in respect of the Major Projects SEPP, Coastal Wetlands SEPP and Littoral Rainforests SEPP). The practical effect of clause 5(3) is that if there is any inconsistency between the provisions in the Mining SEPP and those contained in any other environmental planning instrument, including relevantly the *Lithgow Local Environment Plan 1994*, the provisions of the Mining SEPP will prevail.

"Underground mining" is defined for the purposes of the Mining SEPP as follows:

underground mining means:

- (a) mining carried out beneath the earth's surface, including bord and pillar mining, longwall mining, top-level caving, sub-level caving and auger mining, and
- (b) shafts, drill holes, gas and water drainage works, surface rehabilitation works and access pits associated with that mining (whether carried out on or beneath the earth's surface),

but does not include open cut mining.

And further, "mining" is defined for the purposes of the Mining SEPP as follows:

mining means the winning or removal of materials by methods such as excavating, dredging, or tunnelling for the purpose of obtaining minerals, and includes:

- (a) the construction, operation and decommissioning of associated works, and
- (b) the stockpiling, processing, treatment and transportation of materials extracted, and
- (c) the rehabilitation of land affected by mining.

Accordingly, the Project in its entirety can be characterised as development for the purpose of "underground mining" (which incorporates in its definition the defined term "mining").

The Project is development specified in Schedule 1 to the SRD SEPP

Clause 5(1)(a) in Schedule 1 to the SRD SEPP specifies the following development:

5 Mining

(1) Development for the purpose of mining that:

- (a) is coal ... mining, or

...

Given that the Project in its entirety is development for the purpose of coal mining, the Project is development specified in Schedule 1 to the SRD SEPP.

As each of the two limbs in clause 8(1) of the SRD SEPP can be satisfied, the Project is declared to be "State significant development". As a consequence of this declaration, the Minister is the consent authority for the Project (EP&A Act, section 89D(1)).

The Minister has delegated his consent authority function for certain "State significant development", relevantly:

- to the NSW Planning Assessment Commission (PAC) for development applications made by private proponents for "State significant development"; and
- to officers of DoPI for development applications which have attracted less than 25 public submissions objecting to the development and where the local council has not objected.

5.3.1.2 Application of other Provisions of the EP&A Act to the Project

The other applicable provisions of the EP&A Act are:

- The objects of the EP&A Act set out in section 5 of the EP&A Act, relevantly:

- to encourage the proper management of natural resources, including minerals, for the purpose of promoting the social and economic welfare of the community;
- to encourage the promotion and co-ordination of the orderly and economic use and development of land; and
- to encourage ecologically sustainable development;
- Divisions 6 and 6A of the EP&A Act, relating to contributions and affordable housing provisions;
- Section 89J of the EP&A Act, which provides that the following authorisations are not required for the Project if it is approved State significant development:
 - the concurrence of the Minister administering Part 3 of the *Coastal Protection Act 1979*;
 - a permit under sections 201, 205 or 219 of the *Fisheries Management Act 1994*;
 - an approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*;
 - an Aboriginal heritage impact permit under the *National Parks and Wildlife Act 1974*;
 - an authorisation under section 12 of the *Native Vegetation Act 2003*;
 - a bush fire safety authority under section 100B of the *Rural Fires Act 1997*;
 - a water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*;
- Section 89K of the EP&A Act, which provides that the following authorisations cannot be refused if they are necessary for the carrying out of the Project if it is approved State significant development, and that the authorisations granted must be substantially consistent with the Project's State significant development consent:
 - an aquaculture permit under section 144 of the *Fisheries Management Act 1994*;
 - an approval under section 15 of the *Mine Subsidence Compensation Act 1961*;
 - a mining lease under the *Mining Act 1992*;
 - a production lease under the *Petroleum (Onshore) Act 1991*;
 - an environment protection licence under the *Protection of the Environment Operations Act 1997*;
 - a consent under section 138 of the *Roads Act 1993*;
 - a licence under the *Pipelines Act 1967*.

5.3.2 Other NSW State Legislation

The Project may require approvals under one or more other NSW legislation. This will be considered and addressed in the Project's EIS. A summary of potentially relevant legislation is included in **Table 7**.

Table 7 - Summary of NSW Legislation Relevant to the Project

Legislation	Relevance to the Project
<i>Protection of the Environment Operations Act 1997</i>	<p>The <i>Protection of the Environment Operations Act 1997</i> (POEO Act) is administered by the Environment Protection Agency (EPA), which is part of the Office of Environment and Heritage (OEH). The POEO Act regulates and requires licensing for environmental protection, including for waste generation and disposal, and for water, air, land and noise pollution.</p> <p>Under the POEO Act, an Environment Protection Licence (EPL) is required for premises at which a “scheduled activity” is conducted. Schedule 1 of the POEO Act lists activities that are scheduled activities for the purposes of the Act.</p> <p>The Project is a scheduled activity and operates under EPL 3607. This Licence will require to be varied to remove LDP006 and LDP007 which will become part of the EPL of the Springvale Coal Services site.</p>
Mining Act 1992	<p>Springvale Colliery current holds Coal Lease 377, Authorisation 460 and 5 Mining Leases. New mining leases may be required in certain areas of the Project Application Area.</p>
<i>Water Management Act 2000</i> and <i>Water Act 1912</i>	<p>The <i>Water Management Act 2000</i> (WM Act) and the <i>Water Act 1912</i> contain provisions for the licensing, allocation, capture and use of water resources. Generally, where a water sharing plan under the WM Act applies to the water sources in an area, the provisions of the <i>Water Act 1912</i> are ousted.</p> <p>The WM Act is potentially relevant to this Project as the Project Application Area is within the geographical area of the <i>Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011</i> (Groundwater WSP) and the <i>Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011</i> (Unregulated River Water WSP).</p> <p>The Groundwater WSP relevantly applies to the following water sources:</p> <ul style="list-style-type: none"> • Sydney Basin Richmond Groundwater Source; • Sydney Basin Coxs River Groundwater Source; and • Coxs River Fractured Rock Groundwater Source. <p>The Unregulated River Water WSP relevantly applies to the following water sources:</p> <ul style="list-style-type: none"> • Hawkesbury and Lower Nepean Rivers Water Source / Colo River Management Unit/ Colo River Catchment Sub Zone; and • Upper Nepean & Upstream Warragamba Water Source / Wywanddy Management Zone. <p>To the extent that the Project involves the extraction of water from a water source to which either of these WSPs applies, it would ordinarily be necessary to obtain one or more aquifer access licences and approvals under Section 89, 90 and 91 of the WM Act to authorise that extraction. However, Section 89J(1)(g) of the EP&A Act provides that such approvals are not necessary for approved State significant development.</p> <p>Springvale holds several water licences issued under the <i>Water Act 1912</i>. The water sources to which these licences apply are not subject to any WSP and are regulated under the <i>Water Act 1912</i>.</p>
<i>National Parks and Wildlife Act 1974</i>	<p>The <i>National Parks and Wildlife Act 1974</i> (NPW Act) is administered by the National Parks and Wildlife Service (NPWS) and provides for the establishment, care, control, and management of National Parks, historic sites, nature reserves, State conservation areas, Aboriginal areas, and State</p>

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Legislation	Relevance to the Project
	<p>game reserves.</p> <p>An archaeological survey will be conducted as part of the EIS, which will identify the presence of any known Aboriginal sites, as well as strategies for the management and mitigation of any identified impacts on such sites.</p> <p>No Aboriginal Heritage Impact Permit will be needed for the Project if development consent is granted. Refer to Section 89J of the EP&A Act.</p>
<i>Heritage Act 1977</i>	<p>The purpose of the <i>Heritage Act 1977</i> (Heritage Act) is to protect and conserve non-indigenous cultural heritage, including listed heritage items, sites, and relics.</p> <p>The archaeological survey to be undertaken as part of the EIS will identify any items of heritage significance in the Project Site and recommend appropriate management strategies if and where required.</p> <p>No approval under Part 4 of the Heritage Act will be needed for the Project if development consent is granted. See Section 89J of the EP&A Act.</p>
<i>Threatened Species Conservation Act 1995</i>	<p>The <i>Threatened Species Conservation Act 1995</i> (TSC Act) provides for the conservation of threatened species, populations, and ecological communities of animals and plants.</p> <p>The EIS will identify any threatened species in the Project Site, as well as strategies for the management and mitigation of impacts.</p>
<i>Roads Act 1993</i>	<p>Under section 138 of the <i>Roads Act 1993</i>, consent from the appropriate roads authority is required to:</p> <ul style="list-style-type: none"> • erect a structure or carry out a work in, on or over a public road; • dig up or disturb the surface of a public road; • remove or interfere with a structure, work or tree on a public road; • pump water into a public road from any land adjoining the road; or • connect a road (whether public or private) to a classified road, otherwise than with the consent of the appropriate roads authority. <p>However, if the Project is granted development consent, by the operation of Section 89K of the EP&A Act, the appropriate roads authority must grant any Section 138 consent necessary for the Project, and that consent must be substantially consistent with the development consent.</p> <p>In any event, additional approvals for road works are not anticipated to be required for the Project.</p>
<i>Crown Lands Act 1989</i>	<p>This Act provides for the administration and management of Crown land in the Eastern and Central Division of NSW (which includes the Project Application Area). A lease, licence or, where appropriate, an easement, to use Crown land would be required where use of Crown land is required for the Project (e.g. the State Conservation Areas).</p>
<i>Fisheries Management Act 1994</i>	<p>Generally, a permit must be obtained under the <i>Fisheries Management Act 1994</i> for any works that involve dredging or reclamation, any structure that may inhibit or obstruct the movement of fish within a waterway or cause damage or destruction on marine vegetation.</p> <p>However, under section 89J of the EP&A Act, such permits are not required for State significant development the subject of a development consent.</p> <p>In any event, the Project is unlikely to impact on fish habitat or waterways.</p>

Legislation	Relevance to the Project
<i>Aboriginal Land Rights Act 1983</i>	<p>The <i>Aboriginal Land Rights Act 1983</i> provides for the constitution of Local Aboriginal Land Councils and the NSW Aboriginal Land Council. It also provides a mechanism for Aboriginal Land Councils to claim Crown Land.</p> <p>The currency of any claim will be reviewed during the EIS preparation.</p>

5.3.3 State Environmental Planning Policies

The following State Environmental Planning Policies (SEPPs) could apply to the Project and will be considered as part of the EIS.

5.3.3.1 State and Regional Development SEPP

The application of the SRD SEPP to the Project has been discussed in **Section 5.3.1.1**.

5.3.3.2 Mining SEPP

The aims of the Mining SEPP are listed below and recognise the importance to NSW of mining, petroleum production and extractive industries:

- 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;
- to facilitate the orderly and economic use of development of the land containing mineral, petroleum and extractive material resources; and
- to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive resources.

The application of the Mining SEPP to the Project has been discussed in **Section 5.3.1.1**.

In addition, clauses 12, 13, 14, 15, 16 and 17 of the Mining SEPP set out matters that the Minister must consider before determining the development application for the Project. These matters will be considered in the Project's EIS.

5.3.3.3 State and Environmental Planning Policy No 33 – Hazardous and Offensive Development

The State and Environmental Planning Policy No 33 – Hazardous and Offensive Development (SEPP 33) requires the consent authority to consider particular matters in determining a development application for a project that is a potentially hazardous industry or potentially offensive industry.

A Preliminary Hazard Analysis will be prepared for the Project for inclusion in the EIS if it is determined to be a potentially hazardous industry, as that expression is defined in SEPP 33.

5.3.3.4 State and Environmental Planning Policy No 44 – Koala Habitat Protection

The aim of *State Environmental Planning Policy 44 – Koala Habitat Protection* (SEPP 44) is to encourage the 'proper conservation and management of areas of natural vegetation that provide habitat for Koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline.'

SEPP 44 applies to each local government area listed in Schedule 1 of SEPP 44, excluding land dedicated or reserved under the NPW Act or land dedicated under the *Forestry Act 1916* as a State forest or flora reserve.

The Project Application Area is located within the Greater Lithgow LGA which is listed within Schedule 1 of SEPP 44. Therefore, SEPP 44 applies to the Project Application Area.

SEPP 44 restricts councils, only, from granting development consent for proposals on land identified as core koala habitat without the preparation of a Plan of Management. Although it is the Minister (and not the council) that is the consent authority for the Project, the potential for the Project to impact on land identified as core koala habitat will be assessed as part of the EIS for the Project.

5.3.3.5 State and Environmental Planning Policy (Infrastructure) 2007

Clause 45 of State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) is relevant if the Project involves the penetration of ground within 2m of an underground electricity power line or an electricity distribution pole, or within 10m of any part of an electricity tower. It will also be relevant if the Project is within or immediately adjacent to an easement for electricity purposes, an electricity substation or within 5m of an overhead electricity power line. If clause 45 applies, the Minister must give written notice to the electricity supply authority for the area in which the development is to be carried out, inviting comments about potential safety risks and take into consideration any response to the notice that is received within 21 days of the notice being given.

5.3.3.6 State and Environmental Planning Policy No 55 (Remediation of Land)

State Environmental Planning Policy No 55 (Remediation of Land) (Contamination SEPP) provides that the Minister must not consent to the carrying out of the Project unless it has considered certain matters relating to whether or not the Project land is contaminated.

The relevant provisions of the Contamination SEPP will be addressed in the EIS.

5.4 Local Environment Plans

Lithgow Local Environment Plan

The Project Application Area is located within the *Lithgow City Local Environment Plan 1994* (Lithgow City LEP), and is zoned 1(c) Rural (small holdings) and 1(f) Rural (Forestry). A 'mine' is permissible with consent in these zones. Consequently, the Minister can approve the carrying out of the Project pursuant to the State Significant Development provision of Part 4 of the EP&A Act. In any event, as discussed in **Section 5.3.1.1**, Clause 7 of the Mining SEPP relevantly provides that development for the purpose of underground mining may be carried out with consent on any land notwithstanding anything to the contrary contained in a LEP.

