# Appendix 9.8

## Bushfire Risk Assessment

*Prepared by Australian Bushfire Protection Planners*

Centennial Coal

# Bushfire Risk Assessment

## Ventilation Facility Project, Angus Place Colliery

## April 2012

Centennial Coal
Environment Matters

# BUSHFIRE RISK ASSESSMENT

# FOR THE PROPOSED

# VENTILATION FACILITY PROJECT ANGUS PLACE COLLIERY

# FOR

# CENTENNIAL ANGUS PLACE PTY LTD


***Australian Bushfire Protection Planners Pty Limited***

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# BUSHFIRE RISK ASSESSMENT

# FOR THE PROPOSED

# VENTILATION FACILITY PROJECT
# ANGUS PLACE COLLIERY

# FOR

# CENTENNIAL ANGUS PLACE PTY LTD

| Report Number | Document | Preparation Date | Issue Date | Directors Approval |
|---|---|---|---|---|
| B111562 | Final | 3.10.2011 | 5.4.2012 | *G.L.Swain* |




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# EXECUTIVE SUMMARY

In 2006 Angus Place applied under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), for continued mining operations. Project Approval 06_0021 was granted by the NSW Department of Planning (DoP) in September 2006.

The supporting document lodged to DoP regarding PA 06_0021 was the *Angus Place Colliery Proposed Mining and Coal Transport Environmental Assessment* (EA).

The principal components of the development are an underground longwall mine and development panels, supporting surface infrastructure (Angus Place pit top), a coal stockpile area (Kerosene Vale) and dedicated haul roads to Delta Electricity's Wallerawang and Mount Piper power stations. The Mount Piper Haul Road is privately owned by Coal>Link Pty. Ltd., however, is operated by Angus Place under a commercial agreement between the two parties.

In April 2010 an application was lodged with the NSW Department of Planning to modify the existing Project Approval 06_0021. The approval pathway sought was Section 75W of Part 3A Major Projects. Accordingly, an environmental assessment was lodged for assessment.

It is proposed to develop underground roadways and ventilation shafts from the existing Angus Place Colliery workings to access and mine the potential coal resource to the east of the Wolgan River. The modification proposes to continue development activities beyond the longwall 910 installation face to the area below the proposed ventilation facility. Development activities entail the extraction of coal and installation of strata support to produce underground roadways which would facilitate access to future extraction areas should they prove viable.

Continuous miner units are utilised to extract the coal and install roof and rib support bolts. Such development activities are commonly termed 'first workings'. To ensure sustained productivity, mine scheduling has determined that development units will be required to mine roadways to the east of the area below the proposed ventilation shaft site as part of the proposed modification.

Mine planning regarding the Ventilation Facility Project has identified that additional ventilation capacity is required to ensure compliance with Clause 13(h) of the Coal Mine Health and Safety Regulation (2006). To assist with the supply and transport of materials underground and to improve underground safety, it is additionally proposed to situate several service/supply boreholes at the proposed ventilation facility.

The boreholes will supply such necessary services as concrete, ballast, stone dust, emulsion, electricity, communications and compressed air. Ancillary infrastructure such as power lines and substations will be required to support the ventilation facility.




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The project design phase has determined that in order to maintain adequate ventilation throughout the initial development of the north east area, the proposed ventilation shaft will need to be operational by the time underground development activities mine up to the proposed ventilation shaft site.

As part of the Modification's feasibility assessment, internal ventilation modelling identified several options through which to adequately ventilate the mine extension area.

It was determined that the most appropriate, cost effective solution was the construction and operation of an additional surface ventilation facility, known as Angus Place Colliery Ventilation Site 2 (APC-VS2). Underground roadways will also be developed to link the existing mine workings to the proposed ventilation facility.

APC-VS2 and supporting infrastructure is proposed to be situated on the Newnes State Forest that is managed by Forests NSW. The infrastructure has been positioned to fit in with the layout of the proposed underground first workings and existing surface infrastructure such as forest roads and tracks.

Environmental constraints have also been investigated in the field to minimise the impact of land preparation. The proposed remote location of APC-VS2 will minimise any potential impacts on the regional community.

Such works require approval in accordance with the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act). Angus Place is therefore seeking Ministerial approval under section 75W of Part 3A under the EP&A Act to modify its existing Project Approval (PA06_0021).

To support the application for Project Modification, RPS Australia East Pty Ltd (RPS) have been engaged by Angus Place to prepare and manage the coordination of the Environmental Assessment (EA). Several sub-consultants have been engaged to undertake specialist studies in their respective areas of expertise.

*Australian Bushfire Protection Planners Pty Limited* has been commissioned by RPS, on behalf of *Centennial Angus Place Pty Ltd.,* to prepare a Bushfire Risk Assessment to provide advice on the bushfire protection measures required to the Ventilation Facility Project.

Due to the proposed development being located within a bushfire prone area, Section 79BA of the *Environmental Planning & Assessment Act 1979* applies to the development.

Section 79BA of the *Environmental Planning and Assessment Act* requires the consent authority, when considering development within a bushfire prone area, to confirm that the development complies with the requirements of *Planning for Bushfire Protection 2006.* As such this was identified in the Environmental Assessment Requirements.




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*Planning for Bushfire Protection 2006* provides specific deemed-to-satisfy provisions on the bushfire protection measures necessary for rural & residential subdivisions, the construction of *"Special Fire Protection Purpose Developments"* and the construction of Class 1, 2, 3 & 4 buildings in Bushfire Prone areas.

The document does not identify specific deemed-to-satisfy protection measures for Class 5 – 8 and Class 10 buildings, as defined by the Building Code of Australia [or associated infrastructure such as power lines, mine air shafts, water storage tanks and storage ponds as proposed in the Stage 1 project description].

However, the document does provide the following advice for these classes of buildings:

*"The Building Code of Australia does not provide for any bushfire specific performance requirements and as such AS 3959 -2009 does not apply as a set of "deemed-to-satisfy" provisions.*

*The general fire safety construction provisions [of the BCA] are taken as acceptable solutions, but the aim and objectives of Planning for Bushfire Protection 2006 apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management".*

*"Where the aim and objectives of PfPFP [Section 1.1] are not met, then the construction requirements for bushfire protection will need to be considered on a case-by-case basis".*

*"In many cases, these types of developments will require on-site parking and loading areas. In such cases, it is prudent to place these facilities in the most appropriate location in order to establish defendable space for firefighting purpose".*

The objectives of *Planning for Bushfire Protection 2006* are:

(i) Afford occupants of any building adequate protection from exposure to a bushfire;

(ii) Provide for a defendable space to be located around buildings;

(iii) Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;

(iv) Ensure that safe operational access and egress for emergency service personnel and occupants of the development is available;

(v) Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the asset protection zones; and

(vi) Ensure that utility services are adequate to meet the needs of firefighters and others assisting in bushfire fighting.




