



Preliminary Environmental Assessment

BHP Billiton Illawarra Coal

Ventilation Shaft No.6 Project

Project Number 110060-01 Report 001 Rev 1

Prepared for BHP Billiton Illawarra Coal

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Executive Summary

BHP Billiton Illawarra Coal (BHPBIC) operates the Appin Mine in the Southern Coalfield of NSW. This mine extracts coal underground from the Bulli Seam using conventional longwall mining techniques. An integral component of underground mining is the provision of adequate underground ventilation to ensure safe and efficient operations.

Ventilation of an underground mine primarily consists of two air flows; intake air from mine entries and openings such as downcast shafts, drifts, portals and adits and exhaust air which exits the mine via upcast shafts. Currently, Appin Mine is primarily ventilated by two upcast ventilation shafts; No.2 Upcast Shaft (VS#2) and No.3 Upcast Shaft (VS#3) and three downcast ventilation shafts; No.1 Downcast Shaft and two downcast shafts at Appin West Pit Top (No.4 and No.5 Downcast Shafts), as well as other ancillary intake air arrangements.

BHPBIC is currently mining Longwall 703 in the Area 7 domain and proposes to extend and commence its mining activities into the adjacent Area 9 once their current Bulli Seam Part 3A application is determined and the economically recoverable coal reserves at West Cliff Colliery are exhausted. It is envisaged that the extraction of coal will cease at West Cliff Colliery in 2015. The works proposed in this Part 3A application are required to support the planned reconfiguration of mining activities within Illawarra Coal's Bulli Seam operations.

The proposed new upcast ventilation shaft, Appin Ventilation Shaft No. 6 (VS#6) is necessary to provide adequate underground ventilation for both the development of and future mining of the Area 9 domain. The Area 9 domain will be mined concurrently with the Area 7 domain when the coal reserves at West Cliff Colliery are exhausted. This development also provides opportunities for BHPBIC to improve underground mine safety and efficiency through the construction and operation of additional mine servicing infrastructure at this site.

This report is a Preliminary Environmental Assessment (PEA) under Part 3A of the Environmental Planning & Assessment Act 1979. This PEA describes BHPBIC's proposal to undertake construction (and then operation) of a new upcast ventilation shaft and extraction fans, formally known as the Ventilation Shaft No. 6 (VS#6) and associated surface infrastructure.

The surface infrastructure, with which this Part 3A application seeks approval for, consists of:

- Ventilation shaft
- Multiple extraction fans and one standby low flow backup fan
- Surface to underground service boreholes and consumables storage facilities
- Compressor station for supply of compressed air
- Emulsion mixing and supply plant
- Personnel amenities
- Diesel storage tank and associated pipelines
- Construction and operation of a new electrical substation at the VS #6 Site
- Power connection from the existing Douglas North Substation (DNS) to the new substation at the VS#6 Site under the Hume Highway and Southern Rail Line
- Temporary and permanent site access, internal roadways, associated hardstand and car parking areas
- Water management ponds

- Shaft material/spoil emplacement area in the form of a screening earthen bund and associated revegetation and landscaping activities.

This PEA describes the proposal, identifies benefits, reviews the applicable regulatory framework and identifies agency and community stakeholders. This PEA also reviews potential environmental impacts of the proposal and identifies areas that require further assessment. The key environmental impacts of the proposal are:

- Flora and Fauna
- Cultural Heritage and Archaeology
- Visual amenity
- Air quality and GHG emissions
- Traffic and access
- Sediment and erosion control
- Noise and vibration
- Water resources and
- Surface water management.

The location of VS#6 and associated infrastructure is on BHPBIC owned land, to the east of the township of Douglas Park in NSW. The shaft and associated infrastructure has been positioned to intersect the underground workings of Area 7 and Area 9 and to minimise the potential impacts on the environment and/or community of Douglas Park.

Any potential impacts to the environment and/or community will be detailed, assessed and the appropriate management and mitigation measures developed (if required) in the Environmental Assessment (EA) Report.

This PEA concludes that the approval of this application allows BHPBIC to adequately and safely ventilate its Bulli Seam operations, specifically Areas 7 and 9, and increase safety and efficiency underground by minimising underground traffic. Expectations are that mitigation and management measures will appropriately reduce the more significant impacts such that the resulting environmental impacts of the proposed development will be minimal.

The information provided in this PEA allows the Department of Planning to prepare and release the Director-General's Requirements for the proposal, such that a full EA can be prepared.

Prepared by
for and on behalf of
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1 Introduction

This section describes the background to the proposal and the reason for change.

1.1 Background

BHP Billiton Illawarra Coal Pty. Ltd. (BHPBIC) operates in the Southern Coalfield area of NSW, approximately 25km north-west of Wollongong (refer **Figure 1**). These operations are underground long wall mines which extract coal from the Bulli Seam of the Illawarra Coal Measures, approximately 500m below surface ground level. An integral component of underground coal mining is adequate ventilation to ensure a safe and efficient underground working environment.

Ventilation of an underground mine primarily consists of two air flows; intake air from mine entries and openings such as downcast shafts, drifts, portals and adits and exhaust air which exits the mine via upcast ventilation shafts. The intake and exhaust flow of air ensures a continual through flow of fresh air is available underground. This air is known as Mine Ventilation Air (MVA).

Currently, Appin Mine is ventilated by three operational downcast ventilation shafts; No.1 Downcast Shaft and two downcast shafts at Appin West Pit Top as well as other ancillary intake air arrangements and two operational upcast ventilation shafts with extraction fans; No.2 Upcast Shaft, No.3 Upcast Shaft. The location of this infrastructure is shown in **Figure 1**.

The current ventilation system for Appin Mine is capable of servicing and/or has previously serviced the following mining domains; Areas 1, 2, 3, 4 and 7. However, as new mining domains are approved and mining moves away from existing infrastructure, additional ventilation shafts and ancillary plant is required to ensure sufficient quantities of air are available to the underground operations.

BHPBIC has made an application for approval under Part 3A of the Environmental Planning & Assessment Act 1979 (EP&A Act), to continue to mine the Bulli Seam at its Appin Mine and West Cliff Collieries for the next 30 years. This application is known as the Bulli Seam Operations Project. Approval of this project will allow BHPBIC to extend current, and commence new mining domains within the Bulli Seam.

Area 9 is a new mining domain within Consolidated Coal Lease (CCL) 767 and has been identified by BHPBIC as its next mining domain. This domain is located adjacent to and to the west of Area 7 and is planned to be mined once the coal reserves at West Cliff Colliery expire, in approximately 2015.

Area 7 and Area 9 will be mined in parallel, utilising the existing coal handling infrastructure and management systems. However, as development and then mining of Area 9 commences together with mining in Area 7, added pressure will be placed on the ventilation system.

An assessment of the proposed mine domain ventilation system has identified a need to improve the capacity and reliability of the underground ventilation system currently servicing the existing and proposed mining domains to ensure a safe and efficient working environment underground.

A number of options to improve the ventilation system for Areas 7 and 9 were developed, and after a rigorous internal assessment of each option, it was determined that the most appropriate, cost effective solution was the implementation of a new upcast ventilation shaft, known as Ventilation Shaft No.6 (VS#6). Underground roadways will also be developed to link the mine ventilation system to the existing West Cliff No.1 Upcast Shaft. The location of VS#6 and associated infrastructure is on BHPBIC owned land, to the east of the township of Douglas Park in NSW (refer **Figure 2**). The shaft and associated infrastructure has been positioned to fit in with the layout of the underground workings for Areas 7 and 9, its proximity to services and to minimise the potential impacts on the environment and/or community of Douglas Park.

Additional surface infrastructure associated with VS#6 is also proposed to be implemented at this location, to minimise underground service supply traffic and improve underground safety. This infrastructure consists of a number of small service supply boreholes and silos/storage sheds, connecting from the surface to the underground workings to supply such necessary products as concrete, ballast, fuel, compressed air and communication cables amongst others.

Refer **Section 1.2** of this document for a list of all the proposed developments associated with the VS#6 Project and seeking approval as part of this application.

These proposed works require approval from the Department of Planning (DoP) under Part 3A of the EP&A Act due to State Environmental Planning Policy (Major Developments) 2005. BHPBIC has engaged Cardno Forbes Rigby (Cardno) to manage the preparation this Part 3A application and this report forms the Preliminary Environmental Assessment (PEA) for this Major Project.

1.2 Project Objectives

The overall objective of this project is to obtain Project Approval for new underground mining ventilation infrastructure and associated ancillary equipment proposed to be implemented on BHPBIC owned land, near the community of Douglas Park in NSW.

The following surface works and activities associated with construction and operation of VS#6 and associated infrastructure include:

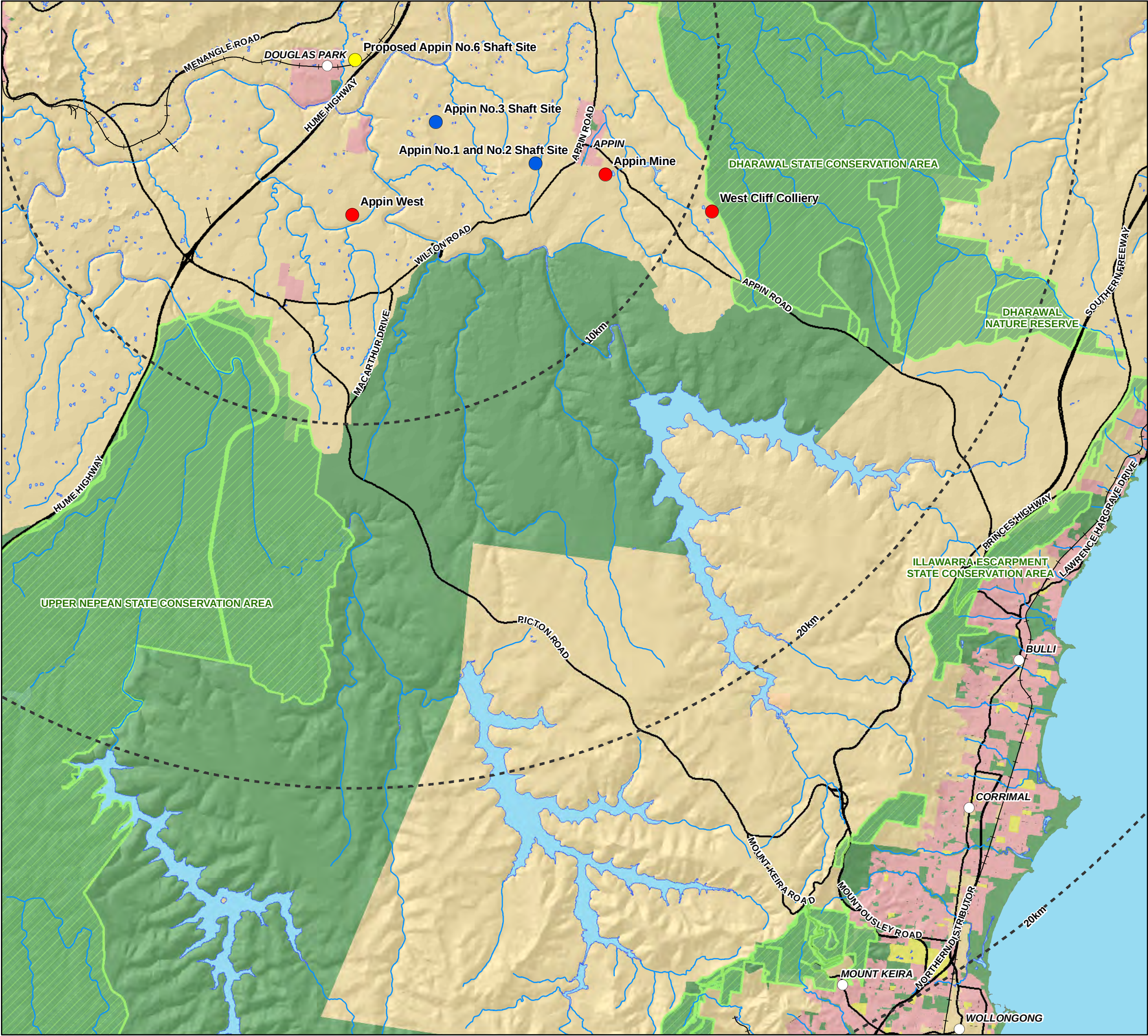
- Ventilation shaft
- Multiple extraction fans and one standby low flow backup fan
- Surface to underground service boreholes and consumables storage facilities
- Compressor station for supply of compressed air
- Emulsion mixing and supply plant
- Personnel amenities
- Diesel storage tank and associated pipelines
- Construction and operation of a new electrical substation at the VS #6 Site
- Power connection from the existing Douglas North Substation (DNS) to the new substation at the VS#6 Site under the Hume Highway and Southern Rail Line
- Temporary and permanent site access, internal roadways, associated hardstand and car parking areas
- Water management ponds
- Shaft material/spoil emplacement area in the form of a screening earthen bund and associated revegetation and landscaping activities.

Refer to **Figure 2** for a site location plan showing the general area of activities described in this PEA.

The objective of this project is to:

- Continue to provide a reliable, safe and efficient ventilation system for Appin Mine and future operations in Area 9 mining domain
- Increase safety and efficiency of supply transport underground by reducing the amount of underground traffic through the construction of service supply boreholes to deliver necessary supplies such as concrete, ballast, stone dust, compressed air etc underground.

BHPBIC will work to achieve these objectives whilst understanding that each has various constraints.



Regional Context

VS#6 PROJECT

- Legend**
- Major Towns (LPMA)
 - Pit Top
 - Existing Ventilation Shaft
 - Proposed Ventilation Shaft
 - Railway (LPMA)
 - Major Roads (LPMA)
 - Major Watercourses (LPMA)
 - NPWS Reserve (LPMA)
 - Waterbodies (LPMA)
 - Distance from Proposed Shaft
- Land Use (ABS)**
- Agricultural/Rural
 - Education
 - Parkland
 - Residential

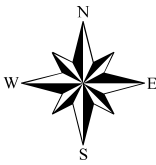
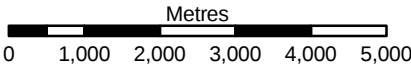
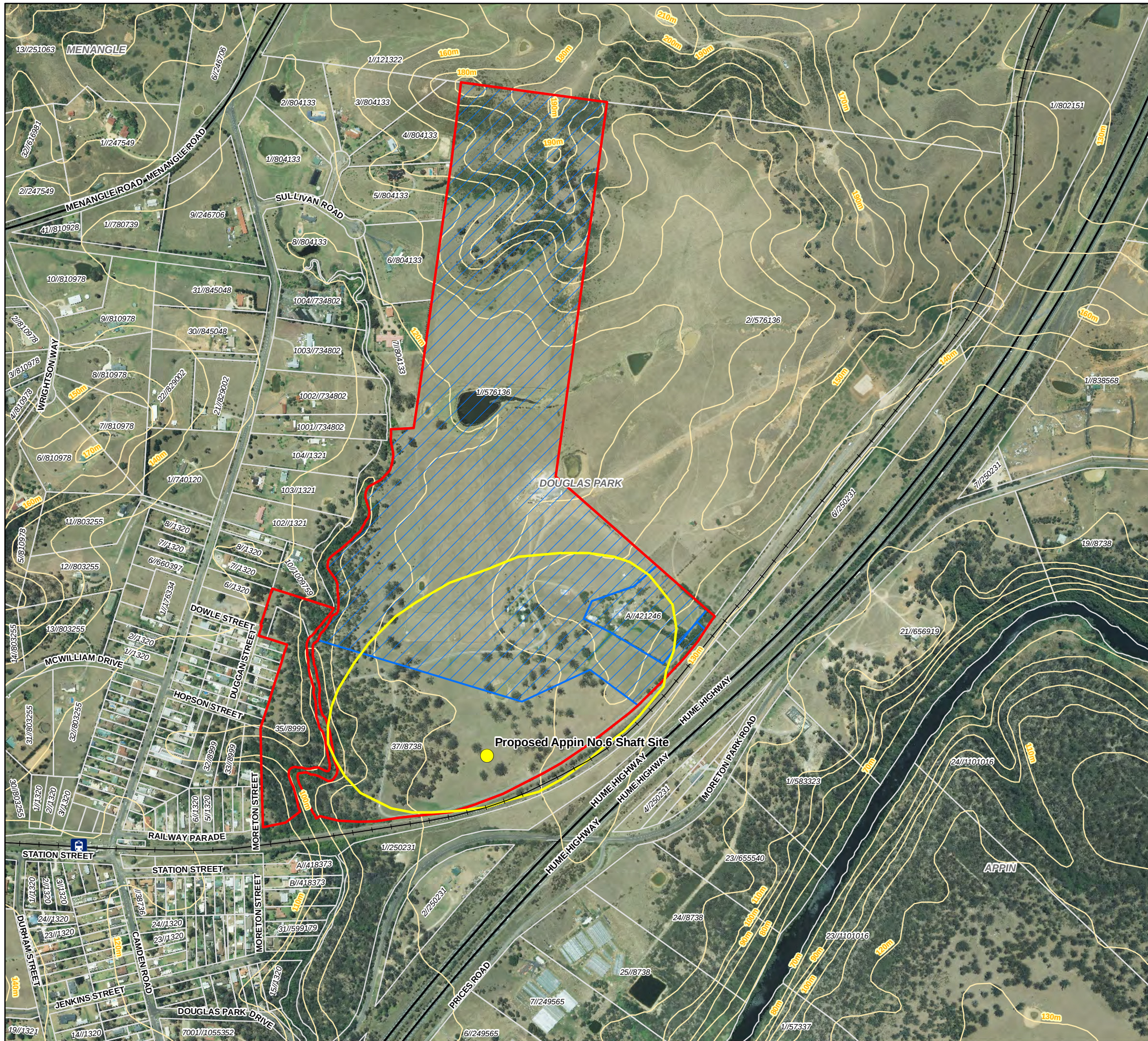


FIGURE 1

Scale 1:100,000 (at A3)





Site Location Plan

VS#6 PROJECT

Legend

- Site Boundary (BHPBIC Owned Land)
- Proposed VS#6
- Railway Stations (LPMA)
- Railway (LPMA)
- Major Roads (LPMA)
- 10m Contours (LPMA)
- Cadastre (LPMA)
- Approximate Works Area
- Heritage Lots (Wollondilly Shire Council)

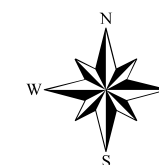
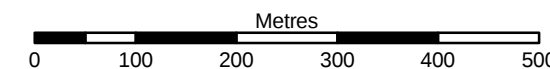


FIGURE 2

Scale 1:7,500 (at A3)



Map Produced by Cardno Wollongong
Date: 10 May 2010
Coordinate System: Zone 56 MGA/GDA 94
GIS MAP REF: 110060_01_1807_SiteLocationPlan.mxd 04
Aerial imagery supplied by BHPBIC (2009)

1.3 Purpose of this Report

The purpose of this PEA is to advise DoP of the following:

- General project activities
- Applicable legislation and planning policies
- Anticipated consultation requirements and methodology
- Expected environmental impacts
- Proposed construction methodology.

The information in this PEA will allow the DoP to better understand the scope of the development and review the anticipated potential environmental impacts. It will assist the Director-General to issue his requirements for the project. These Director-General Requirement's (DGR's) will guide and direct the future Environmental Assessment (EA) for this project.

1.4 Major Project Classification

This project is classified as a Major Project by Part 5(1)(a) of Schedule 1 of the State Environmental Planning Policy (SEPP) (Major Development) 2005, because it is development for the purposes of coal mining. A Part 3A Application for the development is required pursuant to Part 5 of Schedule 1 which states:

5. Mining

- 1) Development for the purpose of mining that:
 - a) is coal or mineral sands mining, or
 - b) is in an environmentally sensitive area of State significance, or
 - c) has a capital investment value of more than \$30 million or employs 100 or more people.
- 2) Extracting a bulk sample as part of resource appraisal or a trial mine comprising the extraction of more than 20,000 tonnes of coal or of any mineral ore.
- 3) Development for the purpose of mining related works (including primary processing plants or facilities for storage, loading or transporting any mineral, ore or waste material) that:
 - a) is ancillary to or an extension of another Part 3A project, or
 - b) has a capital investment value of more than \$30 million or employs 100 or more people.

1.5 Anticipated Timing of the Project

BHPBIC aim to commence development of the project immediately following approval, to ensure the project is commensurate with the Area 9 mine plan. **Table 1.1** shows the anticipated approval programme:

Table 1.1 - Anticipated Timing of the Part 3A Application

Stage	Due Date
1. Prepare Preliminary Environmental Assessment	April 2010
2. Submission of PEA to Department of Planning	May 2010
3. Director-General's Requirements	June 2010
4. Submission of Environmental Assessment to DoP for Adequacy Review	August 2010
5. Public Exhibition and Agency Consultation	September/October 2010
6. Completion of DoP assessment	November/December 2010
7. Minister's Decision	December 2010

1.6 Structure of this report

The structure of this PEA is as follows:

- **Section 2** – explains how the project relates to underground mining and describes the proposed developments
- **Section 3** – reviews planning policies relating to the proposed development
- **Section 4** – details consultation process undertaken thus far
- **Section 5** – details the preliminary risk assessment
- **Section 6** – identifies key environmental impacts
- **Section 7** – identifies secondary environmental impacts.
- **Section 8** – reviews construction management and safety
- **Section 9** – concludes the PEA
- **Section 10** – lists the references used in the preparation of this report.