Under clause 11(1) of the Lithgow City LEP, before determining a development application relating to land within Zone No 1 (a), the Council must take into consideration the effect that the proposed development would have on:

- the present use of the land, and the potential for sustained agricultural production of so much (if any) of the land as is prime crop and pasture land,
- vegetation, timber production, land capability and water resources (including the quality of the water, stability of water courses, ground water storage and riparian rights),
- the future recovery from known or prospective areas of valuable deposits of minerals, coal, petroleum, sand, gravel or other extractive materials,
- the protection of areas of nature conservation significance or of high scenic or recreational value, and of items of heritage significance,
- the cost of providing, extending and maintaining public amenities and services,

- development on adjoining land and on other land in the locality, including any cumulative impact, and
- the future expansion of settlements in the locality.

The Minister (not the Council) is the consent authority for the Project. Notwithstanding, the abovementioned provision of the Lithgow City LEP, insofar as it is relevant to the Project, will be considered in the EIS. Further, the provision will be considered having regard to the application of clause 8 of the Mining SEPP. Clause 8 provides:

8 Determination of permissibility under local environmental plans

- (1) If a local environmental plan provides that development for the purposes of mining, petroleum production or extractive industry may be carried out on land with development consent if provisions of the plan are satisfied:
 - (a) development for that purpose may be carried out on that land with development consent without those provisions having to be satisfied, and
 - (b) those provisions have no effect in determining whether or not development for that purpose may be carried out on that land or on the determination of a development application for consent to carry out development for that purpose on that land.
- (1) Without limiting subclause (1), if a local environmental plan provides that development for the purposes of mining, petroleum production or extractive industry may be carried out on land with development consent if the consent authority is satisfied as to certain matters specified in the plan, development for that purpose may be carried out on that land with development consent without the consent authority having to be satisfied as to those specified matters.

5.4.1 Draft Land Use Strategy

Lithgow City Council has prepared the Draft Land Use Strategy 2010-2030 (LLUS) which has been exhibited and amended in accordance with Council's resolutions, and has now been forwarded to the NSW Department of Planning and Infrastructure for endorsement.

The LLUS is a combined Land Use Issues Paper and Strategy. It explores the issues that currently face the Lithgow LGA and recommends a new planning approach to address these issues. The Strategy will be implemented through the planning system, primarily through a new Local Environmental Plan and Development Control Plan, as well as Council's other policy, regulatory and governance functions.

The LLUS is significant to Council and the community because it will set directions and policy for the LGA's settlement and land use management for the next 20 years. The Strategy will be reviewed throughout this period every five years to ensure that its findings and recommendations remain relevant, are in keeping with sound planning principle and are continuing to meet the needs and expectations of the community.

6.0 KEY ENVIRONMENTAL ISSUES

6.1 Identification of Environmental Issues

The key project-related issues warranting detailed assessment in the EIS will be identified through:

- The existing environmental context of the Project Application Area and surrounding locality;
- The legislative framework applicable to the Project;
- A preliminary environmental risk assessment, which has already been completed;
- The outcomes of consultation to be undertaken with government agencies and other relevant stakeholders; and
- Specialist studies completed as part of the preparation of the EIS.

The outcomes of the preliminary environmental risk assessment, including the issues identified for further detailed assessment in the EIS, are discussed in **Section 6.2**. These issues will form the basis of the EIS, subject to the outcomes of consultation with government agencies, including the Director Generals Requirements, as well as outcomes of the specialist assessments as they progress.

6.2 Preliminary Risk Assessment

The preliminary identification and assessment of hazards and risks (aspects and impacts) associated with the Project is required to provide direction and context for the various components associated with the EIS. The outcomes gained in terms of risk ratings and recommended controls will specifically guide the development of the assessment work scopes.

The primary objectives of the environment and community risk assessment included:

- Identifying those issues relating to the Project that represent the greatest risk to the environment and local community;
- Determination of the consequence of the issue occurring;
- Determination of the likelihood of the issue occurring;
- Assessment of the risk by determining the probability (likelihood) and consequence (effect) of each hazard/impact; and
- Assisting in setting the level of assessment required to address each identified risk within the EIS.

Centennial Coal's Risk Management Standard Risk Matrix is used to calculate the consequence and likelihood of an event to evaluate the subsequent risk level (risk rank). This system operates in accordance with AS/NZS 4360:2004 *Risk Management*.

The issues that were specifically assessed in the risk assessment include:

- | | |
|--------------------------------|--------------------------|
| • Flora and Fauna | • Surface Water |
| • Aboriginal/Cultural Heritage | • Groundwater |
| • European Heritage | • Water Management |
| • Noise | • Greenhouse Gas |
| • Air Quality | • Surface Infrastructure |
| • Traffic | • Land Clearance |

- Visual Impact
- Cumulative Impact
- Social Impact
- Erosion/sedimentation
- Bushfire
- Subsidence
- Waste
- Cliff lines and rock features
- Economic Impact
- Community and Public Safety
- Rehabilitation
- Soil and land use
- Hazardous Goods
- Agriculture

Once they were identified, the various project risks were assessed in light of the mitigation measures and management strategies already in place (i.e. documented in management plans and operational procedures). Where the risks were considered unacceptable, or a knowledge gap was identified in the information available, specialist consultants will be engaged to undertake further assessments and to present additional mitigation measures that may be required.

A Risk Assessment report, including a risk register, was prepared to document the outcomes of the risk assessment, and is attached as **Appendix 3**. A summary of the Centennial Coal risk matrix used and the management requirements in accordance with the Centennial Risk Standard and Risk Matrix is provided in **Table 8**.

Table 8 - Requirements for Management of Risks (Centennial Coal Risk Standard)

Risk Ranking	Risk Category		Generic Management Actions
1 to 4	E	Extreme	Immediate intervention required from senior management to eliminate or reduce this risk.
5 to 9	H	High	Imperative to eliminate or reduce risk to lower level by the introduction of control measures. Management planning required at senior level.
10 to 15	S	Significant	Corrective action required, senior management attention needed to eliminate or reduce risk.
16 to 19	M	Moderate	Corrective action to be determined, management responsibility must be specified.
20 to 25	L	Low	Monitor and manage by corrective action were practicable.

The risk assessment identified 18 ‘high’ environmental issues. These related to potential subsidence related impacts to groundwater, flora and fauna as well as potential surface water quality impacts resulting from mine water discharges. To ensure each risk is adequately assessed in the EIS several recommended controls were determined to direct the additional assessment work and to enable the specialist consultants to identify suitable mitigation measures.

The risk assessment identified 18 ‘significant’ risk environment and community issues. These related to potential subsidence related impacts to cliffs, surface rock formations and Aboriginal heritage sites, plus potential surface water quality and quantity related impacts resulting from pit-top discharges; and potential project related impacts resulting from an increase in greenhouse gas emissions and from a potential lack of community support. A detailed subsidence predictions and impact assessment will be executed as part of the EIA process. An ecological impact assessment will consider the effect of predicted subsidence levels and hydrogeological impacts on the surface ecology.

The risk assessment identified several ‘moderate’ risk environment and community issues relating to the Project. These related to potential subsidence related impacts on European heritage sites, surface

infrastructure and stream morphology. Other potential project related impacts included traffic, land disturbance and land use.

Potential impacts to air quality, noise, waste management and visual amenity were ranked as a 'low' risks to the project. Whilst ranked as potentially low risks, for completeness these aspects will have additional specialist assessment completed for the EIS.

6.3 Identified Environmental Issues

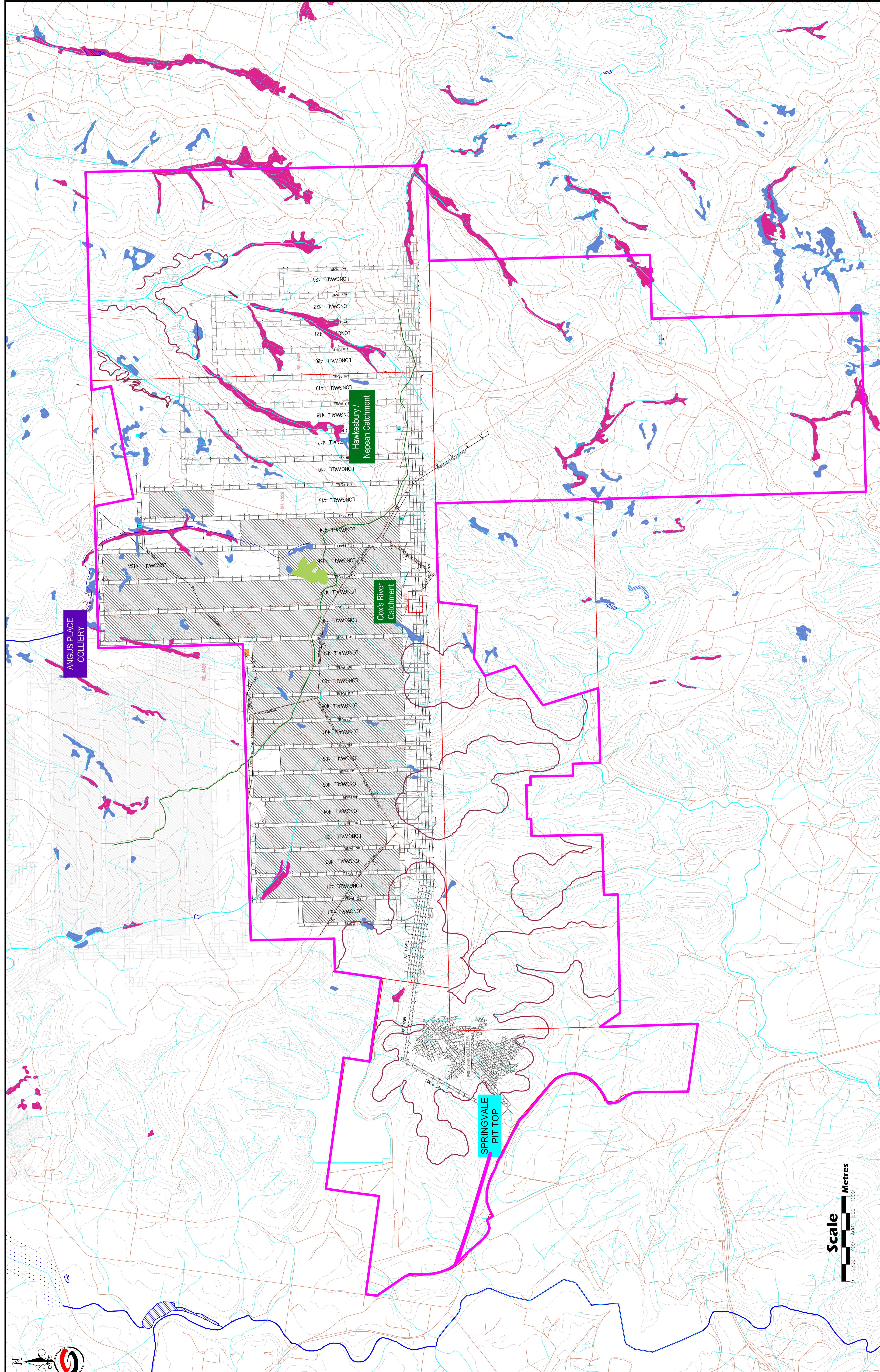
The environmental issues identified during the environment and community risk assessment, and how they will be assessed in the EIS, is discussed in the sections below.

6.3.1 Subsidence

A subsidence predictions and impact assessment report will be developed for the proposed first workings and longwall extraction area. The subsidence impacts will take into consideration the sensitive surface features present within the Project Application Area (refer **Figure 5**).

The subsidence assessment will be undertaken by a suitably qualified subsidence engineering consultant, who will be requested to:

- Initially undertake a collaborative risk based subsidence constraints analysis;
- Identification of mine characteristics (depth of cover, geology, mining method, mining height, mine layout and percentage extraction) and how these characteristics influence transient and final subsidence;
- Identification of sensitive features potentially affected by subsidence, both natural and manmade (surface and sub-surface), and (by involvement in the subsidence risk assessment) an assessment of the significance and sensitivity of those features;
- Identification of known geotechnical constraints (including known and inferred geological structures and known and inferred aquifers and aquicludes) to existing and/or proposed mine design;
- Identification of all natural and man-made features at a minimum 600 m of the edge of secondary extraction, and recalibrated to the zero subsidence line following completion of predictions;
- Where possible, a review of previous subsidence predictions from nearby operations against actual subsidence results and, if required, a critique of regional subsidence applicability to the project;
- Review of regional data sets and interpretation of applicability to the specific site;
- Identification of conventional and non-conventional subsidence effects and impacts likely to be experienced at the site (based on known data);
- Identification of an appropriately scaled subsidence prediction methodology for the site that is clearly described and, where available, supported by actual subsidence data. The model must be calibrated to the specific site;
- Assessment of the conservativeness applied to the prediction methodology used;
- Assessment and interpretation of prediction versus measured subsidence;



		SPRINGVALE MINE Springvale Coal Mine Extension Project Figure 5 - Surface Features	
DATE: 20-04-2012 DRAWN BY: Zac Burley CHECKED BY: S.V. (Survey) Z. Plans		TITLE:	
PROJECT NAME: SVY00776/6 INFORMATION SUPPLIED BY:		SCALE: AOH Sheet 1 of 1	
PROJECT: SPRINGVALE COAL PTY. LTD. THIS DRAWING IS COPYRIGHT © SPRINGVALE COAL PTY. LTD. NO PART OF IT IN ANY FORM OR BY ANY MEANS, INCLUDING PHOTOCOPYING OR OTHERWISE, BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM OR TRANSMITTED WITHOUT PRIOR WRITTEN PERMISSION.		NOTES: Other Coal Mines not shown are located within the plan area. Users of this plan should view mine records held at Industry & Investment NSW for full details of coal mines within this Locality.	
LEGEND: Project Application Area Existing Areas of Extraction Mining Lease Boundary Unsealed Road River/Stream/Creek/ Drainage Line Cliff Line Catchment Watershed Aboriginal Shelter Site Surface Contour Line Surface Power Line Newnes Plateau Sand Swamps Newnes Plateau Hanging Swamps Newnes Plateau Rush Sedge Grassy Woodland		Scale Metres 0 200 400 600 800 1000	

- Maximum predicted vertical subsidence, tilt and strain;
- Sensitivity analysis including predictions based on mining additional increments of 50 m towards natural and man-made features;
- Figures that identify angle of draw and the zero subsidence line, and all natural and man-made features within both zones;
- Make recommendations for impact management and appropriate minimisation strategies.