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In evaluating the appropriateness of the bushfire protection measures to the proposed development the Department of Planning & Infrastructure will consult with the Commissioner of the NSW Rural Fire Service and take into account any comments concerning measures to be taken with respect to the protection of persons, property and the environment from the danger that may arise from a bushfire.

This report undertakes an assessment of the bushfire protection measures required to address the bushfire risk to the proposed ventilation facility project and associated infrastructure [power lines, electrical substation], consistent with the provisions of Section 79BA of the *Environmental Planning and Assessment Act 1979* and examines the adequacy of the setbacks from bushfire prone vegetation [defendable space] to the buildings within the ventilation / services facility; the protection of the infrastructure components of the proposal; fire-fighting access and provision of fire-fighting water supplies, fuel management protocols, evacuation procedures and other matters considered necessary to mitigate any potential bushfire threat to persons, property and the environment.

I therefore confirm that the proposed development complies with the aim and objectives of *Planning for Bushfire Protection 2006* and the deemed to satisfy requirements of Section 4.3.6(f) of *Planning for Bushfire Protection 2006* – Buildings of Class 5 to 8 and Class 10 of the Building Code of Australia.

Graham Swain
Managing Director,
***Australian Bushfire Protection Planners Pty Limited.***




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# TABLE OF CONTENTS






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# SECTION 1

# INTRODUCTION

## 1.1 Aim of this Assessment.

The aim of this report is to address key issue of bushfire hazard as required by the Director-General's Environmental Assessment Requirements [DGR's] issued on the 18th January 2012 and to provide advice on the bushfire protection measures required to be implemented to the Ventilation Facility Project - Angus Place Colliery development in order to address the bushfire risk to persons, property and the environment.

## 1.2 Development Proposal.

It is proposed to develop underground roadways and ventilation shafts from the existing Angus Place Colliery workings to access and mine the potential coal resource to the east of the Wolgan River. The modification proposes to continue development activities beyond the longwall 910 installation face to the area below the proposed ventilation facility.

To assist with the supply and transport of materials underground and to improve underground safety, it is additionally proposed to situate several service/supply boreholes at the proposed ventilation facility.

Ancillary infrastructure such as power lines and substations will be required to support the ventilation facility.

As part of the feasibility assessment, internal ventilation modelling identified several options through which to adequately ventilate the mine extension area. It was determined that the most appropriate, cost effective solution was the construction and operation of an additional surface ventilation facility, known as Angus Place Colliery Ventilation Site 2 (APC-VS2).

The APC-VS2 and supporting infrastructure is proposed to be situated off Sunnyside Ridge Road, on the Newnes State Forest which is managed by Forests NSW.

The infrastructure has been positioned to fit in with the layout of the proposed underground first workings and existing surface infrastructure such as forest roads and tracks.




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The Ventilation Facility Project includes:

- First workings from the LW910 install face to the proposed shaft site (S4 within ESA9) and to develop gate roads for the first two longwall panels;

- Shaft site (S4 within ESA9) containing ventilation shafts, air compressor station, Maihak tube bundle atmospheric monitoring system, emulsion mixing and supply plant, various services boreholes, shaft site substation, bunded diesel storage tank, internal roadways and hardstanding, fire controls and miscellaneous buildings such as an office block, storage shed and toilet facilities, Asset Protection Zones;

- Switchyard (ESA6) at existing overhead Powerline at junction of Blackfellows Hand Road and Sunnyside Ridge Road and includes Asset Protection Zones;

- 66 kV/11 kV substation (preferred site (ESA7/8) and alternative site (within ESA10), including Asset Protection Zones;

- 66 kV power supply corridor (ESA1, ESA2 and ESA3) following Sunnyside Ridge Road (power supply to be underground with overhead conductors at the link with the existing power line);

- Buried pipelines (ESA2, ESA3 and ESA4) (recommissioning of existing and extensions)) along Sunnyside Ridge Road;

- New track ((ESA5) incorporating buried cables and pipelines) from Sunnyside Ridge road to the vent site compound;

- Regrading for track surface improvement in areas between Clarence and substation site to enable safe transport of equipment; and

- Water management ponds and controls for the site compound.




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***Figure 1 – Site Plan of Angus Place Colliery Extension – Ventilation Facility Project and associated infrastructure.***





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***Figure 2 – Site Plan of Angus Place Colliery Extension – Ventilation Shaft Site.***