2 Proposed Development

This section explains the proposed development and how it fits with BHPBIC mining operations.

2.1 Appin Mine Existing Ventilation System

Underground mines require adequate ventilation to provide safe, breathable air for employees underground and maintaining a non-explosive underground atmosphere for the safe operation of equipment. The ventilation system consists of fans at the surface of each upcast ventilation shaft drawing or “sucking” air using negative pressure through the surface entries of the mine such as portals, adits, drifts and downcast ventilation shafts, thus creating circulation through the underground workings. The distance between the upcast ventilation shaft (where the ventilation air exits the mine) and the portals, adits, drifts and downcast ventilation shafts (where the air enters the mine) can be far apart. This, and the significant extent of the underground mine workings, means the ventilation shaft fans must be powerful enough and of an adequate number to reliably circulate required volumes of air throughout the mine.

A reliable supply of breathable air from the surface is required within the underground workings so employees do not require breathing apparatus or are at risk of respiratory dangers. A notable threat associated with MVA is the concentration of methane gas. This is because the conversion of plant material deposits to coal naturally produces methane gas which is trapped underground within the coal seam pores by the processes of adsorption and/or absorption until it is mobilised by “in seam” mine drainage or mining operations.

Typical concentrations of MVA methane extracted in the mine ventilation system are much lower than ‘in seam’ methane gas concentrations, usually ranging from 0.1 to 1.4%. This is due primarily to the dilution effect associated with the large, continuous volumes of air circulating within the mine. The safe and efficient extraction of coal can be adversely affected by the methane concentration in MVA. Where the methane concentration in MVA exceeds 1.5%, strict safety regulatory regimes are imposed which significantly impact upon mining efficiency.

Currently, Appin Mine is ventilated by:

- No.1 Downcast Shaft and
- Two downcast shafts at Appin West Pit Top (No.4 and No.5 Downcast Shafts i.e. ex Bulk Coal Winder and men and materials shaft) as well as other ancillary intake air arrangements

and two operational upcast ventilation shafts with extraction fans:

- No.2 Upcast Shaft and
- No.3 Upcast Shaft.

The location of this infrastructure is shown in **Figure 1**.

The commencement of extraction in Area 9 is proposed to occur in approximately 2015 once the economically retrievable coal reserves at Area 5 are exhausted.

The commencement of operations at Area 9 will result in the operation of two longwalls and associated development units either side of Douglas Mains using an integrated mine ventilation system. This parallel longwall operation will require a significant enhancement of the current ventilation system.

Currently, the approximate total mine airflow quantity for Appin Mine provided by VS#2 and VS#3 is around 520m³/s. The planned total mine airflow quantity with the inclusion of Area 9 operating in parallel with Area 7 after operation of VS#6 is anticipated to be around 700 to 800m³/s. The new underground roadway connection between West Cliff Colliery and the new operation will enable the use of the existing No.1 Upcast Ventilation Shaft at West Cliff.

The current ventilation system for Appin Mine is capable of servicing the Area 7 domain, of which Longwall 703 is currently being mined. However, with the inclusion of Area 9 an improvement to the system's capacity and reliability is required to cope with the ventilation requirements associated with a second mining domain to that of Area 7.

2.2 Ventilation Shaft No.6 Proposed Development

The main aspect of the development proposed in this application is for a new upcast ventilation shaft, known as VS#6, associated extraction fans and ancillary surface infrastructure to primarily ensure a reliable and adequate supply of ventilation air to employees underground. A series of service boreholes are also proposed to improve the logistics of necessary services and supplies required for use underground.

The property on which the VS#6 Project and associated infrastructure is proposed to be developed is freehold land owned by BHPBIC and is described formally as Lot 37/DP8738, Lot 3/DP8738, Lot 35/DP8999, Lot 1/DP576136 and Lot A/DP421246 (refer **Figure 2**). The property is also known locally as the Mountbatten Stud (MBS) on which the Mountbatten Group of heritage listed buildings exist.

The existing landscape of the property on which the VS#6 Project is proposed can be described as previously cleared, open land used for agricultural purposes with undulating to hilly topography. The site is bounded to the immediate west by Harris Creek, a drainage line draining in a southerly direction into the Nepean River, then the township of Douglas Park and the Main Southern Rail Line and Hume Highway to the north, south and east. The Nepean River is located to the south and east of the site, on the eastern side of Moreton Park Road.

An overview of all aspects of the proposed development seeking approval as part of this application is provided in the following sections.

2.2.1 VS#6 Construction Phase

The shaft will be circular with a constructed diameter of approximately 6.0m, a finished internal diameter of between 5.0m to 5.6m and a depth of approximately 530m. The shaft will travel in a straight vertical line from the surface to intersect the mine workings underground. It will access the Area 7/Area 9 underground workings in a designated area that is consolidated, structurally and geotechnically competent and will remain "open" i.e. will not collapse or form part of the Area 7 or Area 9 goaf as a result of mining induced subsidence.

The shaft will be created by using the drilling technique known as "blind boring". Blind boring is the drilling from the surface down to the required depth using a large diameter drill head. The drill head is attached to a drill string that is rotated at the surface. The cutting head breaks the rock into small pieces that are then transported by a compressed air induced vacuum and water to the surface. At all times during the excavation of the shaft it is full of water. One of the key advantages of blind boring is that no person is required to enter the shaft during excavation.

BHPBIC have proposed this method of shaft excavation based on successful construction and safety outcomes from previous constructed shafts. The blind boring process provided increased safety over other methods and therefore this method is the preferred method of shaft construction for VS#6. The blind boring process uses a specific drilling rig suspended from a headframe approximately 35m in height, with the actual drilling process being performed completely submerged within the shaft,

which assists the spoil removal process. Three process ponds will manage the water used and the spoil produced during the shaft drilling process.

Power for the shaft drilling, construction phase (and operation of the extraction fans) will be provided via a new 66/11kV electrical substation proposed to be constructed onsite, with power supplied via a predominately underground electrical cable connection from the new substation to the existing DNS on Moreton Park Road.

The spoil or excavated material from the shaft drilling process will be captured in the form of very wet slurry and pumped to the three process ponds for settlement and temporary storage. The process ponds will be regularly cleaned out via excavator and the spoil material allowed to dry in a designated shaft spoil drying area, before being placed in a spoil emplacement berm or bund.

As the depth of the shaft increases, the depth of water in the shaft also increases until the completed excavated shaft is filled entirely with water. It is anticipated that the completed excavated shaft will then be progressively lined with steel liners or “collars” which are circular, hollow tubes approximately 5.3m in diameter and 3.2m in height. These steel collars are lined internally with concrete to provide a smooth, finished surface that reduces friction from the flow of air through the shaft during operation. It is expected that 178 of these collars will be required to be installed in order to fully line the shaft. However, alternative methods of lining the shaft will also be considered.

As the collars are lowered and installed into the completed excavated shaft, they will displace the same volume of water as the volume of each collar. The water eventually displaced from the finished shaft will be managed via the process ponds. The process pond water and water remaining in the shaft at the completion of construction may be drained into the underground workings to facilitate settlement of the fines entrained in the water, before being pumped to the surface for treatment at the Appin West Water Treatment Plant prior to reuse or discharge. A number of sedimentation ponds will be constructed to effectively manage the surface water from the disturbed areas during construction.

Shaft construction is anticipated to take 18 months to two years to complete and **Figure 3** shows an artist's impression of what the construction phase might look like.

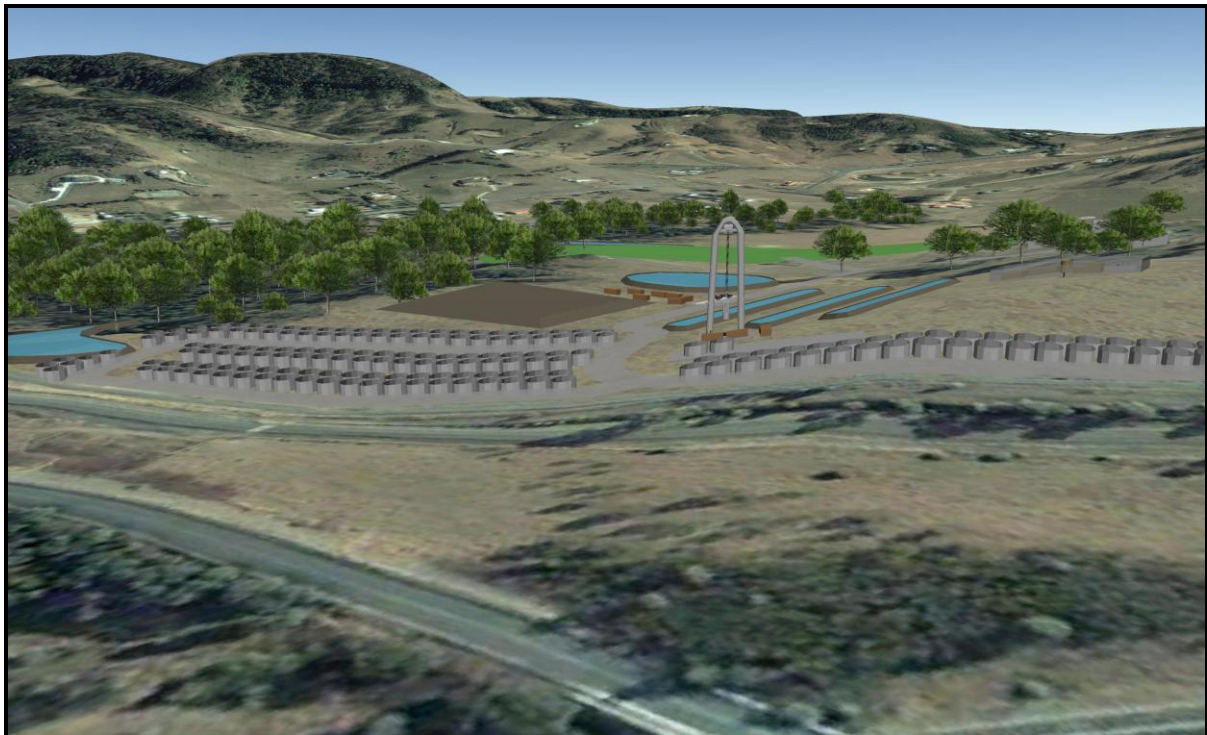


Figure 3 – Artist's Impression of Construction Phase View from the North East

Further detail on the shaft construction process will be provided in the EA.