6.3.2 Flora and Fauna

Clearing activities, as identified from the risk assessment process, pose environmental risks if not adequately assessed and managed. Further, subsidence levels have the potential to impact on surface ecology by affecting aspect and ground/surface water. To this end, Springvale Colliery will appoint a suitably qualified consultant to assess the ecological risks posed by the development and determine suitable mitigation measures.

Springvale Colliery is aware that there are Temperate Highland Peat Swamps on Sandstone (THPSS) within the vicinity of the Project Application Area that may be potentially impacted by the development. THPSS are listed as an Endangered Ecological Community (EEC) under the EPBC Act. There is also the potential for other listed flora and fauna species to be located within the project application area. The Project will be referred to SEWPAC under the provisions of Division 1, Part 7 of the EPBC Act.

The ecological assessment work will focus on the following areas in addition to the impacts of clearing:

- Subsidence predictions from first and second workings. Impact assessment informed by assessments for subsidence, groundwater, surface water and soils and land (regarding land stability and sedimentation and erosion issues).
- Depressurisation of groundwater aquifers. Impacts on any present groundwater dependent ecosystems will be assessed based on the outcomes of the groundwater assessment.

Construction:

- Impacts from the construction of the dewatering boreholes, in particular clearance of vegetation and habitat removal. Include consideration of fragmentation and the creation of any barriers, weeds and an offset strategy.
- Impacts from construction of supporting surface infrastructure (power supply, pipelines, substation etc.) in particular clearance of vegetation and habitat removal. Include consideration of fragmentation and the creation of any barriers, weeds and an offset strategy.

Operation:

- Any impacts arising from operation e.g. maintenance of bushfire clearance areas, disturbance.

Rehabilitation:

- Biodiversity offset strategy
- Liaison with rehabilitation consultants regarding appropriate measures to be included.
- Impacts from proposed rehabilitation strategy.

6.3.3 Surface Water

The Project Application Area traverses both the Wolgan River/Carne Creek and Coxs River catchments which report to the Hawkesbury-Nepean River and Sydney Catchment, respectively (refer **Figure 5**). As identified from the risk assessment process, there are several potential sources for surface water contamination or loss emanating from the proposed Project. As such, impacts to be addressed include the following:

- Collection and review of background data;
- Classification and mapping of surface water drainage lines overlying the underground mining area;
- Assessment of impacts to creeks which could be impacted by the proposed Project;
- Review of the existing site water balance which includes analysis of any water quality data to determine the median, 80th and 20th percentile values for each parameter. The background water quality will be compared to the ANZECC water quality guidelines;
- Review and update existing monitoring program as required (including any licensing requirements);
- Determine mitigation or management measures as required; and
- Identify any residual environmental risk.

It is anticipated that the EIS will present a full analysis of potential surface water impacts, as well as outline any practical mitigation and management measures required to minimise or mitigate potential impacts.

6.3.4 Groundwater

A Groundwater Impact Assessment will be undertaken as part of the EIS and will include:

- A review of any available background hydrogeological and mining data;
- Searches of the NSW Groundwater Bore Database to identify beneficial use of groundwater in the anticipated radius of drawdown;
- Consideration of the ecological assessment report (to be prepared concurrently to the groundwater assessment) to identify possible Groundwater Dependent Ecosystems (GDEs);
- Development of a high level, conceptual hydrogeological model, including the identification of model layers and boundaries, material properties and sources / sinks;
- Construction of a MODFLOW hydrogeological model based on the conceptual model with calibration of the model against available underground water level data;
- Predictive simulations of water level change in the workings;
- Development of groundwater management strategies and mitigation measures as required;
- Identification of any residual environmental risk; and
- As part of this process the Groundwater Impact Assessment will consider the implications of the Water Sharing Plan.

6.3.5 Greenhouse Gas

This Project will continue to mine the Lithgow seam, which from historic monitoring generally contains low concentrations of GHGs. The GHG assessment will:

- Calculate Scope 1, 2 and 3 GHG estimations for the on-site activities associated with the Project in accordance with the requirements of the NGER Act, and by applying all relevant emission factors and methods including those documented in the NGER System Measurement, Technical Guidelines (June 2010);
 - Scope 1 GHG consist of direct emissions from sources within the boundary of an organisation such a vehicle emissions and manufacturing processes;
 - Scope 2 GHG are indirect emissions from the use of purchase electricity and other consumables;
 - Scope 3 includes all other emissions which occur as a consequence of an organisation's activities but are not from sources owned or controlled by the organisation. A good example in the case of Springvale Colliery is the release of GHG from the combustion of coal used in the generation of electricity.
- Assess the significance of GHG emissions for the Project in relation to national GHG objectives, and report on the Project's GHG implications in terms of Federal and NSW Government policies and protocols;
- Determine mitigation or management measures as required; and
- Identify any residual environmental risk.

6.3.6 Air Quality

An Air Quality Assessment will be undertaken as part of the EIS to assess potential impacts on nearby sensitive receptors. This assessment will include:

- An identification of sensitive receptors within the vicinity of the Project Application Area.
- Identification of all likely dust generating sources including depositional dust, PM₁₀, and Total Suspended Particulates (TSP);
- Identification of any odour resulting from the proposed activities;
- Establishment of background air quality levels and air quality goals for all relevant air quality emissions in accordance with the NSW DECCW "Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales" (2005) and other relevant guidelines;
- Consideration of the recently issued state wide Pollution Reduction Program requiring NSW coal mines to undertake an investigation into the practicality of implementing best practice measures to reduce particle emissions;
- Estimation of emission rates, primarily using emission inventory data, including the National Pollutant Inventory (NPI) Emission Estimation Technique Manuals and USEPA AP-42 Emissions Inventory documentation, as required;
- Dispersion modelling to predict PM₁₀, TSP and deposition rates at the closest private receptors;
- Recommendations on mitigation and management strategies; and
- Identification of any residual environmental risk.

6.3.7 Noise and Vibration

The Project has the potential to generate noise and/or vibrations both during the construction and operational phases. As such, a noise impact assessment will be undertaken as part of the EIS and will include:

- An identification of sensitive receptors within the vicinity of the Project Application Area.
- Review of existing background noise levels and contributors from existing infrastructure;
- The assessment will consider noise emissions and vibration levels generated by both the construction and operation of the proposed surface infrastructure;
- Analysis of noise data with reference to local weather conditions and cumulative impacts;
- Impact assessment of the proposed Project's contribution to the noise environment at the nearest sensitive receptors for day, evening and night time periods under calm and prevailing meteorological conditions;
- Identification of noise management strategies and mitigation measures, as required; and
- Identification of any residual environmental risk.

6.3.8 Heritage (Aboriginal and European)

An Aboriginal and Non-Aboriginal Impact Assessment will be undertaken as part of the EIS and will include:

- Background research, including:
 - Identify statutory requirements relevant to the proposed Project;
 - Consultation with the Aboriginal community and other interested stakeholders in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010);
 - Literature review of previous archaeological studies relevant to the Project Application Area;
 - Search of the Aboriginal Heritage Information Management System (AHIMS) database;
 - Assessment of Aboriginal and European archaeological and cultural heritage items identified within the Project Application Area;
 - Baseline inventory of all Aboriginal heritage sites inside the Project Application Area.
- Field surveys over the Project Application Area
- Identification of mitigation and management strategies to avoid and/or minimise against identified Aboriginal and/or European impacts; and
- Identification of any residual environmental risk.

6.3.9 Social

A Social Impact Assessment will be undertaken as part of the EIS to identify impacts of the proposed Project on the community, stakeholders and recreational users of the Newnes State Forest to identify mitigation and management measures as required.

6.3.10 Soils, Land Capability and Agriculture Assessment

The EIS will include an assessment and reporting of soils and soil-related issues and recommending further appropriate management and mitigation measures as required. Agricultural impacts will be considered in accordance with the Agricultural Impact Assessment Guidelines.

6.3.11 Traffic and Transport

A traffic and transport assessment will be carried out and will include:

- Characterisation of the existing road transport environment;
- Identification of potential impacts of the project to the public road network;
- Quantification of traffic generated by the Project during both the construction and operational phases;
- Potential impacts on traffic conditions; and
- Measures to potential impacts from traffic.

6.3.12 Economics

An economic assessment will be conducted for the Project. It is anticipated that the scope of the assessment include:

- A cost benefit analysis;
- A regional economic impact assessment of the project;
- Quantification of the economic cost, benefits and impacts of the project; and
- The provision of recommendations on any relevant management and mitigation.

6.3.13 Visual

A visual impact assessment will be undertaken as part of the EIS.

6.3.14 Other

Other assessments will be carried out for the environmental assessment including cumulative impacts, bushfire, hazards and public safety, mine closure and rehabilitation and waste.

7.0 STAKEHOLDER AND COMMUNITY CONSULTATION

Springvale Colliery will lead the stakeholder and community consultation for the Project. A detailed stakeholder consultation plan will be developed. It will provide a framework to identify and appropriately consult with stakeholders that may be influenced by or have an interest in the Project. Key stakeholders include:

- Community;
- Local industry;
- Non-government organisations and community bodies;
- Mine staff and employees; and
- Government (Federal, State and Local).

A stakeholder consultation log will be maintained as a record of the consultation activities undertaken, and the contents of this log will be summarised in the EIS.

Consultation to be undertaken as part of the Project will include:

- Regular correspondence and updates to all residents surrounding the Project Application Area;
- Updates to the Community Consultative Committee;
- Updates to NGOs;
- Project updates provided on the Centennial Coal website;
- Project updates provided in local print media;
- Community Information sessions; and
- Face to face meetings with landowners and other regulatory and industry stakeholders where required or requested.

Springvale Colliery maintains a community complaints and enquiries telephone line which is available so members of the community can obtain information regarding the Project. The community complaints and enquiries telephone number, which is operational 24/7, and an e-mail address are listed at Springvale's website.

8.0 PROJECT JUSTIFICATION

The Project will continue to be designed in accordance with ecologically sustainable principles and as such, the Project will avoid, minimise or mitigate any potential impacts to the environment. To date, significant effort by Springvale has been invested in the design phase of the Project to avoid or minimise potential impacts that could be associated with the Project. A risk based approach has been relied on in designing the Project. A Risk Assessment was undertaken at an early stage and identified potential environmental impacts associated with the Project. This will guide decisions on specialist assessments that should be undertaken across the Project Application Area, and the level of the assessment that will be required.

A number of design iterations have occurred throughout the Project scoping phase to minimise and, where possible, avoid impacts to the environment and community. The subsequent environmental impact assessment process, to be supported by the specialist assessments, will refine the Project further by assessing the impacts and determining mitigation measures.

The Project will allow for continued operations at Springvale, as currently the Development Consent will expire on 28 September 2014. Springvale currently employs approximately 280 full time employees and up to 70 contractors. In addition to sustaining current employment levels, the Project will require the employment of 30 additional personnel. Statistics available from the Australian Bureau of Statistics show that, in 2006, 10% of the regional workforce was directly engaged in mining. A higher proportion work in mining in this region than for NSW as a whole (around 1%) representing the local industry's importance as an employer.

Springvale Colliery has a long standing history in the regional Lithgow area, and has well-established community relationships. As a coal mine, Springvale's challenge is to maximise returns through the mineral wealth within existing lease areas, whilst ensuring a minimal environmental impact. Springvale acknowledges the need to co-exist with its regional community as well as underpin the economic opportunity the mine represents.

9.0 CONCLUSION

Centennial Springvale Pty Ltd (Springvale Colliery) is seeking approval under Part 4 via Division 4.1 of the EP&A Act to undertake and continue a range of mining related activities at the Springvale Colliery as outlined within this Briefing Paper.

Since 1992 Springvale Colliery has been:

- mining coal from the Lithgow Seam for its consistent coal characteristics;
- using the same access and egress as that which currently exists; and
- delivering coal to the local power stations (Wallerawang and/or Mount Piper power stations) and to overseas markets;

To this end, Springvale Colliery considers this proposed Project to be a continuation of existing activities within the defined Project Application Area. There will be no operational changes in the manner in which Springvale Colliery manages coal within the currently approved pit top surface facilities. However, the management of coal handling and processing beyond the pit top facilities will be handled under the proposed Springvale Coal Services consent.

This Briefing Paper has been prepared to provide a description of the Project and identify likely key social and environmental issues associated with the Project. It is further anticipated that this Briefing Paper will provide the Department of Planning and Infrastructure with sufficient information regarding the issue of DGRs to allow the preparation of an EIS in support of development application.