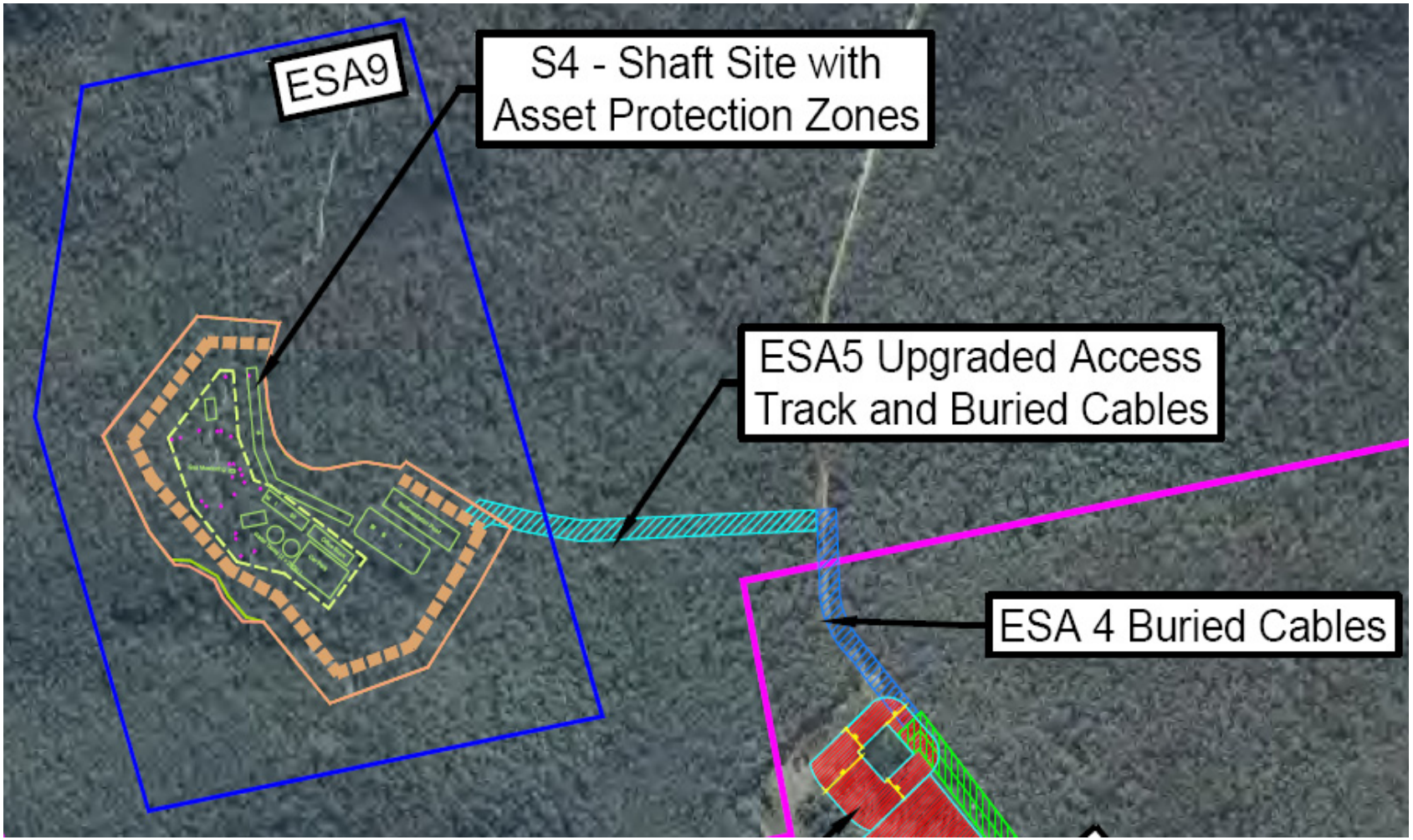





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***Figure 3 – Site Plan of Angus Place Colliery Extension – Substation Sites.***