2.2.2 VS#6 Operational Phase Infrastructure

Once construction of the shaft is complete, three extraction fans (two duty and one hot spare fan), associated ducting and horizontal discharge evases will be installed to form the extraction fan facilities. The extraction fan facilities will consist of three centrifugal fans, connected in parallel, with horizontal evases discharging approximately 500 to 600 m³/s of expired MVA in a north-easterly direction. The fan facilities will be electrically powered via the new substation constructed onsite.

Table 2.1 below details the location of proposed fans and predicted airflows for ventilation of BHPBICs proposed Bulli Seam operations:

Table 2.1 – Predicted Airflows of Upcast Ventilation Shafts under BHPBICs Bulli Seam Operations

Upcast Ventilation Shaft	Year and Predicted Ventilation Airflow (m ³ /s)					
	2010	2011	2012	2013	2014	2015*
West Cliff VS#1	350	350	350	350	350	350
Appin VS#2	220	240	240	240	240	240
Appin VS#3	350	350	520**	520	520	0
Appin VS#6	0	0	0	0	0	520
Total Predicted Ventilation Airflow (m ³ /s)	920	940	1,110	1,110	1,110	1,110

Note: *Predicted start of Longwall 901.

**Capacity increase approval included in Bulli Seam Operations Part 3A Application.

From the table above, it is evident that there is no planned increase in MVA emitted to the atmosphere via the operation of VS#6. This is due primarily to the fact that once VS#6 is operational, VS#3 will be converted to downcast shaft. The minor increases in MVA airflow for VS#2 and VS#3 have been included and assessed within the Bulli Seam Operations Part 3A Application.

After construction, it is anticipated that the process ponds would be decommissioned and the general construction area rehabilitated. The shaft spoil drying area would also not be required and the disturbed area rehabilitated upon final placement of the spoil in the spoil emplacement bund.

The new electrical substation would continue to provide power for the operation of the extraction fans and other surface infrastructure over the life of the project.

The spoil emplacement bund would also be rehabilitated and may also be replanted with pasture or native vegetation to provide a visual screening and/or noise barrier if required.

Figure 4 presents an artist's impression of what the operational phase of the proposed development might look like.

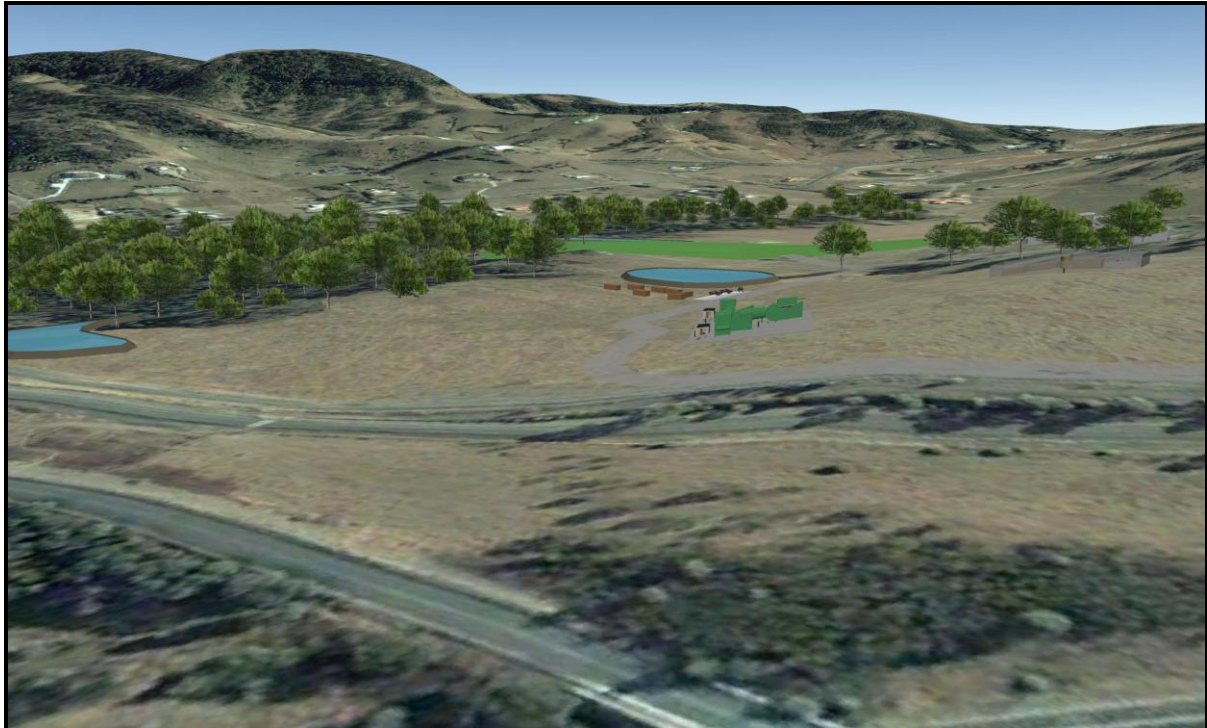


Figure 4 – Artist's Impression of Operational Phase View from the North East

Further detail on the operational infrastructure will be provided in the EA.

2.2.3 Service Supply Boreholes

Due to the planned increase in personnel movements underground with the parallel operation of Area 7 and Area 9, the need exists to reduce the amount of underground traffic supplying necessary services and supplies underground and increase the safety of the working environment for underground employees.

Currently, necessary services and supplies required by Appin Mine such as concrete, ballast, fuel, emulsion, compressed air and stone dust etc. are delivered underground by vehicle or pipeline from either Appin East, Appin West and potentially West Cliff Colliery. The long distances underground from these Pit Tops to Area 7 where these services are currently required and the number of vehicles required to transport these services has resulted in increased traffic congestion underground which will be compounded with the Area 9 development.

The expected increase in the abovementioned services and supplies required for development and mining of Appin Area 9 as well as Appin Area 7 would result in significant traffic flows to both of these domains.

BHPBIC propose to construct and operate a number of small service supply boreholes from the VS#6 Site, just to the north of the actual shaft location.

These service supply boreholes are anticipated to be approximately 200-300mm in diameter, fully lined and of a similar depth to the shaft and will intersect another area of the Area 7/Area 9 workings in order to allow delivery of such abovementioned supplies directly from the surface of the VS#6 Site to the underground workings of Area 9 and Area 7 where they are required. The boreholes and surface storage tanks would be housed in storage sheds and silos. Ballast may be stored in a small stockpile area.

Figure 5 presents a layout plan showing the operational and associated surface infrastructure proposed to be developed at the VS#6 Site.

Further detail on the service supply boreholes and associated housing sheds/silos will be provided in the EA.

2.2.4 Access

Currently, access to the VS#6 Site on the MBS property is via a gated, gravel access track from Dowle Street in Douglas Park. BHPBIC recognise that the characteristics of the existing access track into the VS#6 Site render it unsuitable for long term, regular heavy vehicle access required primarily throughout the construction phase without significant upgrades to the track and measures to ensure the protection for the community from unreasonable levels of noise and dust.

BHPBIC are investigating a range of alternative, practicable and sustainable access options into the site in order to reduce the construction associated traffic impacts on the Douglas Park community. These investigations into alternative access options and the preferred access option to be implemented as part of the VS#6 Project will be finalised, detailed and assessed in the EA.

2.3 Identification of a Preferred Option

BHPBIC have considered different options for improving the capacity and reliability of the ventilation system of Appin Mine during the conceptual planning phase of this project. These options consist of:

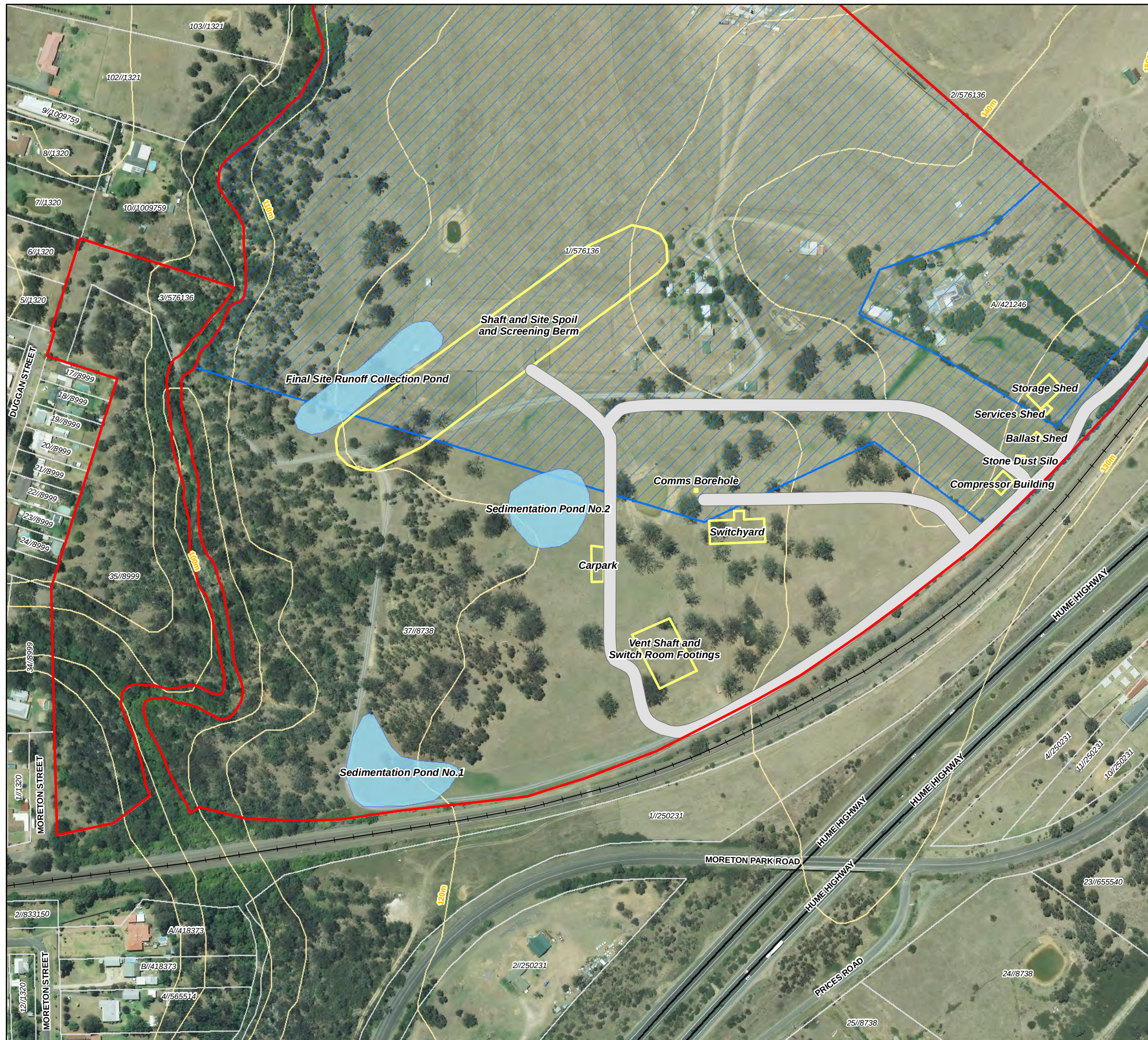
- Construction of a new downcast ventilation shaft over the Area 9 workings
- Small diameter upcast ventilation shafts at various intervals over the Area 9 workings
- Small diameter downcast ventilation shafts at various intervals over the Area 9 workings
- Forced exhaust ventilation system improvement by implementing multiple booster units on the existing Appin No.2 and No.3 extraction fans to increase their capacity
- A combination of the above including ongoing utilisation of existing shafts with underground installation of multiple booster fans.