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Appendix 1 – Schedule of Land

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Springvale Mine Extension Project
Briefing Paper

Owner Name	Lot	DP	Lease	Description
M.A. Pyne	14	16283	ML1303	Freehold
H.J. Egan & K.M. Hannah	13	16283	ML1303	Freehold
W.J. Unsworth	15	16283	ML1303	Freehold
W.J. Unsworth	16	16283	ML1303	Freehold
D.M. & J.I. Livingstone	12	16283	ML1303	Freehold
J.D Wakeling	11	16283	ML1303	Freehold
P.T Sharp	10	16283	ML1303	Freehold
W.J Unsworth	17	16283	ML1303	Freehold
W.J Unsworth	18	16283	ML1303	Freehold
P.J Braithwaite	19	16283	ML1303	Freehold
J. Rosewarne, V.A Logue, & E.J. Marshall	20	16283	ML1303	Freehold
A.W. Whymark	9	16283	ML1303	Freehold
M.M Alexander	8	16283	ML1303	Freehold
B.E. & G.J Ryan	7	16283	ML1303	Freehold
A.W Hollands	3	15649	ML1303	Freehold
M.S. & L.J. Morris	C	326622	ML1303	Freehold
P.A. Café & A.J. Star	B	326622	ML1303	Freehold
G.J. & S.A. Wheeler	A	326622	ML1303	Freehold
Delta Electricity	1	568265	ML1303	Freehold
Delta Electricity	16	855844	ML1303	Freehold
D. Webb	30	16283	ML1303	Freehold
W.J. Unsworth	29	16283	ML1303	Freehold
W.J. Unsworth	28	16283	ML1303	Freehold
M.C. Bruce	27	16283	ML1303	Freehold
M.C. Bruce	26	16283	ML1303	Freehold
D.N & M.J Morgan	25	16283	ML1303	Freehold
H.C. & M.M. Collins	24	16283	ML1303	Freehold

Springvale Mine Extension Project
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Owner Name	Lot	DP	Lease	Description
H.C. & M.M. Collins	23	16283	ML1303	Freehold
F. Fararo	A	417872	ML1303	Freehold
J.H & C.F. Epton	1	607402	ML1303	Freehold
C.J. Beecroft	2	607402	ML1303	Freehold
C.A. Willmott & T.M. Northey	3	607402	ML1303	Freehold
A.C. & H.C. Collins	1	551636	ML1303	Freehold
Delta Electricity	101	829410	ML1303	Freehold
Delta Electricity	2	829137	ML1303	Freehold
Delta Electricity	5	829137	ML1303	Freehold
Delta Electricity	228	751651	ML1303	Freehold
Delta Electricity	2	1018958	ML1303	Freehold
State Rail Authority of NSW	1	226790	ML1303	Freehold
State Rail Authority of NSW	2	226790	ML1303	Freehold
The State of NSW	129	751651	ML1303	Crown
Centennial Springvale Pty Ltd and Springvale SK Kores Pty Ltd	125	751651	ML1303	Freehold
Centennial Springvale Pty Ltd and Springvale SK Kores Pty Ltd	2	835651	ML1303	Freehold
State Rail Authority of NSW	3	226790	ML1303	Freehold
J.L. & S.L. Murray	22	868170	ML1303	Freehold
L.S. & M.A. Mickkleson	21	868170	ML1303	Freehold
P.D. Heckendorf	73	751651	ML1303	Freehold
W. & L.G. Brooks	3	805024	ML1303	Freehold
J.L. Murray	4	805024	ML1303	Freehold
The State of NSW	68	751651	NL1303	Crown
A.J. & K.A. Larkins	72	751651	ML1303	Freehold
A.J. & K.A. Larkins	302	751651	ML1303	Freehold
G.S. Dunn	407	751651	ML1303	Freehold
C.C. & R. Bush	67	1004747	ML1303	Freehold

Springvale Mine Extension Project
Briefing Paper

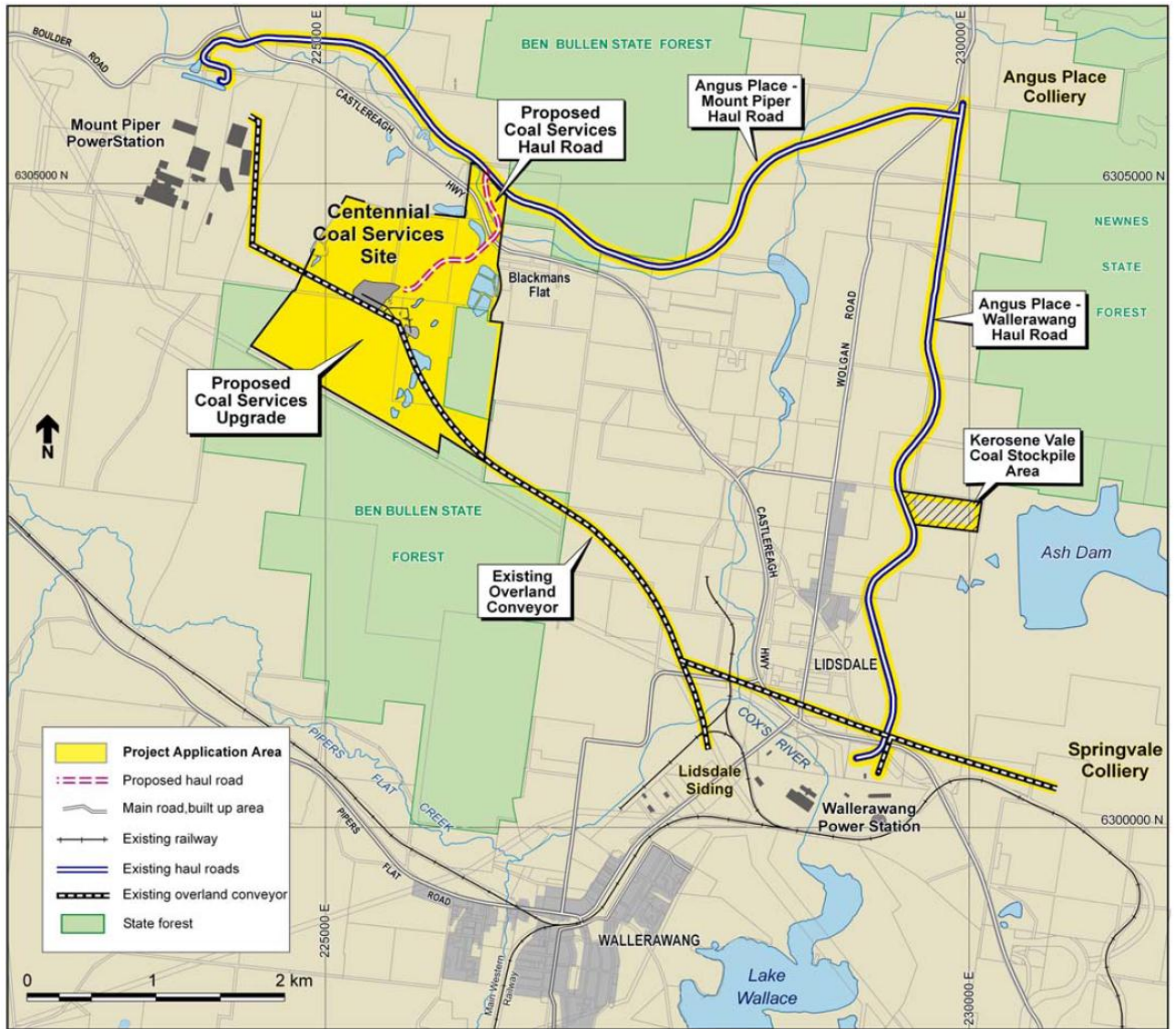
Owner Name	Lot	DP	Lease	Description
The State of NSW	195	751651	ML1303	Crown
Department of Corrective Services	1	787242	ML1303	Crown
The State of NSW	7	751655	CL377	Crown
J.L, L.J, M.L. & J Danaia	30	751655	CL377	Freehold
J.L, L.J, M.L. & J Danaia	31	751655	CL377	Freehold
J.L, L.J, M.L. & J Danaia	32	751655	CL377	Freehold
J.L, L.J, M.L. & J Danaia	33	751655	CL377	Freehold
J.L, L.J, M.L. & J Danaia	37	751655	CL377	Freehold
Puckoon (NSW) Pty Limited	38	751655	CL377	Freehold
Puckoon (NSW) Pty Limited	39	751655	CL377	Freehold
Puckoon (NSW) Pty Limited	99	751655	CL377	Freehold
T.G. & W.F. Best	26	751655	CL377	Freehold
Newnes State Forest	201	751655	CL377	Crown
Newnes State Forest	84	751655	CL377	Crown
Oakey Park Coal Mining and Coke Company Limited	1	113040	EL6974	Freehold
Boral Resources (NSW) Pty Ltd	47	751655	EL6974	Freehold
Boral Resources (NSW) Pty Ltd	50	751655	EL6974	Freehold
Newnes State Forest	51	751655	EL6974	Crown
Newnes State Forest	52	751655	EL6974	Crown
Newnes State Forest	53	751655	EL6974	Crown
Newnes State Forest	202	751655	EL6974	Crown
Newnes State Forest	203	751655	EL6974	Crown
Newnes State Forest	35	751634	ML1588	Crown

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Appendix 2 – Springvale Coal Services Project Application Area

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Appendix 3 – Broad Brush Risk Assessment

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Dyadem Stature for Risk Management:

Risk Assessment Title: Springvale Mine Project PEA Risk Assessment

Version: 1

Region: West

Site: Springvale UG

Department: ZZZZ Whole Site

Equipment / Process: Community

Stature Risk Assessment No.: 1000076000

Study Lifecycle State: Risk Assessment In Progress

Potential Hazard No.:

PULSE Actions Required URL:

Site Risk Assessment Ref. No. (Optional): SVRA00274

1. Background

Springvale Coal Pty Ltd owns and operates Springvale Colliery, an existing underground coal mine located within the NSW Western Coalfield, approximately 15 kilometres north-west of Lithgow. Springvale Coal Pty Ltd is a joint venture company owned in equal share by Centennial Coal Company Ltd, SK Corporation and Kores. The Centennial Coal Company Ltd is a wholly owned subsidiary of Banpu Singapore Pte Limited (Banpu).

Springvale Coal extracts coal from the Lithgow seam, using longwall mining techniques.

In July 1992, Springvale Coal obtained Development Consent to produce up to 3.4 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal, and longwall mining commenced in 1995. The mine employs approximately 280 full time equivalent personnel and produces up to 3.4 Mtpa of thermal coal from the Lithgow coal seam. Springvale Coal has contracts with Delta Electricity to supply thermal coal and also exports coal overseas.

Springvale Coal Pty Ltd is seeking Project Approval for the Springvale Colliery Extension Project under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

2. Objective

The following Hierarchy of Controls offers a framework for considering the effectiveness of controls. Note that the effectiveness of a control that is intended to reduce a risk decreases from top to bottom of the list. In other words, the closer the control type is to the top of the hierarchy, the more potentially effective the control.

- Eliminate the hazard or energy source (do not use the energy)
- Minimise or replace the hazard or energy source (reduce the amount of energy to a less damaging level or replace the energy with another that has less potential negative consequences)
- Control the hazard or energy using engineered devices (ex. Lock outs, chemical containers, mechanical roof support, gas monitors, etc.)
- Control the hazard or energy by using physical barriers (ex. machine guarding, warning signs, etc.)
- Control the hazard or energy with procedures (ex. Isolation procedures, standard operating procedures, etc.)
- Control the hazard or energy with personal protective equipment (ex. hard hats, boots with toe caps, gloves, safety glasses, welding gear, etc.)
- Control the hazard or energy with warnings and awareness (ex. posters, labels, stickers, verbal warnings, etc.)

The objectives of this Risk Assessment is to identify the environment and community risks associated with the proposed Springvale Mine Project and to identify knowledge gaps where further information and/or assessment will be required to support an Environmental Impact Assessment for the proposed Project.

3. Potential Hazards

The potential hazards for the proposed Springvale Mine Project include:

- Subsidence impacts
- Impacts to flora and fauna communities (including threatened and endangered species / communities and Groundwater Dependent Ecosystems)
- Impacts to surface features including cliffs and rock formations
- Loss of groundwater or depressurisation of groundwater aquifers;
- Discharge requirements exceeding current EPL limits for volume;
- Discharge of water that does not meet EPL or ANZECC quality criteria;
- Traffic Impacts;
- Noise Impacts;
- Impacts to air quality;
- Impacts from GHG emissions; and
- Community impacts
- Impacts to Aboriginal / cultural heritage sites
- Impacts to European heritage sites.

4. Risk Assessment Boundary Definition

This is a preliminary Risk Assessment aimed to identify knowledge gaps and areas where further assessments will be required. The full extent of environmental risks associated with this project will not be understood until further and more detailed investigations have been undertaken. This risk assessment should be reviewed following the completion of the detailed investigations to ensure all environmental risks associated with the Project have been identified, understood and are at an acceptable level for the company.

5. Risk Assessment Methods

Yes/No	Method
Yes	Workplace Risk Assessment and Control (WRAC)
No	Fault Tree Analysis (FTA)
No	Safety Integrity Level Analysis to Australian Standard 61508 (SIL)
No	Bow Tie Analysis (BTA)
No	Failure Modes and Effects Analysis (FMEA)
No	Hazard and Operability Analysis (HAZOP)

6. Previous Risk Assessment and other documents to be used and/or referenced

Document Name	Title	Version	Referenced Document Date
SVRA00249	Springvale Project Description Risk Assessment	1	13-Nov-2010
HMS999	Springvale Coal - SMP Variation Longwalls 415 to 417 Risk Assessment	Draft	16-Feb-2011

8. Venue and Time

Date	Description	Location	Start Time	End Time	Comment
1. 28-Mar-2011	Scoping	Springvale Technical Services Office	1:00 PM	4:00 PM	
2. 29-Mar-2011	Assessment	Springvale Board Room	8:00 AM		
3.	Review				

9. Risk Assessment Team Selection

Name	Title	Company	Industry Start Date	Yrs. of Exp.	Mobile Phone #	E-Mail Address	Pulse User No.	Role	Attendance		
									1. 28-Mar-2011	2. 29-Mar-2011	3.
Peter Corbett	JV Technical Services Manager	Angus Place Colliery	11-Mar-1992	19	0428 253 203	peter.corbett@centennialcoal.com.au	10000	Facilitator	P	P	
Tony King	Environmental Co-ordinator	Springvale Mine Operation				tony.king@centennialcoal.com.au		(none)	P	P	
Terry O'Brien	Mine Manager	Springvale Mine Operation	23-Nov-1981	29	0439 367 494	terry.obrien@centennialcoal.com.au	70012	Risk Assessment Owner			P