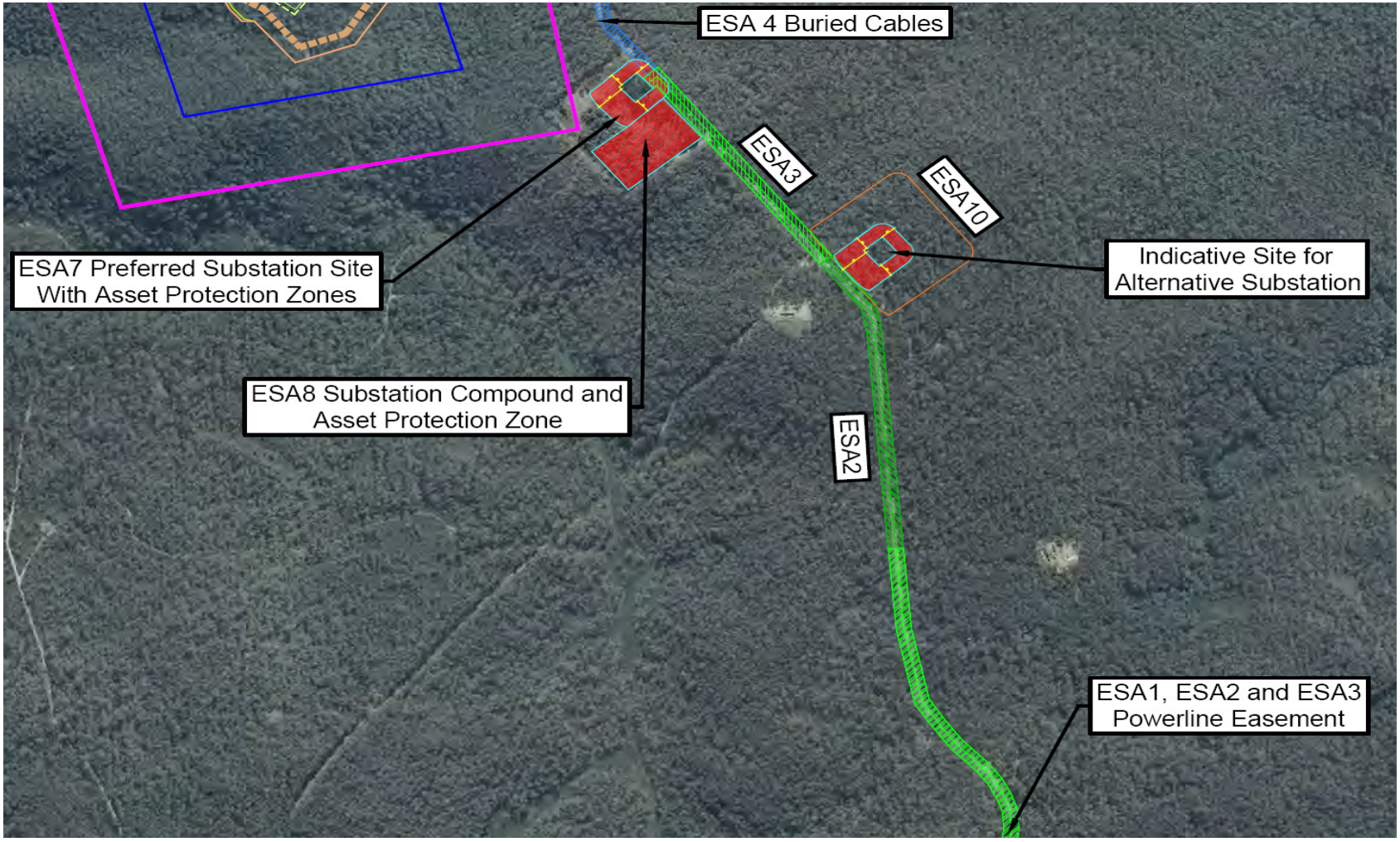





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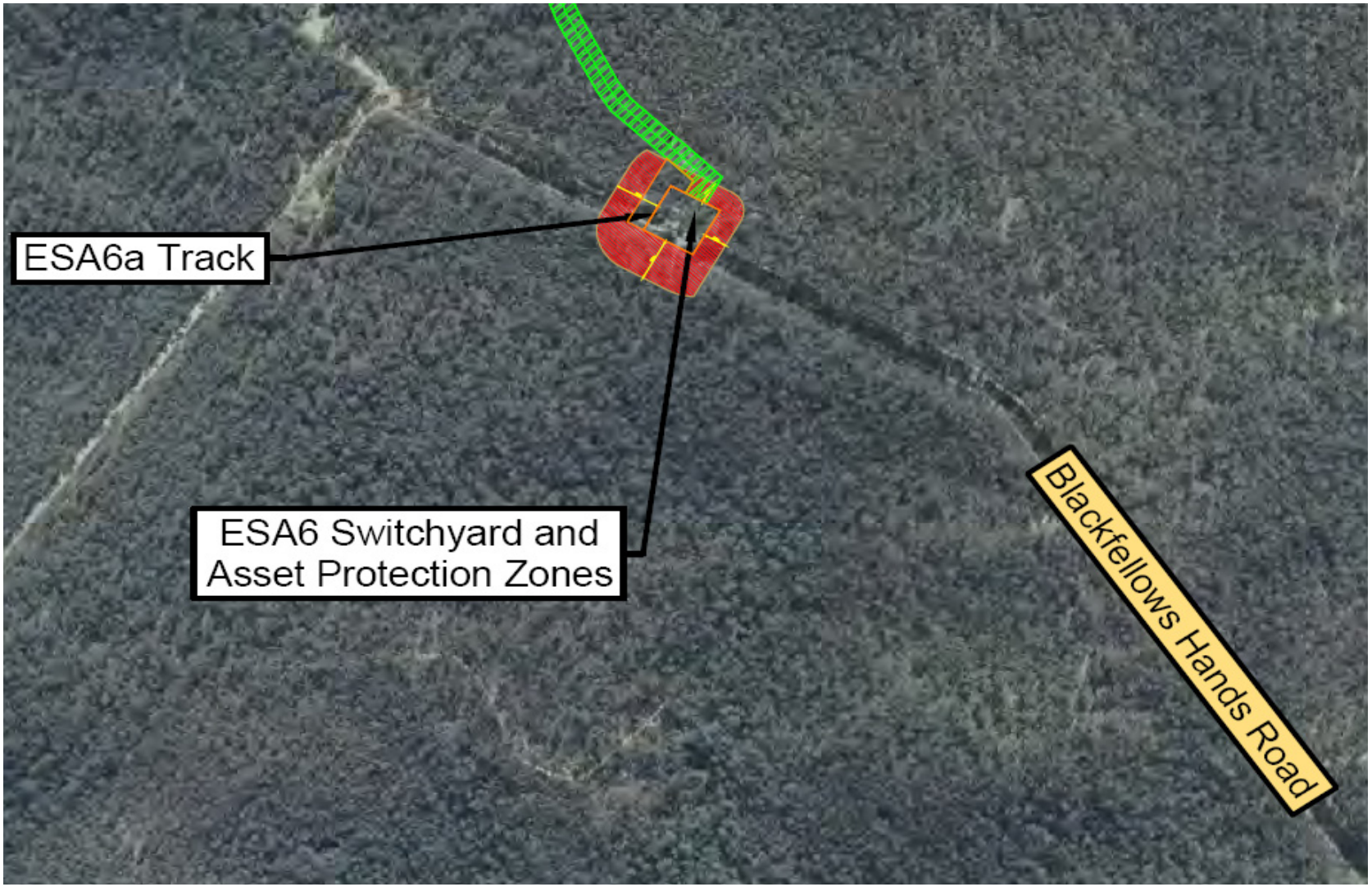
***Figure 4 – Site Plan of Angus Place Colliery Extension – Switchyard Site.***







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## 1.3 Statutory Requirements.

This assessment has been prepared having regard to the following legislative and planning requirements:

### 1.3.1 Legislation.

***Environmental Planning and Assessment Act - 1979* (EPA Act)**

Planning and development within NSW is regulated by the *Environmental Planning & Assessment Act, 1979* (EPA Act). Part 3A [Major Projects] of the Act commenced on the 1st August 2005 and consolidated the assessment and approval regime for all major projects previously addressed under Part 4 [Development Assessment] or Part 5 [Environmental Assessment] of the Act.

*Environmental Planning and Assessment Amendment [Part 3A Repeal] Bill 2011* repeals part 3A of the *Environmental Planning & Assessment Act, 1979* (EPA Act) and retains a category of State significant development and State significant infrastructure and contains provisions for dealing with part 3A applications still in the system.

This application is a modification to an existing approval under Part 3A and therefore the application will be assessed under the previous Part 3A system.

### 1.3.2 Planning Policies.

***Planning for Bushfire Protection – 2006.* [Rural Fire Service]**

This document provides guidance on the planning and development control processes in relation to bushfire protection measures for rural residential and residential subdivision, *"Special Fire Protection"* and Class 5 – 8 and 10 buildings in bushfire prone areas.

The document provides deemed-to-satisfy specifications on the provision of Asset Protection Zones to residential and *"Special Fire Protection"* developments; defendable space requirements to Class 5 – 8 & 10 developments and access/water supply provisions for developments in bushfire prone areas. Provision for the assessment of construction standards to buildings and management / maintenance of the Asset Protection Zones/defendable space to buildings is also provided.




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## 1.4 Documentation Reviewed.

The following documents were reviewed in the preparation of this assessment:

- Director General's Environmental Assessment Requirements [DGR's] dated 18th January 2012 – Application Number 06_0021 Mod 2;
- Angus Place East – Figure 1 – Stage 1 Approval, Project Description dated 21/7/2011;
- Angus Place East – Figure 2 – Stage 1 Approval, Project Description dated 21/7/2011;
- Angus Place Bushfire Management Procedures;
- Flora & Fauna Assessment – Angus Place Ventilation Facility – RPS;
- Ventilation Facility Project – Angus Place Colliery Briefing Paper 21 December 2011 prepared by Centennial Coal;
- Plan of revised Project Area prepared by Centennial Coal – 2.4.2012;
- Aerial Photograph of the site;
- 1:25,000 Topographic Map;
- The Lithgow Council Certified Bushfire Prone Land Map;
- *Planning for Bushfire Protection 2006* prepared by the NSW Rural Fire Service.

## 1.5 Site Inspection.

An inspection of the site was undertaken by Graham Swain, Managing Director, *Australian Bushfire Protection Planners Pty Limited* on the 14th July 2011.