These options were assessed during the conceptual planning phase for the project and each was deemed unsuitable as the preferred option for a number of reasons. The proposed developments described in **Section 2.2** of this report represent the preferred options for development.

2.4 Consequences of Not Proceeding

If the development proposed in this Part 3A application does not proceed, the existing ventilation system would not be rated to cope with the extra demand placed upon it due to the development and then mining of Area 9 simultaneously with Area 7.

This would effectively preclude a second domain being mined in parallel with Area 7, therefore resulting in a significant amount of lost production from the Bulli Seam operations. This would have following effects:



Site Layout Plan

VS#6 PROJECT

Legend

- Site Boundary (BHPBIC Owned Land)
- Railway Stations (LPMA)
- Railway (LPMA)
- 2m Contours (LPMA)
- Major Roads (LPMA)
- Cadastral (LPMA)
- Indicative Waterbodies (Operational)
- Indicative Operational Layout
- Internal Roads (Operational)
- Heritage Lots (Wollondilly Shire Council)

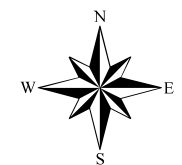
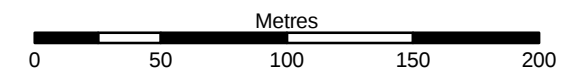


FIGURE 5

Scale 1:3,000 (at A3)



Map Produced by Cardno Wollongong
Date: 10 May 2010
Coordinate System: Zone 56 MGA/GDA 94
GIS MAP REF: 110060-01_1808_VentShaftSiteLayoutPlan.mxd 05
Aerial imagery supplied by BHPBIC (2009)

2.4.1 Financial

If mining Area 9 or any other additional domain within Bulli Seam operations does not progress, the NSW state government would suffer a loss in mining related taxes, charges and royalties and the communities which rely on these mines for significant amounts of household incomes would be significantly impacted.

2.4.2 Employment

A reduction in the rate or extent of mining for the Bulli Seam operations would reduce the number of BHPBIC mining and surface employees in the Illawarra from approximately 2015 onwards, because coal production and processing volumes would drop significantly due to the completion of mining at Area 5 at this time. It is envisaged that as mining operations at Area 5 are completed, mining in Area 9 will commence. If this does not occur as a result of not proceeding with the proposed development, this would result in a loss of employment to the region.

2.4.3 Continued Underground Traffic Congestion

If the service supply boreholes are not implemented as part of the proposed VS#6 development, BHPBIC will continue to supply materials to the Area 7 domain from either Appin East, Appin West or West Cliff Colliery Pit Tops. The logistical complexity and current inefficiencies of the underground materials transport system, associated with vehicles transporting materials from the abovementioned pit tops to the mining area and the reduced level of mine operational efficiency due to this and the distances associated with the underground road network, would continue.

2.4.4 Customer Requirements

BHPBIC would be unable to meet their customer requirements from 2015 onwards if they cannot access all the financially viable coal reserves within the mining lease areas or extract coal in an efficient manner that accords with their proposed Bulli Seam operations. This may result in customers sourcing coal from other Australian States or another country.

3 Regulatory Framework

This section outlines the current regulatory framework within which BHPBIC operate and the relevant policies that the EA proposes to address.

3.1 Planning Approach

Section 1.4 identifies that this proposal has the characteristics of a Major Project, consequently on receipt of this PEA and the accompanying application, the Minister will be requested to confirm the development is a 'Major Project' under SEPP (Major Development) 2005 and issue the DGR's. Following receipt of the DGR's, the EA will be prepared and subsequently lodged and the Minister will assume the responsibility of the consent authority.

3.2 Federal Guidance & Controls

The EA will assess relevant Federal legal controls:

- **Environment Protection & Biodiversity Conservation Act 1999** – the EA will show that the proposal will not have any significant impact on a location or species listed under this act
- **Greenhouse Gas Emissions** – the Federal Government provides requirements and guidance on GHG emissions through a variety of legislation and regulations. **Section 6** of this PEA provides further detail on this topic. The EA will address these policies and demonstrate that the proposed development complies with relevant legislation.

3.3 State & Strategic Planning Controls

The EA will assess relevant state planning controls and strategic planning guidance. This will include a review of the following policies:

- **Environmental Planning & Assessment Act 1979** – as discussed this proposal is applicable for determination under Part 3A of this Act. This PEA and the subsequent EA will be prepared in accordance with this legislation. BHPBIC has submitted a Part 3A application for the Bulli Seam Operations Project to seek approval for the next 30 years of mining in the Bulli Seam. This includes mining in Areas 7 and 9.
- **Environmental Planning & Assessment Regulation 2000** – the EA will demonstrate that this Part 3A application is in accordance with the requirements of this regulation.
- **Mining Act 1992** – underground coal mining is subject to approvals and titles granted under the Mining Act 1992. These titles provide the control mechanism for government by stipulating tenure, operating and environmental conditions. The EA will demonstrate how the proposed development is in accordance with activities permitted by the Mining Act 1992.
- **Protection of the Environment Operation Act 1997** – existing site Environment Protection Licenses may need to be varied to incorporate the works in this application. The EA will review this requirement.
- **Threatened Species Conservation Act 1995 & National Parks & Wildlife Act 1974** – the EA will include assessments of the development areas by a specialist environmental and cultural heritage consultant demonstrating the development has no significant impact on threatened species or cultural heritage.

- **State Environmental Planning Policy (Major Development) 2005** – this SEPP guides the type of developments to which Part 3A of the EP&A Act is applicable. The EA will include confirmation of this SEPPs applicability to the proposed project.
- **State Environmental Planning Policy (Mining, Petroleum, Production & Extractive Industries) 2007** – the EA will review this SEPP and assess the proposed development against the applicable policies.
- **Sydney Regional Environment Plan No. 20 Hawkesbury – Nepean River** – the EA will determine if the proposed works are within land in respect of which this Regional Environmental Plan (REP) applies. If so, the development will be assessed against relevant policies in this REP.
- **Illawarra Regional Environmental Plan No. 1** – the EA will review policies in this plan and assess the development against relevant controls and directions.
- **Illawarra Regional Strategy 2006 – 31** – the EA will review policies in this plan and assess the development against relevant controls and directions because BHPBIC activities have a significant impact in the Illawarra.

3.4 Local Planning Controls

All developments proposed in this Part 3A application are located within the Wollondilly Shire Council (WSC) Local Government Area (LGA). This section identifies the relevant Local Environmental Plan (LEP) and zoning. **Figure 6** identifies the land use zoning of the proposed VS#6 Site and surrounding area.

3.4.1 Wollondilly Local Environmental Plan 1991

The proposed VS#6 Site is subject to zoning and policies in the Wollondilly Local Environmental Plan (LEP) 1991 and is zoned 1 (a1) (Rural “A1” Zone).

The primary objectives of the Rural A1 Zone is to protect land for agricultural uses, prevent inappropriate, premature and sporadic subdivisions that may prevent planned urban growth and protect the scenic quality and rural character. Mining works are permissible with development consent within this zone. The EA will assess the proposed development against the relevant policies in the Wollondilly LEP 1991.

3.4.2 Wollondilly Draft Local Environmental Plan 2009

WSC is in the process of updating their LEP and their website advises:

“The Draft Wollondilly Local Environmental Plan 2009 (LEP) and Draft Wollondilly Development Control Plan 2009 (DCP) were placed on public exhibition from 2 November to 14 December 2009. Following a review of all submissions received during the public exhibition period, the Draft LEP and Draft DCP will be considered by Council for final adoption in early 2010. This website will be updated with information on when the Plans will be considered by Council”.

(Source: <http://www.wollondilly.nsw.gov.au/planning/68611.html>).

The public exhibition version of the Wollondilly Draft LEP 2009 proposes to zone the VS#6 Site “RU2” Rural Landscape. The primary objectives of the RU2 Zone are to encourage sustainable primary industry, maintain the rural character through established holdings and appropriate undeveloped land

areas and protect the landscape and water quality whilst permitting a range of compatible uses. Mining is permitted with consent in the RU2 Zone in the Draft LEP 2009.

The Wollondilly Draft LEP 2009 also contains other controls that govern developments at the proposed ventilation site, those affecting the proposed development are:

- Height of Buildings – buildings should not be over 9m in height
- Heritage – Lot 1 DP 576136 and Lot A DP 421246 (northern part of the proposed ventilation shaft site) are listed as general heritage item 174 the Mountbatten Group (consisting of the house, chapel and garden building).