10. Scope Confirmation

Approver	Scope Confirmation	Date	Comments
1. Greg Banning	Yes	March 28, 2011	

WRAC Analysis Worksheet

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
1. Mining	<p>There is a risk to Springvale UG from</p> <p>... Subsidence ...</p> <p>Caused by:</p> <p>Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in:</p> <p>Impacts to Flora (including Threatened species, GDE's, EEC's).</p>	<p>1.1.a. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.1.b. Flora and Fauna surveys and ongoing monitoring conducted over current mining areas</p> <p>1.1.c. Peer review of longwall panel design and subsidence predictions.</p> <p>1.1.d. Historical subsidence behaviour</p> <p>1.1.e. Approved and implemented Subsidence Management Plan</p>	D (Pb)	3 (E)	17 (M)	<p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p>	
		<p>7. Ecological impact Assessment to be completed as part of the Environmental Assessment.</p> <p>11. Groundwater impact assessment to be completed as part of the Environmental Assessment.</p> <p>26. Review CSIRO Hydrogeological model for the proposed Springvale Coal Project Application Area.</p>					
1. Mining	<p>There is a risk to Springvale UG from</p> <p>... Subsidence ...</p> <p>Caused by:</p> <p>Mining using continuous miner methods or Mining using Longwall methods</p>	<p>1.2.a. Multilevel piezometers installed to monitor groundwater levels in current and future mining areas</p> <p>1.2.b. CSIRO Hydrogeological Model</p> <p>1.2.c. Aurecon shallow groundwater monitoring / reporting</p> <p>1.2.d. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.2.e. Peer review of longwall panel</p>	C (Pb)	3 (E)	13 (S)	<p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>11. Groundwater impact assessment to be completed as part of the Environmental Assessment.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p>	
		<p>26. Review CSIRO Hydrogeological model for the proposed Springvale Coal Project Application Area.</p>					

Springvale Mine Extension Project

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
	<p>methods</p> <p>Resulting in:</p> <p>Depressurisation of Groundwater Aquifers including those associated with GDE's.</p> <p>There is a risk to Springvale UG from</p> <p>... Subsidence ...</p> <p>Caused by:</p> <p>Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in:</p> <p>Impacts to surface features including cliffs and rock formations.</p> <p>There is a risk to Springvale UG from</p> <p>... Subsidence ...</p>	<p>design and subsidence predictions.</p> <p>1.2.f. Historical subsidence behaviour</p> <p>1.2.g. Approved and implemented Subsidence Management Plan</p> <p>1.3.a. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.3.b. Peer review of longwall panel design and subsidence predictions.</p> <p>1.3.c. SRK geotechnical hazard map</p> <p>1.3.d. Surface topographic mapping indicates known clifflines.</p> <p>1.3.e. Approved and implemented Subsidence Management Plan</p> <p>1.4.a. Consultation with the Aboriginal community has been undertaken in accordance with the DECCW 2010 Aboriginal Cultural Heritage Consultation Requirements for Proponents.</p> <p>1.4.b. Longwall panels from 416 Panel designed to minimise subsidence effects.</p>	<p></p> <p align="center">D</p> <p align="center">(Pb)</p>	<p align="center">3</p> <p align="center">(E)</p>	<p align="center">17</p> <p align="center">(M)</p>	<p>Springvale Coal Project Application Area.</p> <p>30. Exploration program to investigate near surface stratigraphy and aquifers</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p> <p>27. Assessment of rock features and clifflines to be undertaken as part of the Environmental Assessment</p> <p>4. Aboriginal heritage impact assessment to be completed as part of the Environmental Assessment.</p> <p>5. Consultation with the Aboriginal Community to continue in accordance with the 2010 DECCW Aboriginal Cultural Heritage Consultation Requirements for Proponents.</p>	<p></p>

Springvale Mine Extension Project

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
	<p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Impacts to Aboriginal heritage sites.</p> <p>There is a risk to Springvale UG from ::: Subsidence :::</p> <p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Impacts to European heritage sites.</p> <p>There is a risk to Springvale UG from ::: Subsidence :::</p>	<p>1.4.c. Peer review of longwall panel design and subsidence predictions.</p> <p>1.4.d. Approved and implemented Subsidence Management Plan</p> <p>1.5.a. Limited listed European Heritage sites within lease area.</p> <p>1.5.b. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.5.c. Peer review of longwall panel design and subsidence predictions.</p> <p>1.5.d. Approved and implemented Site Water Management Plan</p> <p>1.6.a. Known listed communities (NPSS & NPHS) have been surveyed.</p> <p>1.6.b. Flora and Fauna surveys and ongoing monitoring conducted over current mining areas</p> <p>1.6.c. Approved and implemented</p>	E	5 (L)	25 (L)	<p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p> <p>6. European heritage impact assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p>	
			D (Pb)	4 (E)	21 (L)	<p>7. Ecological impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p>	

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
	<p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Impacts to fauna habitat.</p> <p>There is a risk to Springvale UG from ... Subsidence ...</p>	<p>Subsidence Management Plan</p> <p>1.6.d. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.6.e. Peer review of longwall panel design and subsidence predictions.</p> <p>1.6.f. Detailed surface water monitoring programme in place.</p> <p>1.7.a. Mapping of known water courses and 1st, 2nd, 3rd order streams across Project Application Area.</p> <p>1.7.b. Existing Water Management Plan.</p> <p>1.7.c. Approved and implemented Subsidence Management Plan</p> <p>1.7.d. Detailed surface water monitoring programme in place.</p> <p>1.7.e. Aurecon shallow groundwater monitoring / reporting</p> <p>1.7.f. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.7.g. Peer review of longwall panel design and subsidence predictions.</p> <p>1.8.a. Location of significant infrastructure known</p> <p>1.8.b. Existing Stakeholder Engagement Plan.</p> <p>1.8.c. Longwall panels from 416 Panel designed to minimise</p>				<p>3. Peer review of subsidence assessment.</p> <p>31. Aquatic assessment to be conducted as part of the Environmental Assessment</p>	
	<p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Erosion and sediment impacts or Impacts to creek geomorphology.</p> <p>There is a risk to Springvale UG from ... Subsidence ...</p>	<p>32. Stream Classification and mapping as part of the Environmental Assessment</p>				<p>8. Surface water impact assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p>	
	<p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Erosion and sediment impacts or Impacts to creek geomorphology.</p> <p>There is a risk to Springvale UG from ... Subsidence ...</p>	<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>				<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>	

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
	<p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Significant impacts to infrastructure.</p> <p>There is a risk to Springvale UG from</p> <p>::: Depressurisation of groundwater aquifers including those associated with GDE's :::</p> <p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Impacts to other groundwater users.</p>	<p>subsidence effects.</p> <p>1.8.d. Peer review of longwall panel design and subsidence predictions.</p> <p>1.8.e. Approved and implemented Subsidence Management Plan</p> <p>1.9.a. Multilevel piezometers installed to monitor groundwater levels in current and future mining areas</p> <p>1.9.b. CSIRO Hydrogeological Model</p> <p>1.9.c. Aurecon shallow groundwater monitoring / reporting</p> <p>1.9.d. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.9.e. Peer review of longwall panel design and subsidence predictions.</p> <p>1.9.f. Historical subsidence behaviour</p> <p>1.9.g. Approved and implemented Subsidence Management Plan</p> <p>1.9.h. Limited number of groundwater users around the Project Application Area.</p> <p>1.9.i. Known extraction rates at dewatering bores and pit top groundwater collection system.</p> <p>1.9.j. Existing Stakeholder</p>				<p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p> <p>11. Groundwater impact assessment to be completed as part of the Environmental Assessment.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>16. Ensure all stakeholders are kept informed of the project.</p>	

Springvale Mine Extension Project

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
	<p>Engagement Plan. 1.9.k. Mine water balance has been prepared</p> <p>1.10.a. Annual NGRS reporting undertaken.</p> <p>1.10.b. Monitoring and reporting of electricity and diesel usage.</p> <p>1.10.c. Low in-seam gas content</p> <p>1.10.d. Gas monitoring</p> <p>Caused by: Diesel use or Electricity use or Extraction of coal</p> <p>Resulting in: Increase in GHG emissions from the site.</p> <p>There is a risk to Springvale UG from ... Extension of mining operations ...</p> <p>Caused by: Extending mining using continuous miner methods or Extending mining using Longwall methods</p>	<p>Engagement Plan. 1.9.k. Mine water balance has been prepared</p> <p>1.10.a. Annual NGRS reporting undertaken.</p> <p>1.10.b. Monitoring and reporting of electricity and diesel usage.</p> <p>1.10.c. Low in-seam gas content</p> <p>1.10.d. Gas monitoring</p> <p>1.11.a. Existing Stakeholder Engagement Plan.</p> <p>1.11.b. Community Consultative Committee.</p>	<p>C (Pb)</p>	<p>4 (F)</p>	<p>18 (M)</p>	<p>12. Greenhouse Gas assessment to be completed as part of the Environmental Assessment.</p> <p>13. Upgrade the gas monitoring equipment for greater monitoring accuracy at the site ventilation upcast shaft.</p> <p>14. Review and update the stakeholder engagement plan.</p> <p>15. Prepare a social impact assessment for the project as part of the Environmental Assessment.</p> <p>16. Ensure all stakeholders are kept informed of the project.</p> <p>2. Mine design to consider minimising potential impacts</p>	

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
	<p>Resulting in: Community complaints or Media coverage.</p>						
<p>2. Coal Handling</p>	<p>There is a risk to Springvale UG from</p> <p>... Impacts to air quality ...</p> <p>Caused by:</p> <p>Coal handling operations at the Springvale Coal facilities</p> <p>Resulting in:</p> <p>Exceedances of air quality criteria at nearby receptors or Local complaints.</p> <p>There is a risk to Springvale UG from</p> <p>... Noise impacts ...</p> <p>Caused by:</p> <p>Coal handling operations at the Springvale Coal surface facilities or Transport of Coal along haul roads</p>	<p>2.1.a. Air quality modelling of existing operations has been conducted</p> <p>2.1.b. Approved and implemented Air Quality Monitoring Program</p> <p>2.2.a. Noise modelling of existing operations has been conducted</p> <p>2.2.b. Approved and implemented Noise Monitoring Program</p>	<p>D (Pb)</p>	<p>4 (E)</p>	<p>21 (L)</p>	<p>17. Air quality assessment to be reviewed and updated for the project as part of the Environmental assessment</p> <p>18. Noise model to be reviewed and updated for the project as part of the Environmental Assessment</p>	

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
	<p>Resulting in: Exceedances of Project specific noise criteria.</p> <p>There is a risk to Springvale UG from</p> <p>... Mining in new areas ...</p> <p>Caused by: Insufficient capacity within current REA for projected</p> <p>Resulting in: Inability to process coal due to lack of approved REA.</p>	<p>2.3.a. Current approved REA</p> <p>2.3.b. Awareness of need to obtain approval for additional REA's to facilitate life of mine plan</p>	<p align="center">D (Pb)</p>	<p align="center">2 (F)</p>	<p align="center">12 (S)</p>	<p>28. Investigate REA requirements for future planned operations, consider options and conduct REA assessment as part of the Environmental Assessment</p> <p>33. Investigate rehabilitation planning as part of Environmental Assessment</p> <p>34. Assess geochemistry of reject material as part of Environmental Assessment</p>	
<p>3. Water Management</p>	<p>There is a risk to Springvale UG from</p> <p>... Exceedances of EPL volumetric limits ...</p> <p>Caused by: Potential increases in mine water</p>	<p>3.1.a. Approved and implemented Site Water Management Plan</p> <p>3.1.b. Mine water balance has been prepared</p> <p>3.1.c. CSIRO Hydrogeological Model</p> <p>3.1.d. Existing EPL</p>	<p align="center">D (Pb)</p>	<p align="center">4 (E)</p>	<p align="center">21 (L)</p>	<p>19. Update the water balance for the Springvale Coal Project</p> <p>20. Groundwater impact assessment to be completed as part of the Environmental Assessment.</p> <p>21. Review the capacity of the Springvale Delta Water Transfer Scheme</p> <p>35. Investigate Water Transfer Scheme contingencies as part of Environmental Assessment</p>	

Springvale Mine Extension Project

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
	<p>discharge requirements</p> <p>Resulting in:</p> <p>Non-compliance with EPL conditions.</p> <p>There is a risk to Springvale UG from</p> <p>3.2.a. Approved and implemented Site Water Management Plan</p> <p>3.2.b. Pollution Reduction Programme on EPL.</p> <p>3.2.c. Pollution control infrastructure</p> <p>Exceedances of EPL and/or ANZECC water quality criteria :</p> <p>Caused by:</p> <p>Ability of existing infrastructure to manage extension of life or Insufficient capacity to store water during intense and prolonged rainfall events or Poor quality of water extracted from the underground water storages.</p> <p>Resulting in:</p> <p>Community complaints or Non-compliance with EPL conditions.</p>						
4. Construction	<p>There is a risk to Springvale UG from</p> <p>4.1.a. Flora and Fauna surveys and ongoing monitoring conducted over current mining areas</p> <p>4.1.b. Centennial Project Standard</p> <p>4.1.c. Implemented Bushfire Management Plan</p> <p>Construction of new infrastructure or upgrades to existing infrastructure :</p>		C (IF)	4 (E)	18 (M)	<p>22. Site to implement a Water Management Committee to review system adequacy and make recommendations for improvement.</p> <p>8. Surface water impact assessment to be completed as part of the Environmental Assessment.</p>	
			C (Pb)	4 (E)	18 (M)	<p>23. Individual project areas to be specified during Project Development.</p> <p>7. Ecological impact Assessment to be completed as part of the Environmental Assessment.</p> <p>29. Environmental Assessment required to be approved prior to commencement of construction activities</p>	

Springvale Mine Extension Project

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
	<p>Caused by: Requirements of the Project</p> <p>Resulting in: Bushfire impacts or Impacts to Aboriginal heritage sites or Impacts to Endangered Ecological Communities or Impacts to European heritage sites or Impacts to fauna habitat or Impacts to flora or Rehabilitation requirements or Visual impacts.</p>	<p>4.1.d. Emergency procedures response</p> <p>4.1.e. Existing contractor management plan framework.</p>				<p>4. Aboriginal heritage impact assessment to be completed as part of the Environmental Assessment.</p> <p>6. European heritage impact assessment to be completed as part of the Environmental Assessment.</p> <p>33. Investigate rehabilitation planning as part of Environmental Assessment</p>	
<p>5. Traffic</p> <p>Caused by: Increasing employee numbers travelling to and from the Springvale Coal surface facilities area or Traffic impacts resulting from construction phase</p> <p>Resulting in: Impact to Forest tracks or Impacts on</p>	<p>There is a risk to Springvale UG from</p> <p>∴ Traffic Impacts ∴∴</p>	<p>5.1.a. On site car park</p> <p>5.1.b. Agreement with Forests NSW to maintain tracks</p> <p>5.1.c. Existing Stakeholder Engagement Plan.</p>	<p>C (Pb)</p>	<p>4 (PI)</p>	<p>18 (M)</p>	<p>24. Traffic impact assessment to be reviewed for the proposed project as part of the Environmental Assessment.</p>	