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# SECTION 2

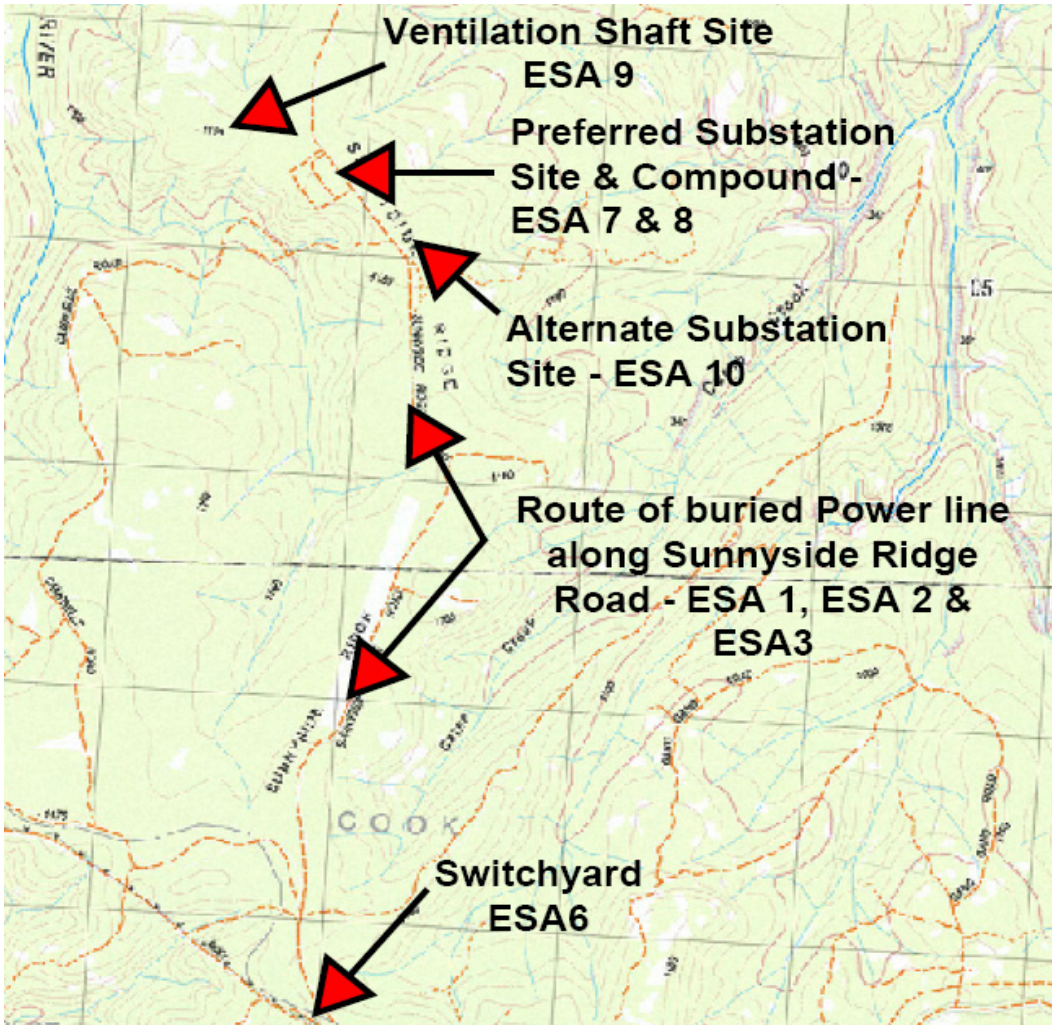
# DESCRIPTION OF DEVELOPMENT SITE

## 2.1 Location & Description.

The ventilation facility site is proposed to be located within the Newnes State Forest to the west of Sunnyside Ridge Road [Latitude 38250; Longitude 11550]. The preferred substation site is also located to the west of Sunnyside Ridge Road at Latitude 38800, Longitude 115250 – refer to Figure 5 below.

Figure 1 [Page 10] shows the locality of the proposed ventilation facility and infrastructure works over an aerial photograph.

***Figure 5 – Location of the Ventilation Shaft Site, Substation precincts, route of Powerline supply and location of Switchyard.***







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## 2.2 Topography.

Appendix 2 of *Planning for Bushfire Protection 2006* states that slopes should be assessed, over a distance of at least 100m from an asset and that the gradient of the land should be determined which will most significantly influence the fire behaviour on the site.

The Ventilation Facility project and associated infrastructure are located within the Newnes State Forest with the overhead power line following the route of Sunnyside Ridge Road which is located on the apex of Sunnyside Ridge which runs approximately north/south with the landform falling to the west and east at gradients ranging from 5 – 10 degrees, increasing in parts to greater than 18 degrees.

The preferred and alternate substation precinct also occupies land which is located on the apex of Sunnyside Ridge. The landform to the west of the ridgeline falls steeply into the Wolgan River Valley at a gradient of more than 18 degrees whilst to the east and northeast to ridgeline flattens to form a landform which falls to the east and northeast at less than 5 degrees.

The ventilation shaft site is located on a low, broad knoll, to the northwest of the preferred substation precinct [ESA7 & ESA8]. The land falls to the west towards the Wolgan River Valley at more than 10 degrees; falls to the north and northeast at 2 – 3 degrees and is level to the south.

## 2.3 Vegetation Communities.

Appendix A2.3 of *Planning for Bushfire Protection 2006* provides a methodology for determining the predominant bushfire prone vegetation for at least 140 metres in all directions from assets. Vegetation is classified using Table A2.1 of *Planning for Bushfire Protection 2006,* which classifies vegetation types into the following groups:

*(a) Forests [wet & dry sclerophyll forests];*
*(b) Woodland;*
*(c) Plantations – being pine plantations not native plantations;*
*(d) Forested Wetlands;*
*(e) Tall Heaths;*
*(f) Freshwater Heaths;*
*(g) Short Heaths;*
*(h) Alpine Complex;*
*(i) Semi – arid Woodland;*
*(j) Arid Woodland; and*
*(k) Rainforests.*

## 2.4 Vegetation Communities within and adjoining the ventilation shaft site and associated infrastructure.

Except for a small area of former Pinus Radiata Forest occupying the preferred site for the substation [ESA7 & ESA8], the vegetation within the Newnes State Forest consists broadly of Dry Sclerophyll Low Open Forest/Woodland.

## 2.5 Significant environmental features on the land within the ventilation shaft site and associated infrastructure sites.

The power line/substation and ventilation shaft site do not contain any significant environmental features such as SEPP 14 – Coastal Wetlands; SEPP 26 Littoral Rainforests; SEPP 44 – Koala Habitat; areas of geological interest; steep lands [>18 degrees]; land slip areas; National Parks Estate or defined riparian corridors.

## 2.6 Known Threatened Species, Populations, Endangered Ecological Communities or Critical Habitat on the land within the power line/substation and ventilation shaft site.

A Flora and Fauna Assessment of the land within the ventilation shaft site and associated infrastructure sites has been undertaken by RPS. The report states:

The proposed first workings, shaft site, switch yard, substation, pipelines, power supply corridor and new access track have been designed based on minimum impact to significant surface features. After due consideration against the relevant key thresholds assessment criteria as set out within Draft Guidelines for Threatened Species Assessment for Part 3A Applications (DEC / DPI 2005), the proposal is expected to have minimal direct impacts on the site, with the proposed direct surface impacts resulting in the removal of 17.48 ha of vegetation of which 14.81 ha (ESA7/8 Preferred Substation) or 16.68ha (ESA10 Alternative Substation) is native vegetation community types that are common on the Newnes Plateau.

None of the vegetation communities to be impacted upon mapped within the site correspond to any TECs as listed within the EPBC Act and the TSC Act.

Mine subsidence, as a result of the proposed first workings is predicted to be negligible (less than 20 mm with no surface cracking). The proposed first workings are therefore considered unlikely to have a significant adverse impact upon ecological attributes within the site as a result of subsidence or modified surface hydrology.




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The proposed direct surface impacts will result in the removal of 17.48 ha of vegetation of which 14.81 ha (ESA7/8 Preferred Substation) or 16.68ha (ESA10 Alternative Substation) is native vegetation.

ESA 10 also contains some scattered small populations of *P. hindii* although an area of equivalent size to ESA7/8 (1.87ha) can be placed in a number of locations within ESA 10 without directly impacting upon any *P. hindii*. However, ESA7/8 is located in an area of MU 59 Non-native Vegetation – Pine plantation / woodlot / shelter and ESA 10 covers an area of three common native vegetation types (MU 7, MU14 and to a lesser extent MU26a therefore, ecologically ESA7/8 is the preferred location for the substation.

The proposed direct surface impacts will also result in the removal of up to approximately 2,105 individual *P. hindii* plants at 218 locations within ESA's 1,2,3,4 and potentially ESA10 depending on the placement of the substation

However, due to the retention of the 8,497 remaining individual *P. hindii* specimens, it is considered that the proposed development is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Two threatened flora species, five threatened bat species, four threatened bird species and two TECs have been recorded within the site during the surveys undertaken in 2011, although habitat is considered suitable for a number of other threatened fauna, which may use the site on at least an intermittent basis.