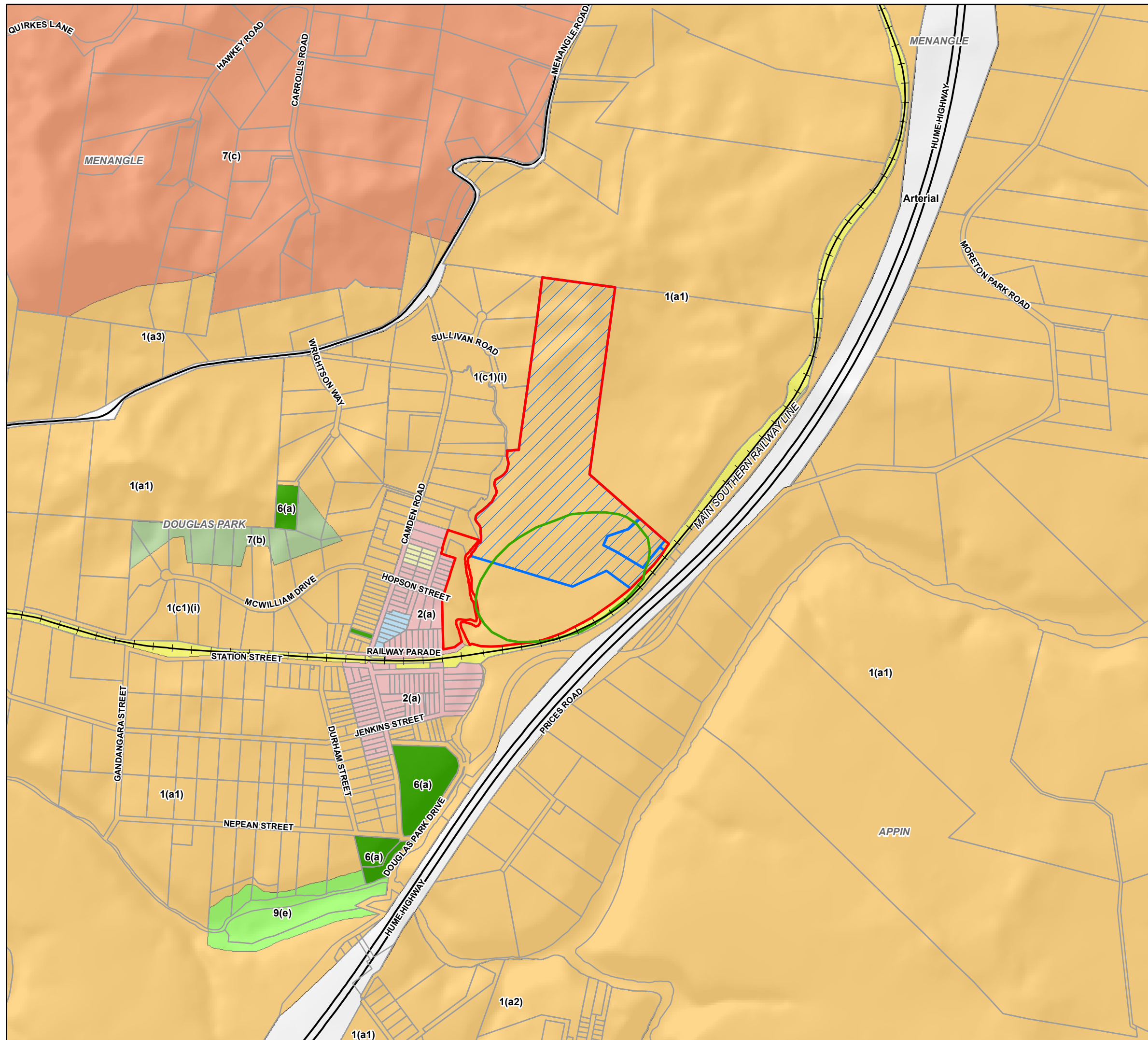
The EA will assess the proposed development in accordance with these matters to ensure there is no significant departure from the appropriate requirements or impacts.

3.4.3 Wollondilly Development Control Plans

WSC has one adopted and one draft Development Control Plan (DCP) that are applicable to the area in which the proposed works are to take place. These are:

- DCP 36 – Development in Rural Areas (adopted)
- Draft Wollondilly DCP 2009.

The EA will review these documents and assess the proposed development against the relevant policies.



Zoning Plan

VS#6 PROJECT

Legend

- ▬ Site Boundary (BHPBIC Owned Land)
- ▬ Approximate Works Area
- ▬ Major Roads (LPMA)
- ▬ Cadastre (LPMA)
- Wollondilly LEP (1991)**
- 1(a1) - Rural "A1"
- 1(a2) - Rural "A2"
- 1(a3) - Rural "A3"
- 1(b) - Agricultural Landscape
- 1(c1)(i) - Rural "C1(i)" Small Holdings
- 2(a) - Residential "A"
- 3(a) - Business
- 5(a) - Special Uses "A"
- 5(b) - Special Uses "B" (Railway)
- 6(a) - Open Space "A" (Recreation)
- 7(b) - Environmental Protection "B" (Soil Conservation)
- 7(c) - Environmental Protection "C" (Rural Living)
- 9(e) - Regional Open Space Reservation
- ▬ Arterial Road
- ▬ Heritage Lots (Wollondilly Shire Council)

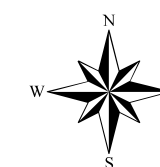
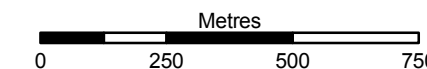


FIGURE 6

Scale 1:15,000 (at A3)



Map Produced by Cardno Wollongong
Date: 10 May 2010
Coordinate System: Zone 56 MGA/GDA 94
GIS MAP REF: 110060_01_1805_ZoningPlan_1991.mxd 06

4 Consultation

This section describes BHPBIC's current consultation and that which is proposed.

4.1 Agencies

BHPBIC has consulted with DoP during the early stage of the Part 3A application. DoP will, in turn, advise of relevant stakeholders in the DGR's. BHPBIC propose to contact these agency stakeholders and report all comments to DoP to expedite the determination of this application.

BHPBIC will continue to liaise with Government as required throughout the project, to discuss and confirm requirements, source information and to discuss outcomes of environmental assessments. Consultation with the following stakeholders is anticipated to occur during the preparation of the EA and over the life of the VS#6 Project:

- Government Ministers
- Department of Planning (DoP)
- Department of Environment, Climate Change & Water (DECCW)
- Wollondilly Shire Council (WSC)
- Department of Industry & Investment NSW
- NSW Roads & Traffic Authority (RTA)
- Australian Rail Track Corporation (ARTC).

4.2 Community

BHPBIC has extensively consulted with the community of Douglas Park regarding the current Area 7 operations and the proposed VS#6 Project and will continue to do so over the life of the project. A letter box drop with information pamphlets regarding the proposed development and door knock was carried out by BHPBIC representatives during the week beginning Monday 12 April 2010.

Following the letter box drop and door knock process, a series of community "drop-in" information sessions regarding the proposed development were held at the Douglas Park Community Hall between 10.00am and 2.00pm on Saturday 17 and 24 April 2010 and between 5.00pm to 7.00pm on Tuesday 20 April 2010. Representatives from BHPBIC and Cardno were in attendance at all three sessions to discuss the project with and answer any queries the community may have.

At each of the three drop-in information sessions, members of the Douglas Park community were invited to join a community advisory panel to assist BHPBIC with the VS#6 Project. Approximately 10 members of the community were interested in joining this panel.

On the evening of Tuesday 27 April 2010, the first Douglas Park Advisory Panel meeting was held at the Douglas Park Community Hall. The meeting was independently facilitated and representatives of BHPBIC, Cardno and the Douglas Park community attended. An overview of the VS#6 Project was provided and discussions regarding the queries and concerns of the community were held.

The Douglas Park Advisory Panel will continue to hold regular meetings at the Douglas Park Community Hall over the life of the VS#6 Project and throughout the Part 3A application process.

The EA will further describe all contact with the community and identify concerns raised throughout the Part 3A application process.

5 Preliminary Risk Assessment

This section identifies preliminary risks associated with the proposed developments.

5.1 Introduction

The basis for identification of potential environmental risks and/or impacts is an appreciation of the site location and an understanding of the process proposed and technology utilised to implement the VS#6 Project. This understanding is achieved through visiting the site and discussion with project operational experts from BHPBIC. This preliminary environmental risk assessment provides direction and context for the identification of potential environmental impacts from the proposed development and the anticipated required potential impact assessments to be undertaken in the future EA.

This preliminary risk assessment is based on an index formed from the perceived likelihood of an occurrence, and the subsequent consequence of that occurrence using the process outlined in the Australian Standard AS/NZS 4360:2004 *Risk Management*.

Both likelihood and consequence are measured on a scale of 1 to 5 (with 1 corresponding to improbable/negligible and 5 corresponding to frequent/catastrophic). A subsequent index was developed and all identified risks classified as belonging to either 'Low', 'Moderate' or 'High' risk categories (refer **Table 5.1**). This is a conservative index, emphasising the number of Moderate and High risks identified.

Table 5.1 - Environmental Risk Assessment Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Improbable	Low	Low	Low	Moderate	Moderate
Remote	Low	Low	Low	Moderate	High
Occasional	Low	Moderate	Moderate	High	High
Probable	Moderate	Moderate	Moderate	High	High
Frequent	Moderate	High	High	High	High

5.2 Risk Categories

Table 5.2 considers and assesses the following potential environmental risks:

- Flora and fauna
- Visual
- Traffic
- Noise and vibration
- GHG emissions
- Water resources
- Cultural heritage and Aboriginal archaeology
- Air quality

- Sediment and erosion control
- Surface water management
- Utilities
- Waste management.

Each of these factors is then allocated a risk category, and this is used to determine the Key Environmental Impacts (refer **Section 6**) and the Secondary Environmental Impacts (refer **Section 7**) associated with the proposal.

Table 5.2 - Preliminary Environmental Risk Assessment

Environmental Impact	Process/Activity	Potential Impacts from Proposed Development	Risk
Flora and fauna	Removal of trees to allow construction. Excavation works during construction. Operation of developments.	Trees on the site require removal to make space for the proposed developments. Damage or destruction from excavation during construction of proposed developments. The new developments may prevent flora or fauna from actively using the site for habitat or foraging. Refer Section 6 for further information.	LOW The previous land use of the VS#6 Site was for agricultural purposes, therefore creating highly disturbed landscape. However, prior to clearing for agricultural purposes, the vegetation type would have been Cumberland Plains Woodland.
Visual	Construction activities including height of drill rig headframe. Lighting requirements for night time construction. Operation of developments.	Equipment, such as cranes and the drill rig headframe, used to construct the developments may be visible from some public vantage points. Additionally, once completed the highest parts of the development may also be visible from some public locations. Both matters may reduce the scenic quality of the area surrounding the VS#6 Site. Refer Section 6 for further information.	MODERATE The construction equipment will be highly visible for some public/private locations for the duration of the construction activities.
Traffic	Construction traffic. Operational and maintenance traffic.	Construction vehicles travelling to the site may create short duration noise impacts, generate small amounts of dust and cause short delays on local roads. Construction traffic will be carefully managed in accordance with a traffic management plan. Refer Section 6 for further information.	LOW/MODERATE Construction is for a limited timeframe. Low density operational and maintenance traffic will be required. An alternative all weather access option to the site is under investigation.
Noise and vibration	Machinery associated with construction activities. Operation of the extraction fans.	Noise and vibrations associated with construction and operation of the proposed development may impact receivers near the VS#6 Site. Refer Section 6 for further information.	MODERATE/HIGH The VS#6 Site is located nearby to the township of Douglas Park.
GHG emissions	GHG emissions associated with the VS#6 are expected to be minimal; however the GHG emissions associated with Areas 7 and 9 will	GHG emissions from the construction of the VS#6.	LOW/MODERATE Only fairly minor GHG emissions from the

	be emitted to the atmosphere at the new VS#6 Site. Overall, the VS#6 Project would not be contributing to a significant increase in GHG emissions when considered in the context of the Bulli Seam Operations.	GHG emissions produced from Areas 7 and 9 would be emitted to the atmosphere at the VS#6 Site. Refer Section 6 for further information.	construction of the proposed development are expected, however; the GHG emissions associated with Area 7 and 9 will be emitted to the atmosphere at the VS#6 Site. GHG emissions from MVA across the Bulli Seam Operations will be approximately the same as existing and will not exceed those applied for under the Bulli Seam Operations Part 3A Application – given reductions in upcast extraction of other sites once VS#6 is commissioned.
Water resources	Water will be required for the shaft drilling process and other activities during the construction process such as dust control.	The water used for the shaft drilling process is proposed to be sourced from the nearby Nepean River and/or existing dams, which therefore may result in loss of some of the environmental flows conveyed by the River and storage provided by these dams. Refer Section 6 for further information.	MODERATE Water will be required during the construction process.
Cultural heritage and Aboriginal archaeology	Excavation works during construction. On-going use of the Mountbatten Stud heritage listed buildings.	Damage or destruction of heritage items or areas. Refer Section 6 for further information.	LOW Due to the cleared and disturbed nature of all work areas and previous extensive assessment work undertaken at or adjacent to the VS#6 Site.
Air quality	Dust emitted from construction activities. Odour from VS#6 operation.	The dust could reduce the quality of air being breathed by employees or local residents resulting in sneezing or short term respiratory problems. The dust could settle on local buildings. Odour from VS#6 operation may impact nearby receivers. Refer Section 6 for further information.	LOW/MODERATE Potential dust impacts from the construction activities will be temporary in nature and mitigation and management measures will reduce impacts. Dust emission from the VS#6 may occur but are expected to decrease as mining extends away from the shaft area. MVA can sometimes be smelt in close proximity to the MVA discharge.