Springvale Mine Extension Project

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	Bow Tie Extension
6. Visual	<p>road safety .</p> <p>There is a risk to Springvale UG from</p> <p>... Impacts to visual amenity ...</p> <p>Caused by:</p> <p>Land clearing or Lighting on site of New infrastructure</p> <p>Resulting in:</p> <p>Changes in scenic quality.</p>	<p>6.1.a. Existing Stakeholder Engagement Plan.</p> <p>6.1.b. Location of significant infrastructure known</p>	D (Pb)	5 (R)	24 (L)	25. Visual Impact Assessment to be undertaken as part of the Environmental Assessment.	
7. Gain Approval for Project	<p>There is a risk to Springvale UG from</p> <p>... Mine life not extended ...</p> <p>Caused by:</p> <p>Inadequate Environmental Assessment or No approval for mine life extension</p> <p>Resulting in:</p> <p>Mine Closure.</p>	<p>7.1.a. Awareness of Requirements for EA</p> <p>Likely</p>	C (IF)	1 (F)	5 (H)	<p>36. Economic Assessment to be conducted as part of Environmental Assessment</p> <p>37. Consider assessing cumulative impacts of proposed Angus Place and Springvale Mine Extension Projects in one Environmental Assessment</p>	

Springvale Mine Extension Project

Briefing Paper

WRAC Analysis Sorted by RR

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
7. Gain Approval for Project	<p>There is a risk to Springvale UG from</p> <p>::: Mine life not extended :::</p> <p>Caused by:</p> <p>Inadequate Assessment or No approval for mine life extension</p> <p>Resulting in:</p> <p>Mine Closure.</p>	<p>7.1.a. Awareness of Requirements for EA</p> <p>Likely</p>	C	1	5	<p>36. Economic Assessment to be conducted as part of Environmental Assessment</p> <p>37. Consider assessing cumulative impacts of proposed Angus Place and Springvale Mine Extension Projects in one Environmental Assessment</p>
2. Coal Handling	<p>There is a risk to Springvale UG from</p> <p>::: Mining in new areas :::</p> <p>Caused by:</p> <p>Insufficient capacity within current REA for projected</p>	<p>2.3.a. Current approved REA</p> <p>2.3.b. Awareness of need to obtain approval for additional REA's to facilitate life of mine plan</p>	D	2	12	<p>28. Investigate REA requirements for future planned operations, consider options and conduct REA assessment as part of the Environmental Assessment</p> <p>33. Investigate rehabilitation planning as part of Environmental Assessment</p> <p>34. Assess geochemistry of reject material as part of Environmental Assessment</p>

Springvale Mine Extension Project

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
1. Mining	Resulting in: Inability to process coal due to lack of approved REA.					
	There is a risk to Springvale UG from	1.2.a. Multilevel piezometers installed to monitor groundwater levels in current and future mining areas				1. Detailed subsidence assessment to be completed on final mine layout/design.
	::: Subsidence :::	1.2.b. CSIRO Hydrogeological Model				11. Groundwater impact assessment to be completed as part of the Environmental Assessment.
	Caused by:	1.2.c. Aurecon shallow groundwater monitoring / reporting				2. Mine design to consider minimising potential impacts
	Mining using continuous miner methods or Mining using Longwall methods	1.2.d. Longwall panels from 416 Panel designed to minimise subsidence effects.	C (Pb)	3 (E)	13 (S)	3. Peer review of subsidence assessment.
	Resulting in:	1.2.e. Peer review of longwall panel design and subsidence predictions.				26. Review CSIRO Hydrogeological model for the proposed Springvale Coal Project Application Area.
	Depressurisation of Groundwater Aquifers including those associated with GDE's.	1.2.f. Historical subsidence behaviour				30. Exploration program to investigate near surface stratigraphy and aquifers
	There is a risk to Springvale UG from	1.2.g. Approved and implemented Subsidence Management Plan				
	::: Subsidence :::	1.1.a. Longwall panels from 416 Panel designed to minimise subsidence effects.				1. Detailed subsidence assessment to be completed on final mine layout/design.
	Caused by:	1.1.b. Flora and Fauna surveys and ongoing monitoring conducted over current mining areas	D (Pb)	3 (E)	17 (M)	2. Mine design to consider minimising potential impacts
Mining using continuous miner methods or Mining using Longwall methods	1.1.c. Peer review of longwall panel design and subsidence predictions.				3. Peer review of subsidence assessment.	
	1.1.d. Historical subsidence behaviour				7. Ecological impact Assessment to be completed as part of the Environmental Assessment.	
	1.1.e. Approved and implemented				11. Groundwater impact assessment to be completed as part of the	

Springvale Mine Extension Project

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
1. Mining	<p>Resulting in:</p> <p>Impacts to Flora (including Threatened species, GDE's, EEC's).</p> <p>There is a risk to Springvale UG from</p> <p>Subsidence :::</p> <p>Caused by:</p> <p>Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in:</p> <p>Impacts to surface features including cliffs and rock formations.</p>	<p>Subsidence Management Plan</p> <p>1.3.a. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.3.b. Peer review of longwall panel design and subsidence predictions.</p> <p>1.3.c. SRK geotechnical hazard map</p> <p>1.3.d. Surface topographic mapping indicates known clifflines.</p> <p>1.3.e. Approved and implemented Subsidence Management Plan</p>	D (Pb)	3 (E)	17 (M)	Environmental Assessment.
						26. Review CSIRO Hydrogeological model for the proposed Springvale Coal Project Application Area.
						1. Detailed subsidence assessment to be completed on final mine layout/design.
						2. Mine design to consider minimising potential impacts
						3. Peer review of subsidence assessment.
1. Mining	<p>There is a risk to Springvale UG from</p> <p>Subsidence :::</p> <p>Caused by:</p> <p>Mining using continuous miner methods or Mining using Longwall methods</p>	<p>1.4.a. Consultation with the Aboriginal community has been undertaken in accordance with the DECCW 2010 Aboriginal Cultural Heritage Consultation Requirements for Proponents.</p> <p>1.4.b. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.4.c. Peer review of longwall panel design</p>	D (Pb)	3 (L)	17 (M)	4. Aboriginal heritage impact assessment to be completed as part of the Environmental Assessment.
						5. Consultation with the Aboriginal Community to continue in accordance with the 2010 DECCW Aboriginal Cultural Heritage Consultation Requirements for Proponents.
						1. Detailed subsidence assessment to be completed on final mine layout/design.

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
	<p>methods</p> <p>Resulting in:</p> <p>Impacts to Aboriginal heritage sites.</p>	<p>subsidence predictions.</p> <p>1.4.d. Approved and implemented Subsidence Management Plan</p>				<p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p>
<p>1. Mining</p>	<p>There is a risk to Springvale UG from</p> <p>Impacts to Aboriginal heritage sites.</p> <p>There is a risk to Springvale UG from</p> <p>Depressurisation of groundwater aquifers including those associated with GDE's :::</p> <p>Caused by:</p> <p>Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in:</p> <p>Impacts to other groundwater users.</p>	<p>1.9.a. Multilevel piezometers installed to monitor groundwater levels in current and future mining areas</p> <p>1.9.b. CSIRO Hydrogeological Model</p> <p>1.9.c. Aurecon shallow groundwater monitoring / reporting</p> <p>1.9.d. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.9.e. Peer review of longwall panel design and subsidence predictions.</p> <p>1.9.f. Historical subsidence behaviour</p> <p>1.9.g. Approved and implemented Subsidence Management Plan</p> <p>1.9.h. Limited number of groundwater users around the Project Application Area.</p> <p>1.9.i. Known extraction rates at dewatering bores and pit top groundwater collection system.</p> <p>1.9.j. Existing Stakeholder Engagement Plan.</p> <p>1.9.k. Mine water balance has been prepared</p>	<p>D</p> <p>(Pb)</p>	<p>3</p> <p>(E)</p>	<p>17</p> <p>(M)</p>	<p>11. Groundwater impact assessment to be completed as part of the Environmental Assessment.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>16. Ensure all stakeholders are kept informed of the project.</p>
<p>1. Mining</p>	<p>There is a risk to Springvale UG from</p>	<p>1.10.a. Annual NGRS reporting</p>	<p>C</p>	<p>4</p>	<p>18</p>	<p>12. Greenhouse Gas assessment to be completed as part of the Environmental</p>

Springvale Mine Extension Project

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
	<p>Release of GHG emissions ...</p> <p>Caused by:</p> <p>Diesel use or Electricity use or Extraction of coal</p> <p>Resulting in:</p> <p>Increase in GHG emissions from the site.</p>	<p>undertaken.</p> <p>1.10.b. Monitoring and reporting of electricity and diesel usage.</p> <p>1.10.c. Low in-seam gas content</p> <p>1.10.d. Gas monitoring</p>	(Pb)	(F)	(M)	<p>Assessment.</p> <p>13. Upgrade the gas monitoring equipment for greater monitoring accuracy at the site ventilation upcast shaft.</p>
1. Mining	<p>There is a risk to Springvale UG from ...</p> <p>Extension of mining operations ...</p> <p>Caused by:</p> <p>Extending mining using continuous miner methods or Extending mining using Longwall methods</p> <p>Resulting in:</p> <p>Community complaints or Media coverage.</p>	<p>1.11.a. Existing Stakeholder Engagement Plan.</p> <p>1.11.b. Community Consultative Committee.</p>	C	4	18	<p>14. Review and update the stakeholder engagement plan.</p> <p>15. Prepare a social impact assessment for the project as part of the Environmental Assessment.</p> <p>16. Ensure all stakeholders are kept informed of the project.</p> <p>2. Mine design to consider minimising potential impacts</p>
3. Water Management	<p>There is a risk to Springvale UG from</p>	<p>3.2.a. Approved and implemented</p>	C	4	18	<p>22. Site to implement a Water Management Committee to review system</p>

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
5. Traffic	<p>Resulting in:</p> <p>Bushfire impacts or Impacts to Aboriginal heritage sites or Impacts to Endangered Ecological Communities or Impacts to European heritage sites or Impacts to fauna habitat or Impacts to flora or Rehabilitation requirements or Visual impacts.</p> <p>There is a risk to Springvale UG from</p> <p>5.1.a. On site car park</p> <p>5.1.b. Agreement with Forests NSW to maintain tracks</p> <p>5.1.c. Existing Stakeholder Engagement Plan.</p> <p>::: Traffic Impacts :::</p> <p>Caused by:</p> <p>Increasing employee numbers travelling to and from the Springvale Coal surface facilities area or Traffic impacts resulting from construction phase</p> <p>Resulting in:</p> <p>Impact to Forest tracks or Impacts on road safety .</p>	<p>5.1.a. On site car park</p> <p>5.1.b. Agreement with Forests NSW to maintain tracks</p> <p>5.1.c. Existing Stakeholder Engagement Plan.</p>	C (Pb)	4 (PI)	18 (M)	24. Traffic impact assessment to be reviewed for the proposed project as part of the Environmental Assessment.
1. Mining	<p>There is a risk to Springvale UG from</p> <p>::: Subsidence :::</p>	<p>1.6.a. Known listed communities (NPSS & NPHS) have been surveyed.</p> <p>1.6.b. Flora and Fauna surveys and ongoing monitoring conducted over current mining areas</p> <p>1.6.c. Approved and implemented</p>	D (Pb)	4 (E)	21 (L)	<p>7. Ecological impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p>

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control	
1. Mining	<p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Impacts to fauna habitat.</p> <p>There is a risk to Springvale UG from ::: Subsidence :::</p> <p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Erosion and sediment impacts of Impacts to creek geomorphology.</p> <p>There is a risk to Springvale UG from ::: Subsidence :::</p>	<p>Subsidence Management Plan</p> <p>1.6.d. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.6.e. Peer review of longwall panel design and subsidence predictions.</p> <p>1.6.f. Detailed surface water monitoring programme in place.</p> <p>1.7.a. Mapping of known water courses and 1st, 2nd, 3rd order streams across Project Application Area.</p> <p>1.7.b. Existing Water Management Plan.</p> <p>1.7.c. Approved and implemented Subsidence Management Plan</p> <p>1.7.d. Detailed surface water monitoring programme in place.</p> <p>1.7.e. Aurecon shallow groundwater monitoring / reporting</p> <p>1.7.f. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.7.g. Peer review of longwall panel design and subsidence predictions.</p> <p>1.8.a. Location of significant infrastructure known</p> <p>1.8.b. Existing Stakeholder Engagement Plan.</p> <p>1.8.c. Longwall panels from 416 Panel designed to minimise</p>				<p>3. Peer review of subsidence assessment.</p> <p>31. Aquatic assessment to be conducted as part of the Environmental Assessment</p> <p>8. Surface water impact assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p> <p>32. Stream Classification and mapping as part of the Environmental Assessment</p>	
							<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>
							<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>
							<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>
							<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>
							<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>
							<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>
							<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>
							<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>
							<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p>