As required by the Draft Guidelines for Threatened Species Assessment for Part 3A Applications (DEC / DPI 2005), an assessment of the Key Thresholds has determined that the proposed first workings, shaft site, switch yard, substation, pipelines, power supply corridor and new access track are likely to result in minimal impacts upon the available habitats on the site. The project is considered unlikely to cause a significant adverse effect upon threatened species recorded within the site or those which may potentially occur within the site on an intermittent basis.

## 2.7 Details of Aboriginal/European Heritage within the ventilation shaft site and associated infrastructure sites.

A Cultural Heritage Assessment has been undertaken by RPS.

A search was undertaken of the Office of Environment & Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS) on 21 July 2011 for a 5 km radius centred on the project area.

A total of 41 sites were identified within that search radius. The most common site types within the local landscape are shelters with deposit (51.21%), followed by artefact scatters (17.07%) and shelters with art (12.20%)

Based on the AHIMS, historical and environmental data as well as a review of previous archaeological investigations conducted in the area, a predictive model was developed. It is predicted that the most likely site types to be encountered within the project area are shelter either with/without art and/or deposit and/or artefact scatters. In areas where old growth vegetation remains, scarred trees are also possible.

A survey of the project area was conducted on 16-17 November 2011 in conjunction with Chantel Chapman of Bathurst Local Aboriginal Land Council, Shaun Brown of Gundungurra Tribal Council Aboriginal Corporation and Elwin Wolferdon of Mingaan Aboriginal Corporation. No sites were identified as a result of the survey. As no sites were identified, no mitigation measures are included and recommendations are both general and applicable to all of the project area, unless otherwise specified.

As a result of this archaeological investigation, the following general recommendations are made for the project area:

**Recommendation 1**
Should subsidence or other surface impact exceed predicted values, it is recommended that additional archaeological investigation of the area affected be undertaken.

**Recommendation 2**
All relevant Centennial staff should be made aware of their statutory obligations for heritage under NSW *NPW Act (1974)* and the NSW *Heritage Act (1977).*

**Recommendation 3**
If during the proposed works any Aboriginal sites are identified in the project area, then all works in the area should cease, the area cordoned off and contact made with OEH Enviroline 131 555, a suitably qualified archaeologist and the relevant Aboriginal stakeholders, so that it can be adequately assessed and managed.




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**Recommendation 4**

In the unlikely event that skeletal remains are identified, work must cease immediately in the vicinity of the remains and the area cordoned off. The proponent, Centennial Coal, will need to contact the NSW Police Coroner to determine if the material is of Aboriginal origin. If determined to be Aboriginal, the proponent, must contact the OEH Enviroline 131 555, a suitably qualified archaeologist and representatives of the local Aboriginal Community Stakeholders to determine an action plan for the management of the skeletal remains, formulate management recommendations and to ascertain when work can recommence.

**Recommendation 5**

If, during the course of development works, significant European cultural heritage material is uncovered, work should cease in that area immediately. The OEH Enviroline 131 555 should be contacted and works only recommence when an appropriate and approved management strategy instigated.




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# SECTION 3
# FIRE MANAGEMENT RESPONSIBILITIES

Fire management within the development site is the responsibility of:

## 3.1 Lithgow City Council.

The Lithgow City Council has responsibility, under Section 66 of the *Rural Fires Act*, to issue a notice in writing requiring an owner / occupier of any land within the Local Government Area [LGA] to carry out bushfire hazard reduction works on that land. Section 100E of the *Rural Fires Act* requires Council to issue bushfire hazard reduction certificates for hazard reduction to be undertaken on private lands.

## 3.2 New South Wales Rural Fire Service.

The NSW Rural Fire Service (RFS) has the responsibility for undertaking fire suppression activities, hazard management activities and other functions relative to emergency management, within its areas of operation. *Section 73* of the *Rural Fires Act (1997)* enables the Commissioner to carry out bush fire hazard reduction works on any land as required by a bush fire risk management plan if the work has not been carried out satisfactorily. Incurred costs can be recovered as a debt owed to the Crown.

## 3.3 Fire & Rescue New South Wales.

The Fire & Rescue New South Wales has the responsibility for undertaking fire suppression activities, and other functions relative to emergency management, within its area of operation and through Mutual Aid Agreements, provide assistance to the NSW Rural Fire Service, particularly for structural fire operations within the NSW Rural Fire Brigade Districts. Hazmat management within New South Wales is the responsibility of the Fire & Rescue New South Wales.

## 3.4 The Lithgow Bush Fire Management Committee.

The Lithgow Bushfire Management Committee has the responsibility for planning for coordinated fire fighting activities / hazard management activities on a local government level. It is not an operational organization, a fire fighting organization or a funding source for fire management activities.

The Bush Fire Management Committee is supported by the following provisions of the Rural Fires Act 1997:

- ***Section 52*** *requires each Bush Fire Management Committee to prepare a draft bush fire management plan for their local areas which includes a plan of operations and a bush fire risk management plan.*




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- ***Section 54*** *of the Act specifies that a draft bush fire risk management plan is to 'set out schemes for the reduction of bush fire hazards in the rural fire district or other part of the State'. A draft bush fire risk management plan may also restrict or prohibit the use of fire or other fire hazard reduction activities in all or specified circumstances or places to which the plan applies.*

### 3.5 Public Authorities [e.g. State Forests] & owners/occupiers of land.

*The Rural Fires Act, 1997* provides several legislative opportunities to require Public Authorities, land owners and occupiers to manage hazardous fuels. These are listed below:

- ***Section 63(1)*** states that it is the duty of a public authority to take any practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of a bushfire on or from:

  *(a) any land vested in or under its control or management, or*

  *(b) any highway, road, street, land or thoroughfare, the maintenance of which is charged on the authority.*

- ***Section 63(2)*** states that *'it is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of fires on, and to minimise the danger of the spread of fires on or from that land'.*

- ***Section 65A*** states that the *'Commissioner may nominate a member of the Service as a hazard management officer'.*

- ***Section 65(2)*** states that *'an authorised person may, with the permission of the fire fighting authority or other authority responsible for unoccupied Crown land or managed land or a person nominated by the authority to give such permission, enter the land and carry out bushfire hazard reduction work with the assistance of such other persons as the authorised person considers to be necessary for the purpose'.*

- ***Section 65(3)*** states that *'the authority responsible for unoccupied Crown land or managed land is to be taken to have given the permission under this section to the extent necessary to give effect to a bushfire risk management plan'.*

- ***Section 65(4)*** states that *'if permission under this section is given subject to conditions, the conditions must be complied with'.*

- ***Section 66(1)*** states that *'a hazard management officer may, by notice in writing, require the owner or occupier [not being a public authority] of any land to carry out bushfire hazard reduction work specified in the notice on the land'.*

- ***Section 66(2)*** states that *'a hazard management officer must serve a notice under this section if required to do so by a bushfire risk management plan applicable to the land that is in force'.*