Surface water management	Construction of proposed developments.	The shaft drilling process will result in sediment and extremely fine particles of soil known as colloids that may remain in suspension if not managed appropriately. Potential for turbid and high suspended solids concentration in water used for the construction process. Refer Section 6 for further information.	LOW/MODERATE The process and sedimentation ponds (and treatment option if required) will manage the surface water impacts. Approximately 30 to 50ML of water will be required for construction and dust suppression during construction.
Sediment and erosion control	Construction activities.	Disturbed and hardstand areas during the construction process may result in increased surface water and sediment laden runoff, contributing to erosion. Refer Section 6 for further information.	LOW Best practice soil and water management controls will be implemented to minimise any potential impacts during high intensity rainfall events.
Bushfire	Occurrence of a bushfire. "Hot works" during construction activities.	The proposed development is on land mapped as bushfire prone by WSC and thus could be affected by a bushfire started elsewhere. This occurrence could impact the environment and damage property. Refer Section 7 for further information.	LOW The threat of ignition caused by the project is minimal but the impact may be high. Appropriate management and mitigation measures will minimise this risk.
Utilities	Adequate electricity, telecommunication, water and sewer provision is necessary during construction and operation.	If not managed in the design of the facility the development may not have suitable provision of utility services resulting in over uses of existing utility infrastructure. Refer Section 7 for further information.	LOW BHPBIC have identified service requirements and suitable measures are proposed.
Waste management	Generation of waste from construction and operation activities.	Waste not being contained and disposed of in an appropriate fashion, resulting in the presence of waste on private landholdings within the project area. Refer Section 7 for further information.	LOW There will be minimal waste and appropriate measures will ensure sustainable disposal.

6 Key Environmental Impacts

This section identifies key environmental impacts that the EA will assess.

6.1 Flora and Fauna

The developments proposed in this PEA are predominately located in disturbed areas, used for agricultural purposes. However, as the proposed development requires some tree removal, excavation and construction, there is a possibility of minor impacts to flora and fauna. The native vegetation community on the VS#6 Site is Cumberland Plains Woodland.

BHPBIC will engage a specialist flora and fauna consultant to identify areas of significant flora and/or fauna habitat or species within the general work areas prior to the submission of the EA. BHPBIC will endeavour to retain all activities within areas of previous land disturbance where feasible.

The EA will report the method of assessment used to identify environmentally sensitive areas and the results of this assessment. If it is necessary to disturb any area of significant vegetation or habitat the EA will discuss the reasons and suggest suitable environmental mitigation measures.

The EA will focus on impact assessments from the proposed developments and will include copies of any sub-consultant reports in relation to impacts on flora and fauna.

6.2 Visual

The general works area for the proposed VS#6 Site is within an area of generally cleared agricultural landscape located to the east of the Douglas Park township and north-west of the Main Southern Rail Line and Hume Highway. The area is generally open and sparsely populated resulting in few, if any, locations of visual interest. The area does not include any landscape features of note and is not a tourist attraction or scenic route, resulting in no specific visual corridors that require protection.

The topography, distance from the township and existing trees all serve to mitigate some visual impacts from the proposal. However, the EA will thoroughly assess the potential for visual impact from the proposed development and discuss relevant visual impact mitigation and management measures if necessary.

6.3 Traffic Management

The project described in this PEA will require transportation of construction materials and employees along local roads adjacent to the township of Douglas Park and surrounding areas during the construction phase and then the small operational workforce during operation of the VS#6 Site.

Construction vehicle impacts will predominately relate to the delivery of infrastructure (such as the drill rig, shaft collars, mobile equipment for spoil management etc), shaft construction materials, road construction equipment and materials, and employees. This is because there are no off site truck movements associated with the movement of spoil from the shaft drilling process as this material is proposed to be retained onsite in the form of an earthen screening bund and for possible reuse as shaft filling material when the site is eventually rehabilitated and the shaft is no longer required for use.

Operational associated traffic movements are expected to be minor.

The site has existing access from Dowle Street in Douglas Park, which due to its location and characteristics render it an unsuitable access way for large, heavy vehicles that will be required

throughout the construction phase without significant upgrades to the track and measures to ensure the protection for the community from unreasonable levels of noise and dust.

As previously mentioned, BHPBIC are investigating a range of alternative, sustainable access options into the site in order to reduce the construction associated traffic impacts on the Douglas Park community. These investigations into alternative access options and the preferred access option to be implemented as part of the VS#6 Project will be finalised, detailed and assessed in the EA.

BHPBIC will engage a suitably qualified and experience consultant to prepare a traffic management plan based on the implementation of the preferred access way to the VS#6 Site. This will be included in the EA in accordance with an assessment of potential traffic impacts and any necessary mitigation and management measures.

6.4 Noise and Vibration

The proposed development has the potential to generate noise and/or vibration from the following aspects:

- Construction activities
- Operation of extraction fans.

These sources may have the potential to cause 'offensive noise' as defined by the Protection of the Environment Operations Act 1997, if they are located in close proximity to sensitive receivers.

The EA will identify likely noise levels from the proposed equipment using data from similar equipment owned and operated by BHPBIC. An assessment of noise or vibration sensitive receivers in proximity to the BHPBIC sites will ascertain if there is a possibility of 'offensive noise' or significant vibration. BHPBIC will engage a specialist noise and vibration consultant to determine existing noise and/or vibration levels, assess impacts and recommend any mitigation and management measures if necessary

If the specialist noise assessment determines that noise and/or vibration levels at a sensitive receiver/s will be 'offensive' or significant, BHPBIC will incorporate appropriate mitigation and management measures in the design of the development or within the Statement of Commitments.

6.5 Greenhouse Gas Emissions

The GHG emissions associated with the construction of the proposed development are expected to be fairly minor. The GHG emissions associated with Areas 7 and 9 would be emitted to the atmosphere via the MVA released from VS#6. Other upcast ventilation shafts in the Bulli Seam Operations will be modified to extract less MVA (refer **Table 2.1**). As such, the net GHG emitted from the combined Bulli Seam Operations will remain approximately the same.

The EA will include GHG emission calculations for the proposed development. Preparation of these will use methodology and emissions factors outlined in the *National Greenhouse Accounts (NGA) Factors* (2008) and best industry practice.

All methodologies are underpinned by frameworks outlined in documents produced by the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC) with due regard to the Kyoto Protocol.

Consistent with the protocols of IPCC and UNFCCC, the GHG assessment for the proposed development will include three emission types. These are Scope 1, Scope 2, and Scope 3 emissions. A description of each is below:

- **Scope 1** – include direct emissions from sources within the boundary of an organisation such as fuel combustion and manufacturing processes.
- **Scope 2** – include indirect emissions from the consumption of purchased electricity, steam or heat produced by another organisation. Scope 2 emissions result from the combustion of fuel to generate electricity, steam, or heat and do not include emissions associated with the production of fuel. Scopes 1 and 2 are careful to ensure that two or more organisations do not report the same emissions in the same scope.
- **Scope 3** – include all other indirect emissions that are a consequence of an organisation's activities but are not from sources owned or controlled by the organisation. Examples of Scope 3 emissions include indirect emissions associated with the extraction/production of fuels used onsite, fuel extraction and line loss associated with the consumed electricity, transport of product outside the organisation, and emissions associated with end use of that product.

The EA will categorise activities associated with the proposed development within the three scopes to allow correct calculations of GHG emissions associated with this project. The EA will provide calculation methodologies in addition to results.

6.6 Water Resources

The proposed development will require the use of water during the construction phase. Such uses during the construction phase include:

- Water for the shaft drilling process
- Dust control.

MBS currently has water from the adjacent Nepean River pumped to it from a pump that is located adjacent to the banks of land on which the Douglas North Substation is located. The pump is supplied power from this substation. This water is used for stock and domestic purposes. It is proposed to upgrade this pump and pipeline to allow sufficient water to the VS#6 Site for construction and operational purposes. Approximately 30 to 50ML of water will be required for construction and dust suppression activities. Further detail on this will be provided and assessed in the EA.

Operation of the extraction fans will only require minimal volumes of water, mainly associated with operational staff amenities.

An appropriate source and supply of water for the construction and operation of the VS#6 Project will be detailed and assessed in the EA.

6.7 Cultural Heritage and Aboriginal Archaeology

BHPBIC has a thorough understanding of Aboriginal and European heritage in the proposed works area. This is through long-term relationships with local Aboriginal groups and previous work in the area and on the VS#6 Site with local specialist Aboriginal cultural and European heritage consultants. Such studies have formed part of applications such as the: Bulli Seam Operations Project, Appin Area 7 Goaf Drainage Project and the Subsidence Management Plan application for

Appin Mine Longwall 701 to 704, which have all been undertaken on the land subject to this application.

It is unlikely that any Aboriginal cultural heritage impacts will arise from this proposal given the disturbed nature of the site. Two lots that form part of the ventilation site are heritage listed in the Wollondilly LEP 1991 as forming the Mountbatten Group. This does not have State or Federal heritage listing.

The EA will review any previous heritage studies of the work area and state and federal heritage registers to identify known heritage areas or items. Consultation with local Aboriginal groups will also provide information on areas of heritage significance. Using this information BHPBIC will aim to avoid all known heritage sites.