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Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
	<p>subsidence effects.</p> <p>1.8.d. Peer review of longwall panel design and subsidence predictions.</p> <p>1.8.e. Approved and implemented Subsidence Management Plan</p> <p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Significant impacts to infrastructure.</p>					<p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p>
<p>2. Coal Handling</p>	<p>There is a risk to Springvale UG from existing operations has been conducted</p> <p>2.1.a. Air quality modelling of existing operations has been conducted</p> <p>2.1.b. Approved and implemented Air Quality Monitoring Program</p> <p>Impacts to air quality :::</p> <p>Caused by: Coal handling operations at the Springvale Coal facilities</p> <p>Resulting in: Exceedances of air quality criteria at nearby receptors or Local complaints.</p>		<p>D</p> <p>(Pb)</p>	<p>4</p> <p>(E)</p>	<p>21</p> <p>(L)</p>	<p>17. Air quality assessment to be reviewed and updated for the project as part of the Environmental assessment</p>
<p>2. Coal Handling</p>	<p>There is a risk to Springvale UG from existing operations has been conducted</p> <p>2.2.a. Noise modelling of existing operations has been conducted</p> <p>2.2.b. Approved and implemented Noise Monitoring Program</p> <p>Impacts :::</p>		<p>D</p> <p>(Pb)</p>	<p>4</p> <p>(R)</p>	<p>21</p> <p>(L)</p>	<p>18. Noise model to be reviewed and updated for the project as part of the Environmental Assessment</p>

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
	<p>Caused by:</p> <p>Coal handling operations at the Springvale Coal surface facilities or Transport of Coal along haul roads</p> <p>Resulting in:</p> <p>Exceedances of Project specific noise criteria.</p>					
3. Water Management	<p>There is a risk to Springvale UG from</p> <p>Exceedances of EPL volumetric limits</p> <p>Caused by:</p> <p>Potential increases in mine water discharge requirements</p> <p>Resulting in:</p> <p>Non-compliance with EPL conditions.</p>	<p>3.1.a. Approved and implemented Site Water Management Plan</p> <p>3.1.b. Mine water balance has been prepared</p> <p>3.1.c. CSIRO Hydrogeological Model</p> <p>3.1.d. Existing EPL</p>	D (Pb)	4 (E)	21 (L)	<p>19. Update the water balance for the Springvale Coal Project</p> <p>20. Groundwater impact assessment to be completed as part of the Environmental Assessment.</p> <p>21. Review the capacity of the Springvale Delta Water Transfer Scheme</p> <p>35. Investigate Water Transfer Scheme contingencies as part of Environmental Assessment</p>
6. Visual	<p>There is a risk to Springvale UG from</p> <p>Impacts to visual amenity</p>	<p>6.1.a. Existing Stakeholder Engagement Plan.</p> <p>6.1.b. Location of significant infrastructure known</p>	D (Pb)	5 (R)	24 (L)	<p>25. Visual Impact Assessment to be undertaken as part of the Environmental Assessment.</p>

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
1. Mining	<p>Caused by: Land clearing or Lighting on site or New infrastructure</p> <p>Resulting in: Changes in scenic quality.</p> <p>There is a risk to Springvale UG from</p>	<p>1.5.a. Limited listed European Heritage sites within lease area.</p> <p>1.5.b. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.5.c. Peer review of longwall panel design and subsidence predictions.</p> <p>1.5.d. Approved and implemented Site Water Management Plan</p>	L	MRC	RR	<p>6. European heritage impact assessment to be completed as part of the Environmental Assessment.</p>
	<p>::: Subsidence :::</p> <p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Impacts to European heritage sites.</p>		E	5	25	<p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p>

WRAC Analysis Sorted by Consequence

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
7. Gain Approval for Project	There is a risk to Springvale UG from	7.1.a. Awareness of Requirements for EA				36. Economic Assessment to be conducted as part of Environmental Assessment
	<p>... Mine life not extended ...</p> <p>Caused by:</p> <p>Inadequate Assessment or No approval for mine life extension</p> <p>Resulting in:</p> <p>Mine Closure.</p>	Likely	C (IF)	1 (F)	5 (H)	37. Consider assessing cumulative impacts of proposed Angus Place and Springvale Mine Extension Projects in one Environmental Assessment
2. Coal Handling	There is a risk to Springvale UG from	2.3.a. Current approved REA				28. Investigate REA requirements for future planned operations, consider options and conduct REA assessment as part of the Environmental Assessment
	<p>... Mining in new areas ...</p> <p>Caused by:</p> <p>Insufficient capacity within current REA for projected</p>	2.3.b. Awareness of need to obtain approval for additional REA's to facilitate life of mine plan	D (Pb)	2 (F)	12 (S)	33. Investigate rehabilitation planning as part of Environmental Assessment 34. Assess geochemistry of reject material as part of Environmental Assessment

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
1. Mining	Resulting in: Inability to process coal due to lack of approved REA.					
	There is a risk to Springvale UG from ::: Subsidence ::: Caused by: Mining using continuous miner methods or Mining using Longwall methods	1.1.a. Longwall panels from 416 Panel designed to minimise subsidence effects. 1.1.b. Flora and Fauna surveys and ongoing monitoring conducted over current mining areas 1.1.c. Peer review of longwall panel design and subsidence predictions. 1.1.d. Historical subsidence behaviour 1.1.e. Approved and implemented Subsidence Management Plan	D (Pb)	3 (E)	17 (M)	1. Detailed subsidence assessment to be completed on final mine layout/design. 2. Mine design to consider minimising potential impacts 3. Peer review of subsidence assessment. 7. Ecological Impact Assessment to be completed as part of the Environmental Assessment. 11. Groundwater impact assessment to be completed as part of the Environmental Assessment. 26. Review CSIRO Hydrogeological model for the proposed Springvale Coal Project Application Area.
1. Mining	Resulting in: Impacts to Flora (including Threatened species, GDE's, EEC's).					
	There is a risk to Springvale UG from ::: Subsidence ::: Caused by: Mining using continuous miner methods or Mining using Longwall methods	1.2.a. Multilevel piezometers installed to monitor groundwater levels in current and future mining areas 1.2.b. CSIRO Hydrogeological Model 1.2.c. Aurecon shallow groundwater monitoring / reporting 1.2.d. Longwall panels from 416 Panel designed to minimise subsidence effects. 1.2.e. Peer review of longwall panel design and subsidence predictions.	C (Pb)	3 (E)	13 (S)	1. Detailed subsidence assessment to be completed on final mine layout/design. 11. Groundwater impact assessment to be completed as part of the Environmental Assessment. 2. Mine design to consider minimising potential impacts 3. Peer review of subsidence assessment. 26. Review CSIRO Hydrogeological model for the proposed Springvale Coal Project Application Area.

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
1. Mining	<p>Resulting in: Depressurisation of Groundwater Aquifers including those associated with GDE's.</p> <p>There is a risk to Springvale UG from</p> <p>Subsidence</p> <p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Impacts to surface features including cliffs and rock formations.</p>	<p>1.2.f. Historical subsidence behaviour</p> <p>1.2.g. Approved and implemented Subsidence Management Plan</p> <p>1.3.a. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.3.b. Peer review of longwall panel design and subsidence predictions.</p> <p>1.3.c. SRK geotechnical hazard map</p> <p>1.3.d. Surface topographic mapping indicates known clifflines.</p> <p>1.3.e. Approved and implemented Subsidence Management Plan</p>	D	3 (E)	17 (M)	<p>30. Exploration program to investigate near surface stratigraphy and aquifers</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p> <p>27. Assessment of rock features and clifflines to be undertaken as part of the Environmental Assessment</p>
1. Mining	<p>There is a risk to Springvale UG from</p> <p>Depressurisation of groundwater aquifers including those associated with GDE's</p> <p>Caused by:</p>	<p>1.9.a. Multilevel installed to monitor groundwater levels in current and future mining areas</p> <p>1.9.b. CSIRO Hydrogeological Model</p> <p>1.9.c. Aurecon shallow groundwater monitoring / reporting</p> <p>1.9.d. Longwall panels from 416 Panel designed to minimise subsidence effects.</p>	D (Pb)	3 (E)	17 (M)	<p>11. Groundwater impact assessment to be completed as part of the Environmental Assessment.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>16. Ensure all stakeholders are kept informed of the project.</p>

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control										
1. Mining	<p>... Subsidence ...</p> <p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Impacts to fauna habitat.</p> <p>There is a risk to Springvale UG from courses and 1st, 2nd, 3rd order streams across Project Application Area.</p> <p>... Subsidence ...</p> <p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Erosion and sediment impacts or Impacts to creek geomorphology.</p>	<p>surveyed.</p> <p>1.6.b. Flora and Fauna surveys and ongoing monitoring conducted over current mining areas</p> <p>1.6.c. Approved and implemented Subsidence Management Plan</p> <p>1.6.d. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.6.e. Peer review of longwall panel design and subsidence predictions.</p> <p>1.6.f. Detailed surface water monitoring programme in place.</p>	(Pb)	(E)	(L)	<p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p> <p>31. Aquatic assessment to be conducted as part of the Environmental Assessment</p>										
		<p>1.7.a. Mapping of known water courses and 1st, 2nd, 3rd order streams across Project Application Area.</p> <p>1.7.b. Existing Water Management Plan.</p> <p>1.7.c. Approved and implemented Subsidence Management Plan</p> <p>1.7.d. Detailed surface water monitoring programme in place.</p> <p>1.7.e. Aurecon shallow groundwater monitoring / reporting</p> <p>1.7.f. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.7.g. Peer review of longwall panel design and subsidence predictions.</p>				D	4	21	<p>8. Surface water impact assessment to be completed as part of the Environmental Assessment.</p>							
		<p>2.1.a. Air quality modelling of</p>							(Pb)	(E)	(L)	<p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p> <p>32. Stream Classification and mapping as part of the Environmental Assessment</p>				
		<p>There is a risk to Springvale UG from</p>										<p>17. Air quality assessment to be reviewed and updated for the project as part</p>				
		2. Coal Handling											D	4	21	

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
	<p>Impacts to air quality</p> <p>Caused by:</p> <p>Coal handling operations at the Springvale Coal facilities</p> <p>Resulting in:</p> <p>Exceedances of air quality criteria at nearby receptors or Local complaints.</p>	<p>existing operations has been conducted</p> <p>2.1.b. Approved and implemented Air Quality Monitoring Program</p>	(Pb)	(E)	(L)	of the Environmental assessment
3. Water Management	<p>There is a risk to Springvale UG from</p> <p>Exceedances of EPL volumetric limits</p> <p>Caused by:</p> <p>Potential increases in mine water discharge requirements</p> <p>Resulting in:</p> <p>Non-compliance with EPL conditions.</p>	<p>3.1.a. Approved and implemented Site Water Management Plan</p> <p>3.1.b. Mine water balance has been prepared</p> <p>3.1.c. CSIRO Hydrogeological Model</p> <p>3.1.d. Existing EPL</p>		4	21	<p>19. Update the water balance for the Springvale Coal Project</p> <p>20. Groundwater impact assessment to be completed as part of the Environmental Assessment.</p> <p>21. Review the capacity of the Springvale Delta Water Transfer Scheme</p> <p>35. Investigate Water Transfer Scheme contingencies as part of Environmental Assessment</p>
3. Water Management	<p>There is a risk to Springvale UG from</p>	<p>3.2.a. Approved and implemented Site Water Management Plan</p>	C	4	18	<p>22. Site to implement a Water Management Committee to review system adequacy and make recommendations for improvement.</p>

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
	<p>... Exceedances of EPL and/or ANZECC water quality criteria ...</p> <p>Caused by:</p> <p>Ability of existing infrastructure to manage extension of life or Insufficient capacity to store water during intense and prolonged rainfall events or Poor quality of water extracted from the underground water storages.</p> <p>Resulting in:</p> <p>Community complaints or Non-compliance with EPL conditions.</p>	<p>3.2.b. Pollution Programme on EPL. Reduction</p> <p>3.2.c. Pollution control infrastructure</p>	(IF)	(E)	(M)	<p>8. Surface water impact assessment to be completed as part of the Environmental Assessment.</p>
4. Construction	<p>There is a risk to Springvale UG from</p> <p>... Construction of new infrastructure or upgrades to existing infrastructure ...</p> <p>Caused by:</p> <p>Requirements of the Project</p> <p>Resulting in:</p>	<p>4.1.a. Flora and Fauna surveys and ongoing monitoring conducted over current mining areas</p> <p>4.1.b. Centennial Project Standard</p> <p>4.1.c. Implemented Management Plan Bushfire</p> <p>4.1.d. Emergency response procedures</p> <p>4.1.e. Existing contractor management plan framework.</p>	C	4	18	<p>23. Individual Project Application Areas to be specified during Project Development.</p> <p>7. Ecological impact Assessment to be completed as part of the Environmental Assessment.</p> <p>29. Environmental Assessment required to be approved prior to commencement of construction activities</p> <p>4. Aboriginal heritage impact assessment to be completed as part of the Environmental Assessment.</p> <p>6. European heritage impact assessment to be completed as part of the Environmental Assessment.</p> <p>33. Investigate rehabilitation planning as part of Environmental Assessment</p>

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control						
1. Mining	<p>Bushfire impacts or Impacts to Aboriginal heritage sites or Impacts to Endangered Ecological Communities or Impacts to European heritage sites or Impacts to fauna habitat or Impacts to flora or Rehabilitation requirements or Visual impacts.</p> <p>There is a risk to Springvale UG from</p> <p>1.8.a. Location of significant infrastructure known</p> <p>1.8.b. Existing Stakeholder Engagement Plan.</p> <p>1.8.c. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.8.d. Peer review of longwall panel design and subsidence predictions.</p> <p>1.8.e. Approved and implemented Subsidence Management Plan</p> <p>Caused by:</p> <p>Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in:</p> <p>Significant impacts to infrastructure.</p>	<p>1.10.a. Annual NGRS reporting undertaken.</p> <p>1.10.b. Monitoring and reporting of electricity and diesel usage.</p> <p>1.10.c. Low in-seam gas content</p> <p>1.10.d. Gas monitoring</p>	<p>D</p> <p>(Pb)</p>	<p>4</p> <p>(F)</p>	<p>21</p> <p>(L)</p>	<p>9. Approval of mine design required for secondary extraction through an SMP or extraction plan.</p> <p>10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p> <p>3. Peer review of subsidence assessment.</p>						
							1. Mining	<p>There is a risk to Springvale UG from</p> <p>Release of GHG emissions</p> <p>Caused by:</p> <p>Diesel use or Electricity use or Extraction of coal</p>	<p>C</p> <p>(Pb)</p>	<p>4</p> <p>(F)</p>	<p>18</p> <p>(M)</p>	<p>12. Greenhouse Gas assessment to be completed as part of the Environmental Assessment.</p> <p>13. Upgrade the gas monitoring equipment for greater monitoring accuracy at the site ventilation upcast shaft.</p>