- ***Section 66(3)*** states that *'a hazard management officer must issue a bushfire hazard reduction certificate in respect of any bushfire hazard reduction work required by a notice issued in accordance within section (2)'.*

- ***Section 66(6)*** states that *'the requirements and conditions so specified must include any requirements in a bushfire risk management plan that is applicable to the land and is in force and may include a requirement or condition that the burning of fire breaks or of combustible material;*

  ***(a)*** *must in fire district constituted under the Fire Brigades Act 1989 be carried out by or under the supervision of the fire brigade or an officer in charge of the fire brigade;*

  ***(b)*** *must outside a fire district, be carried out by or under the supervision of the rural fire brigade specified in the notice or an appropriate officer of the rural fire brigade or any hazard management officer.*

- ***Section 66(7)*** states that *'a notice requiring the establishment of a firebreak cannot require an occupier or owner to kill or remove any trees that are reasonably necessary for shade, shelter, windbreak or fodder purposes or the protection of threatened species, populations, ecological communities or critical habitats within the meaning of the 'Threatened Species Conservation Act 1995'.*

- ***Section 66(8)*** states that *'an occupier or owner to whom a bushfire hazard reduction notice is given must, despite the fact that a fire permit has not been granted under Division 5, comply with the requirements specified in the notice'.*

- ***Section 70(2)*** states that *'if within the time specified in the relevant notice the owner or occupier to whom it is given fails to comply with any requirement of the notice, the Commissioner may, without prejudice to liability of the owner or occupier, enter on the land and carry out the bushfire hazard reduction work the owner or occupier was required to do under the notice'.*




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- ***Section 70(3)*** states that *'any costs incurred by the Commissioner in carrying out such work may be recovered from the owner or occupier of the land as a debt due to the Crown in a court of competent jurisdiction'.*
- ***Section 87*** allows the removal of hazards in the bush fire danger period by the provision of a permit system. The permits are valid for 21 days, excluding TOBAN days.

  Section 10 permits are not required to adhere to *Part V* provisions of the EPA Act 1979 in the assessment of impact, except for public authorities. An owner/occupier of private land must obtain from the NSW Rural Fire Service, a bushfire hazard reduction certificate before undertaking hazard reduction works on that land (Section 100E of the *Rural Fires Act 1997*).

### 3.6 Management of the Defendable Spaces to the Development.

The management of the Defendable Spaces [setbacks from Bushfire Prone Vegetation] within the Substation compound and the ventilation shaft site shall remain the responsibility of Centennial Angus Place Pty Ltd.




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## SECTION 4

# BUSHFIRE RISK ASSESSMENT

Bushfire risk is defined as the chance of a bushfire occurring that will have harmful consequences to human communities and the environment. Bushfire risk is usually assessed through consideration of the likelihood of ignition and consequences of a bushfire occurring.

A range of factors influence bushfire risk – these include:

- The likelihood of human and natural fire ignitions, as influenced by time, space and demographics;
- The potential spread and severity of a bushfire, as determined by fuel, topography and weather conditions;
- The proximity of assets vulnerable to bushfire fuels, and likely bushfire paths; and,
- The vulnerability of assets including natural assets, or their capacity to cope with, and recover from bushfire.

Broad strategies to manage bushfire risk include:

- Eliminate the bushfire risk (make the land-use decision first by asking the question about whether development should or should not proceed in a given area);
- Design or substitution (review locations);
- Engineering controls (infrastructure, building standards and landscaping).

An assessment of bushfire risk to the development proposal must firstly define the problem. The ventilation shaft site, Substation site and the route of the power line and access roads are located on top of a series of ridgelines which are exposed to strong to gale force winds from the northwest, west and southwest. These winds, combined with the forest vegetation and steep topography of the landscape, produce circumstances where catastrophic bushfire events will occur.




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Any resource critical to the operation of the Colliery, including personnel either travelling to/from or occupying the ventilation shaft site, will be impacted to such an extent that personnel may be critically injured and property lost.

Safe operations of the facilities during such events cannot be guaranteed as the bushfire risk cannot be permanently eliminated to the extent required to mitigate the risk to a level which will be safe during a significant bushfire event that occurs within the Newnes State Forest estate.

Physical damage from gale force winds, fallen trees and lightning strikes or faults in the overhead section of the power lines, fires within the Substation equipment and within the electrical equipment at the ventilation shaft site have the potential to cause the ignition of the surrounding vegetation, unless precautions are implemented and maintained.

Site operations such as cutting, grinding, welding and inappropriate storage/use of materials that may be subject to spontaneous combustion can cause the ignition of unmanaged vegetation within and external to the ventilation shaft site, Substation compound and associated facilities.

Site works during the construction of the ventilation shaft facility and associated infrastructure may present a short term risk of ignition of adjoining unmanaged forest vegetation, resulting in a risk to forestry assets and the broader community.

These are investigated in Section 5.




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# SECTION 5
# BUSH FIRE PROTECTION ASSESSMENT

## 5.1 Introduction.

Chapter 1 of *Planning for Bushfire Protection 2006* states all development on bushfire prone land must satisfy the aim and objectives of *Planning for Bushfire Protection 2006.*

The aim of the document is to use the NSW development assessment system to provide for protection of human life [including firefighters] and to minimize impacts on assets from the threat of bushfire, while having due regard to development potential, onsite amenity and protection of the environment.

The objectives of the document are:

- *Afford occupants of any building adequate protection from exposure to the impacts of a bushfire;*
- *Provide for a defendable space to be located around buildings;*
- *Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*
- *Ensure that safe operational access/egress for emergency service personnel and occupants relocating is provided and/or available;*
- *Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads within the Asset Protection Zone/s; and*
- *Ensure that utility services are adequate to meet the needs of firefighters [and others assisting in bushfire fighting operations].*

Sections 5.2 – 5.4 of this report examine the potential bushfire risk to the individual development areas and provides recommendations on the bushfire protection measures required to be implemented to the mitigate the potential bushfire threat.

The examination of the requirements for access and water supplies for firefighting operations; management of the defendable space [Asset Protection Zone] and evacuation planning are examined in Sections 5.5 – 5.7 of this report.




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## 5.2 Powerline.

The power line will be constructed along Sunnyside Ridge Road to the substation site located at ESA7/ESA8 or ESA10, as determined. As the risk to an aerial [overhead] installation is greater than an underground installation, Centennial Coal have opted to install the power line [ESA 1, ESA 2 & ESA 3] in a trench running along the side of Sunnyside Ridge Road – except for where the underground supply connects to the existing overhead supply.

The underground supply removes the risk of ignition of surrounding vegetation from arcing of wires; pole top fires; lightning strikes to wires and poles and physical damage caused by strong winds and direct flame contact.

However, there is the potential for the overhead connection to the existing power line to be destroyed by a bushfire – either through the high winds associated with major fire events bringing down trees across the line or by flame and high levels of radiant heat contact with the aerial lines and /or the support poles.

This destruction will shut down the supply to the ventilation and ancillary equipment within the ventilation shaft site however the back-up diesel generator will provide emergency power during the power outage.