As heritage registers and previous studies cannot confirm the absence of Aboriginal heritage areas or items, BHPBIC will take guidance from an archaeologist regarding the requirement for site-specific assessments and local Aboriginal group's involvement in the assessment. If site-specific heritage assessments are necessary these will form part of the EA and all findings and recommendations fully reported.

Upon the identification of any Aboriginal archaeological sites or artefacts in a development area, BHPBIC will attempt to avoid these sites. If this is not possible, the EA will review other options and take into account guidance from the archaeologist and local Aboriginal groups to seek a solution that satisfies all relevant parties.

BHPBIC will engage a specialist cultural heritage and Aboriginal archaeology consultant to assess the potential impacts of the proposed development. The EA will provide full details on heritage/archaeology assessments, the potential for impact on the Mountbatten Group and any mitigation and management measures if necessary.

6.8 Air Quality

Construction and operation of the proposed development may have the following air quality impacts:

- Coal and stone dust emitted to the atmosphere via the MVA
- Odour from operation of the ventilation shaft
- Dust and fumes from the construction activities.

BHPBIC will engage a specialist air quality consultant to assess the potential impacts of the proposed on air quality and all reporting will be included in the EA. Any mitigation and management measures will be fully discussed in the EA with an assessment of the reduction in air quality impacts that implementation may provide.

6.9 Sediment and Erosion Control

The construction works for this project have the potential to affect surface water flows and cause erosion and sediment runoff. The EA will assess the likely erosion impacts from the works and describe proposed control measures. If necessary, relevant mitigation measures will be included in the Construction Management Plan.

The areas that will accommodate the proposed developments may alter the level of surface water runoff due to the new impervious surfaces. The EA will assess alterations to surface water runoff and propose any sediment and erosion control measures where necessary.

6.10 Surface Water Management

As described in this PEA, the site is located within the Harris Creek catchment, which discharges into the wider Nepean River downstream of the site. There are several potential sources for surface water contamination discharging from the site during both the construction and operational phases of the project. These consist of:

- Increased sediment generated from access tracks and disturbed areas cleared of grasses and weeds for the construction of the ventilation shaft, switchyard and other surface infrastructure
- Process water generated from the ventilation shaft drilling operation, or the possible leakage of drilling and machinery fluids from the equipment associated with the ventilation shaft drilling operation.

To overcome these potential impacts, BHPBIC will engage a specialist soil and water management consultant to identify appropriate mitigation measures prior to the submission of the EA. The specialist consultant will investigate a range of surface water management measures applicable to both phases of the project. Such measures will take into account the local soil types, the near-surface and subsurface lithology, topography and geomorphology of the nearby Harris Creek and Nepean River (as the receiving waters). Mechanical and chemical testing of the local soil types will be undertaken to ensure that the surface water management measures are designed commensurate with the site specific data.

The EA will provide a full assessment of the potential surface water impacts and any mitigation and management measures required to minimise or mitigate these potential impacts.

7 Secondary Environmental Impacts

This section identifies secondary environmental impacts that the EA will assess.

7.1 Bushfire

As the proposed works for the ventilation shaft and infrastructure at the site require a cleared area the bushfire threat will be reduced as an asset protection zone will be created between the remaining vegetation to the west and the proposed developments. This will result in a significant reduction in any bushfire threat. However, as the facility is on land mapped as bushfire prone and it could be affected by a bushfire started elsewhere. There is the possibility of both impact to the environment and property damage.

The EA will review bushfire mapping for all the development sites and assess how this impacts the proposed development. Where necessary, BHPBIC will engage a specialist sub-consultant to undertake a bushfire assessment of the proposed development.

The EA will include this assessment and include appropriate mitigation and management measures if required in the design or layout of the proposed development. If appropriate, relevant bushfire mitigation and management measures will be included in the Statement of Commitments.

7.2 Utilities

The construction and operation of the site requires typical public utility infrastructure including potable water, sewer, electricity and telecommunications. The existing property is serviced by this infrastructure and this will be suitable for personnel amenity during operation and construction of the development.

The EA will identify the current utility infrastructure servicing the VS#6 Site and advise if any upgrade/remedial works are necessary.

7.3 Waste Management

This project will generate minimal waste, as the processes are mostly self-contained. Waste streams will fall into two categories, construction and operational. Typical construction and operational waste streams include:

- Sewage from construction and operational personnel. Temporary office buildings and toilet facilities will be located onsite for construction staff.
- General waste (e.g. food and drink containers) from the workforce carrying out the construction works and delivery of equipment (packaging).
- General construction related waste such as concrete, steel, timber, electrical cabling etc.

BHPBIC will implement waste management process from the outset of the development. This will include separate waste receptacles for differing waste streams to ensure reuse or recycling where possible. Spoil waste from the ventilation shaft and borehole drilling will be used to create an earthen bund to reduce visual and noise impacts on the Douglas Park community and possibly be reused as shaft filling material. BHPBIC will organise suitable waste collection services based on the type and amount of waste generated.

The EA will identify waste streams from the project and advise management procedures.

8 Construction Management

This section reviews matters relating to construction of the proposed infrastructure.

The project requires a significant amount of construction. Construction of the proposed development will take approximately two years to complete.

BHPBIC will ensure all such works progress in a safe method whilst also using measures to reduce environmental impacts. Works will progress in accordance with the BHPBIC Environmental Management System (EMS), which has accreditation to the ISO 14001 standard.

8.1 Environmental Management Plan

BHPBIC, or any contractor appointed to undertake the construction works, will prepare Health and Safety and Environmental documentation that includes details of the environmental controls for the worksite. Compliance with the following requirements will be a minimum:

- All staff will be briefed on environmental controls prior to the commencement of work. All personnel will be required to attend a site induction that will cover the OHS and Environmental issues on site.
- Mitigation measures for control of erosion and water pollution in accordance with the soil and construction handbook (Soils and Construction, Volume 1, 4th edition March 2004, LANDCOM).
- Plant and equipment will be inspected on arrival to site and prior to use to ensure it is complies with its safety specifications.
- Daily inspection of plant will be undertaken to ensure it remains safe for use.

8.2 Construction Safety

All work carried out for BHPBIC construction activities must be covered by relevant safety legislation and procedures. The Contractor will be required to complete a risk assessment in relation to activities involved in the construction of the project. Once approved by BHPBIC, the risk assessment will form part of the controls that determine all safety management aspects of the development.

Workplace safety is of the highest importance to BHPBIC and relevant measures are in place to increase safety. These include:

- Site induction including safety awareness and hazard specific training
- Mandatory wearing of the following Personal Protective Equipment (PPE):
 - Steel toe-capped footwear
 - Hard hat
 - High visibility vest or coat
 - Hand protection
 - Eye protection
 - Hearing protection (wherever applicable).

In addition to compliance with site safety regulations, protective equipment and attendance at site induction the Contractor will be responsible for the safety of their employees and sub-contractor employees.

8.3 Equipment Inspection

All motorised plant in use during construction may be subject to inspection by the Mine Electrical and Mechanical Engineers. The construction work will meet NSW Workcover safety guidelines until such time that mine lease areas are declared. From that time onwards the mine regulations will be enforced. As such, all Coal Mine Safety equipment will conform with relevant regulations and requirements. Equipment that does not meet relevant standards will be removed from site.

8.4 Pollution Control Measures

Appropriate best practice measures will be put in place to ensure control of stormwater and silt runoff during construction. Such measures will include soil and water management plans, silt fencing and clean water diversion drains.

The Construction Management Plan will detail all such protection measures and compliance with these during construction will be mandatory.

9 Conclusion

This section concludes this Preliminary Environmental Assessment.

This PEA informs the DoP of developments proposed in an application under Part 3A of the EP&A Act 1979 that seek to support the underground mining activities in the Area 9 mining domain, as part of Illawarra Coal's Bulli Seam Operations. The proposed development is primarily to improve the capacity and reliability of the ventilation system that will service this domain, through the implementation of a new upcast ventilation shaft and associated infrastructure.

The proposed development also seeks approval to improve the logistics of the supply of necessary services underground, such as concrete, fuel, ballast, emulsion, compressed air etc which is currently undertaken by vehicle transport underground. The large distances between access points into the mine to where the services are required and the increasing number of vehicles required for transportation of such services presents a safety risk to the employees underground and logistical constraints to the efficiency of the overall operation.

The location for the proposed development described in this PEA is on BHPBIC owned land, east of the township of Douglas Park in NSW. The developments proposed in this PEA application are:

- Ventilation shaft
- Three extraction fans and one standby low flow backup fan
- Surface to underground service supply boreholes
- Air compressor station
- Emulsion mixing and supply plant
- Staff amenities and housing/storage sheds
- Diesel storage tank and associated pipelines
- Construction and operation of a new electrical substation at the VS#6 Site
- Power connection from the existing DNS to the new substation at VS#6 site under the Hume Highway and Southern Rail Line
- Temporary and permanent site access, internal roadways, associated hardstand and car parking areas
- Water management ponds
- Shaft material/spoil emplacement area in the form of a screening earthen bund and associated revegetation and landscaping activities.

This PEA determines that the approval of this application allows BHPBIC to adequately and safely ventilate the planned continued operation of mining in the Bulli Seam and increase safety and efficiency underground by minimizing underground traffic. If the proposed development described in this PEA does not proceed, this would preclude mining of the most efficient option for a replacement mining domain for the current West Cliff operation, subsequently threatening job security, Government taxes and affecting the local, state and national economy.

Expectations are that mitigation and management measures will appropriately reduce the more significant impacts such that the resulting environmental impacts of the proposed development will be minimal.

The EA will identify potential impacts from the proposed development and undertake further study in the following key areas:

- Flora and fauna
- Visual
- Traffic
- Noise and vibration
- GHG emissions
- Water resources
- Cultural heritage and Aboriginal archaeology
- Air quality
- Sediment and erosion control
- Surface water management
- Utilities
- Waste management.

In order to facilitate and continue sustainable and safe mining practices BHPBIC is seeking approval of the works described in this PEA.

The development proposed in this application is shown to meet the definition of a Major Project in Part 5(1)(a) of Schedule 1 of the SEPP (Major Development) 2005. Following review of this PEA the Director-General of the Department of Planning is respectfully requested to issue his requirements for the assessment of this project.

10 References

This section cites the resource material that assists in the production of this PEA.

Australian Government, 2008, Carbon Pollution Reduction Scheme – White Paper.

BHP Billiton Illawarra Coal, 2009, Bulli Seam Operations Environmental Assessment Report.

Department of Planning, 2005, State Environmental Planning Policy (Major Development) 2005.

Wollondilly Shire Council, 1991, Wollondilly Local Environmental Plan 1991.

Wollondilly Shire Council, 2009, Wollondilly Draft Local Environmental Plan 2009.