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
	<p>Resulting in:</p> <p>Increase in GHG emissions from the site.</p>					
5. Traffic	<p>There is a risk to Springvale UG from</p> <p>... Traffic Impacts ...</p> <p>Caused by:</p> <p>Increasing employee numbers travelling to and from the Springvale Coal surface facilities area or Traffic impacts resulting from construction phase</p> <p>Resulting in:</p> <p>Impact to Forest tracks or Impacts on road safety .</p>	<p>5.1.a. On site car park</p> <p>5.1.b. Agreement with Forests NSW to maintain tracks</p> <p>5.1.c. Existing Stakeholder Engagement Plan.</p>	C (Pb)	4 (PI)	18 (M)	<p>24. Traffic impact assessment to be reviewed for the proposed project as part of the Environmental Assessment.</p>
1. Mining	<p>There is a risk to Springvale UG from</p> <p>... Extension of mining operations ...</p> <p>Caused by:</p>	<p>1.11.a. Existing Stakeholder Engagement Plan.</p> <p>1.11.b. Community Consultative Committee.</p>	C (Pb)	4 (R)	18 (M)	<p>14. Review and update the stakeholder engagement plan.</p> <p>15. Prepare a social impact assessment for the project as part of the Environmental Assessment.</p> <p>16. Ensure all stakeholders are kept informed of the project.</p> <p>2. Mine design to consider minimising potential impacts</p>

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
	<p>Extending mining using continuous miner methods or Extending mining using Longwall methods</p> <p>Resulting in:</p> <p>Community complaints or Media coverage.</p>					
2. Coal Handling	<p>There is a risk to Springvale UG from</p> <p>... Noise impacts ...</p> <p>Caused by:</p> <p>Coal handling operations at the Springvale Coal surface facilities or Transport of Coal along haul roads</p> <p>Resulting in:</p> <p>Exceedances of Project specific noise criteria.</p>	<p>2.2.a. Noise modelling of existing operations has been conducted</p> <p>2.2.b. Approved and implemented Noise Monitoring Program</p>	D (Pb)	4 (R)	21 (L)	<p>18. Noise model to be reviewed and updated for the project as part of the Environmental Assessment</p>
1. Mining	<p>There is a risk to Springvale UG from</p> <p>... Subsidence ...</p>	<p>1.5.a. Limited listed European Heritage sites within lease area.</p> <p>1.5.b. Longwall panels from 416 Panel designed to minimise subsidence effects.</p> <p>1.5.c. Peer review of longwall panel design and subsidence</p>	E (Pb)	5 (L)	25 (L)	<p>6. European heritage impact assessment to be completed as part of the Environmental Assessment.</p> <p>1. Detailed subsidence assessment to be completed on final mine layout/design.</p> <p>2. Mine design to consider minimising potential impacts</p>

Springvale Mine Extension Project

Briefing Paper

Step	Potential Incident	Current Controls	L	MRC	RR	Recommended Control
	<p>Caused by: Mining using continuous miner methods or Mining using Longwall methods</p> <p>Resulting in: Impacts to European heritage sites.</p>	<p>predictions. 1.5.d. Approved and implemented Site Water Management Plan</p>				<p>3. Peer review of subsidence assessment.</p>
<p>6. Visual</p>	<p>There is a risk to Springvale UG from</p> <p>... Impacts to visual amenity ...</p> <p>Caused by: Land clearing or Lighting on site or New infrastructure</p> <p>Resulting in: Changes in scenic quality.</p>	<p>6.1.a. Existing Stakeholder Engagement Plan. 6.1.b. Location of significant infrastructure known</p>	<p>D (Pb)</p>	<p>5 (R)</p>	<p>24 (L)</p>	<p>25. Visual Impact Assessment to be undertaken as part of the Environmental Assessment.</p>

Recommended Controls

Recommended Controls Do NOT enter additional Recommended Controls on this sheet.	Place(s) Used	Allocated To		Required By Date	Pulse User No.	PULSE Ref. No.
		(Only one SITE person for each Recommended Control)				
1. Detailed subsidence assessment to be completed on final mine layout/design.	Events: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8	Peter Corbett		30-Sep-2011	10000	
2. Mine design to consider minimising potential impacts	Events: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.11	Peter Corbett		30-Sep-2011	10000	
3. Peer review of subsidence assessment.	Events: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8	Tony King		29-Nov-2011	TBA	
4. Aboriginal heritage impact assessment to be completed as part of the Environmental Assessment.	Events: 1.4, 4.1	Tony King		29-Mar-2012	TBA	
5. Consultation with the Aboriginal Community to continue in accordance with the 2010 DECCW Aboriginal Cultural Heritage Consultation Requirements for Proponents.	Events: 1.4	Tony King		29-Mar-2012	TBA	
6. European heritage impact assessment to be completed as part of the Environmental Assessment.	Events: 1.5, 4.1	Tony King		29-Mar-2012	TBA	
7. Ecological impact Assessment to be completed as part of the Environmental Assessment.	Events: 1.1, 1.6, 4.1	Tony King		29-Mar-2012	TBA	
8. Surface water impact assessment to be completed as part of the Environmental Assessment.	Events: 1.7, 3.2	Tony King		29-Mar-2012	TBA	
9. Approval of mine design required for secondary extraction through an SMP or extraction plan.	Events: 1.8	Tony King		29-Dec-2012	TBA	
10. Infrastructure Impact Assessment to be completed as part of the Environmental Assessment.	Events: 1.8	Tony King		29-Mar-2012	TBA	
11. Groundwater impact assessment to be completed as part of the Environmental Assessment.	Events: 1.1, 1.2, 1.9	Tony King		29-Mar-2012	TBA	
12. Greenhouse Gas assessment to be completed as part of the Environmental Assessment.	Events: 1.10	Tony King		29-Mar-2012	TBA	
13. Upgrade the gas monitoring equipment for greater monitoring accuracy at the site ventilation upcast shaft.	Events: 1.10	Richard Gelson		29-Mar-2012	140103	
14. Review and update the stakeholder engagement plan.	Events: 1.11	Tony King		29-Mar-2012	TBA	

Springvale Mine Extension Project

Briefing Paper

Recommended Controls Do NOT enter additional Recommended Controls on this sheet.	Place(s) Used	Allocated To		Required By Date	Pulse User No.	PULSE Ref. No.
		(Only one SITE person for each Recommended Control)				
15. Prepare a social impact assessment for the project as part of the Environmental Assessment.	Events: 1.11	Tony King		29-Mar-2012	TBA	
16. Ensure all stakeholders are kept informed of the project.	Events: 1.9, 1.11	Tony King		29-Mar-2012	TBA	
17. Air quality assessment to be reviewed and updated for the project as part of the Environmental assessment	Events: 2.1	Tony King		29-Mar-2012	TBA	
18. Noise model to be reviewed and updated for the project as part of the Environmental Assessment	Events: 2.2	Tony King		29-Mar-2012	TBA	
19. Update the water balance for the Springvale Coal Project	Events: 3.1	Tony King		29-Mar-2012	TBA	
20. Groundwater impact assessment to be completed as part of the Environmental Assessment.	Events: 3.1	Tony King		29-Mar-2012	TBA	
21. Review the capacity of the Springvale Delta Water Transfer Scheme	Events: 3.1	John Swane		29-Sep-2011	140069	
22. Site to implement a Water Management Committee to review system adequacy and make recommendations for improvement.	Events: 3.2	John Swane		29-Sep-2011	140069	
23. Individual Project Application Area to be specified during Project Development.	Events: 4.1	Tony King		29-Mar-2012	TBA	
24. Traffic impact assessment to be reviewed for the proposed project as part of the Environmental Assessment.	Events: 5.1	Tony King		29-Mar-2012	TBA	
25. Visual Impact Assessment to be undertaken as part of the Environmental Assessment.	Events: 6.1	Tony King		29-Mar-2012	TBA	
26. Review CSIRO Hydrogeological model for the proposed Springvale Coal Project Application Area.	Events: 1.1, 1.2	Paul Rutzou		29-Mar-2012	140077	
27. Assessment of rock features and clifflines to be undertaken as part of the Environmental Assessment	Events: 1.3	Tony King		29-Mar-2012	TBA	
28. Investigate REA requirements for future planned operations, consider options and conduct REA assessment as part of the Environmental Assessment	Events: 2.3	Lyndon Bryant		29-Mar-2012	TBA	
29. Environmental Assessment required to be approved prior to commencement of construction activities	Events: 4.1	Tony King		29-Nov-2012	TBA	
30. Exploration program to investigate near surface stratigraphy and aquifers	Events: 1.2	Peter Corbett		30-Dec-2011	10000	

Springvale Mine Extension Project

Briefing Paper

Recommended Controls Do NOT enter additional Recommended Controls on this sheet.	Place(s) Used	Allocated To		Required By Date	Pulse User No.	PULSE Ref. No.
		(Only one SITE person for each Recommended Control)				
31. Aquatic assessment to be conducted as part of the Environmental Assessment	Events: 1.6	Tony King		30-Jun-2012	TBA	
32. Stream Classification and mapping as part of the Environmental Assessment	Events: 1.7	Tony King		30-Jun-2012	TBA	
33. Investigate rehabilitation planning as part of Environmental Assessment	Events: 2.3, 4.1	Tony King		30-Jun-2012	TBA	
34. Assess geochemistry of reject material as part of Environmental Assessment	Events: 2.3	Tony King		30-Jun-2012	TBA	
35. Investigate Water Transfer Scheme contingencies as part of Environmental Assessment	Events: 3.1	Greg Banning		30-Jun-2012	140061	
36. Economic Assessment to be conducted as part of Environmental Assessment	Events: 7.1	Tony King		30-Jun-2012	TBA	
37. Consider assessing cumulative impacts of proposed Angus Place and Springvale Mine Extension Projects in one Environmental Assessment	Events: 7.1	Tony King		30-Jun-2012	TBA	

CEY Risk Matrix Page 1

RISK MANAGEMENT STANDARD

Management Standard-004

		CENTENNIAL RISK MATRIX					Likelihood					Description (D)		
		A Certain	B Probable	C Possible	D Remote	E Improbable	A Certain	B Probable	C Possible	D Remote	E Improbable			
Rating	Note: Consequence may result from a single event or may represent a cumulative impact over a period of 12 months. Use the worst case reasonable consequence if there is more than one.	Impact to Annual Business Plan (F)	Personal Injury (PI)	Business Interruption (BI)	Legal (L)	Reputation (R)	Environment (E)	Common"	Has Happened within Centennial"	Regular incidents	Infrequent incidents	Unlikely to occur. Very few recorded or known incidents	May occur in exceptional circumstances. Almost no recorded incidents.	Probability (Pb)
		Consequence	Environment (E)	Reputation (R)	Legal (L)	Reputation (R)	Environment (E)	Frequent incidents	Has Happened within Centennial"	Regular incidents	Infrequent incidents	Unlikely to occur. Very few recorded or known incidents	May occur in exceptional circumstances. Almost no recorded incidents.	Incident Frequency (IF)
1. Catastrophic	>\$50m	Multiple Fatalities	> 1month	Prolonged litigation, heavy fines, potential jail term	Prolonged International media attention	Long term impairment habitats/ ecosystem	1 (E)	2 (E)	5 (H)	7 (H)	11 (S)			
2. Major	\$10m - \$50m	Single Fatality	1 week to 1 month	Major breach/ major litigation	International media attention	Long term effects of ecosystem	3 (E)	4 (E)	8 (H)	12 (S)	16 (M)			
3. Moderate	\$1m - \$10m	Serious/ Disabling Injury	1 day to 1 week	Serious breach of regulation, prosecution/ fine	National media attention	Serious medium term environmental effects	6 (H)	9 (H)	13 (S)	17 (M)	20 (L)			
4. Minor	\$100k - \$1m	Lost Time Injury	12 hrs to 1 day	Non-compliance, breaches in regulation	Adverse local public attention	Minor effects to physical environment	10 (S)	14 (S)	18 (M)	21 (L)	23 (L)			
5. Insignificant	<\$100k	First Aid Treatment Only	< 12 hrs	Low level compliance issue	Local complaints	Limited physical damage	15 (S)	19 (M)	22 (L)	24 (L)	25 (L)			

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Risk Rating	Risk Category	Generic Management Actions
1 to 4	E Extreme	Immediate intervention required from senior management to eliminate or reduce this risk
5 to 9	H High	Imperative to eliminate or reduce risk to a lower level by the introduction of control measures. Management planning required at senior levels
10 to 15	S Significant	Corrective action required, senior management attention needed to eliminate or reduce risk
16 to 19	M Moderate	Corrective action to be determined, management responsibility must be specified
20 to 25	L Low	Monitor and manage by corrective action where practicable

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BOW TIE ANALYSIS - Control Effectiveness Matrix								
Examples	Description	Rank	Control Category	CONTROL - Impact / Status / Quality				
				A >= 80%	B 50 - 80%	C 50 / 50%	D 50 - 20%	E <= 20%
Replace electric hand tools with compressed air alternatives in wet conditions	Eliminates a hazard by removal	1.	Elimination of hazard	Green	Yellow	Yellow	Red	Red
Replace large diameter, heavy cables with smaller ones that are easier to handle manually	Replace element with less risky alternative	2.	Substitution	Green	Yellow	Yellow	Red	Red
Automatic fire fighting sprinkler systems	An automatic device that operates without intervention by personnel	3.	Engineered without people	Green	Yellow	Yellow	Red	Red
Fire alarm that sounds & the operator then has to initiate an evacuation	A device that requires personnel to respond to a stimulus	4.	Engineered with people	Green	Yellow	Red	Red	Red
Inspection, maintenance and repair of machinery	A process carried out by personnel	5.	Procedural	Yellow	Yellow	Red	Red	Red
Employee made aware of dangers of large moving equipment where the operators have limited vision	Induction training programs	6.	Awareness	Red	Red	Red	Red	Red

TYPE OF CONTROL