Lightning strikes to poles and aerials can also cause broken wires, pole fires and the spread of molten wire into the surrounding vegetation, providing a bushfire ignition source.

Pole top fires can occur during periods of dry weather where light rain falls on dust accumulated on the cross arms. This can, depending on the extent of rainfall associated with the showers, ignite the cross arm, spreading burning embers into the surrounding bushland.

Energy supply companies have mandatory clearance requirements to overhead power lines and these should be strictly maintained to this section of the power supply component of the works.

In order to minimise the potential for arcing of the lines and to provide a more secure system capable of withstanding high winds and physical damage and therefore to reduce the risk of bushfire ignition, consideration shall be given to the installation of ‘bundled cable’ or insulated cable between the underground cables and the overhead supply lines.

The 11kv line from the substation site to the ventilation shaft site compound will also be underground and therefore not subject to bushfire risk or the subject of concern over its ability to create a risk of bushfire ignition.

### 5.3 Electrical Substation.

It is proposed to assess two separate areas for the substation. These study areas include ESA7/ESA8 within the Pinus Radiata plantation and the larger ESA10 precinct, the final size of which will be dependent on the results of the ecological studies being undertaken and the location of the substation.

#### 5.3.1 Electrical Substation within ESA7/ESA8.

The ESA7/ESA8 substation site occupies an area which currently contains a remnant Pinus Radiata plantation located to the west of Sunnyside Ridge Road on land which falls gently to the north. This former plantation is surrounded by Dry Sclerophyll Forest vegetation with the topography of the land to the west falling at more than 18 degrees into the Wolgan River Valley.

The terrain and vegetation to the west of the Plantation site has the potential to create bushfires with a calculated tilted flame length of 50 metres, measured from the edge of the unmanaged forest vegetation, west of the perimeter track to the Plantation.

The land to the north falls to the north and northwest at 2 degrees with a resultant tilted flame length of 24 metres.

The result of such fire event would be either direct flame contact or extreme levels of radiant heat on the equipment within the Substation compound.

Direct flame contact with the equipment, particularly the overhead wiring components of the Busbar system, will melt, and any combustible components, such as sheathing to cables, will melt/ignite and burn. The extreme levels of radiant heat will have a similar impact.

The minimum separation between the equipment and the bushfire prone vegetation to the west of the perimeter track should be 50 metres and 25 metres to the north. A separation of 25 metres is recommended to the east with the compound located in the north-eastern corner of the former plantation site – refer to Figure 6 below.

It is recommended that the Pinus Radiata be removed and the area of the former plantation managed as an Asset Protection Zone.




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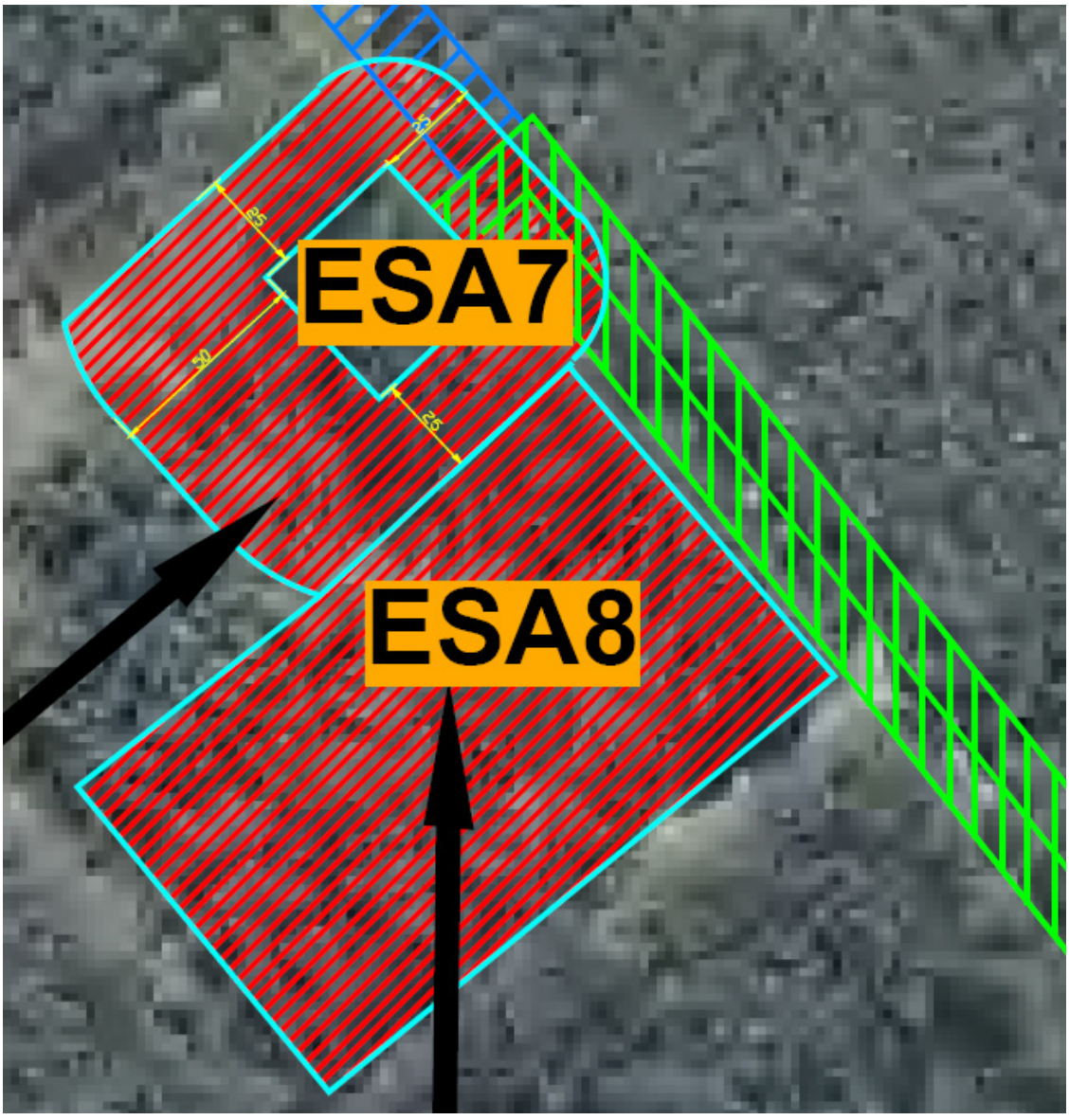
***Figure 6 – Recommended location and bushfire protection measures to Substation at ESA7/ESA8.***




### 5.3.2 Electrical Substation within ESA10.

The larger ESA 10 Precinct being investigated occupies an elongated area that extends along the Sunnyside Ridge ridgeline which falls steeply to the west into the Wolgan River Valley. The gradient of the land to the west of ESA 10 is similar to ESA7 & ESA8 and this precinct will also be exposed to fast spreading bushfires which will travel upslope from the Wolgan River.

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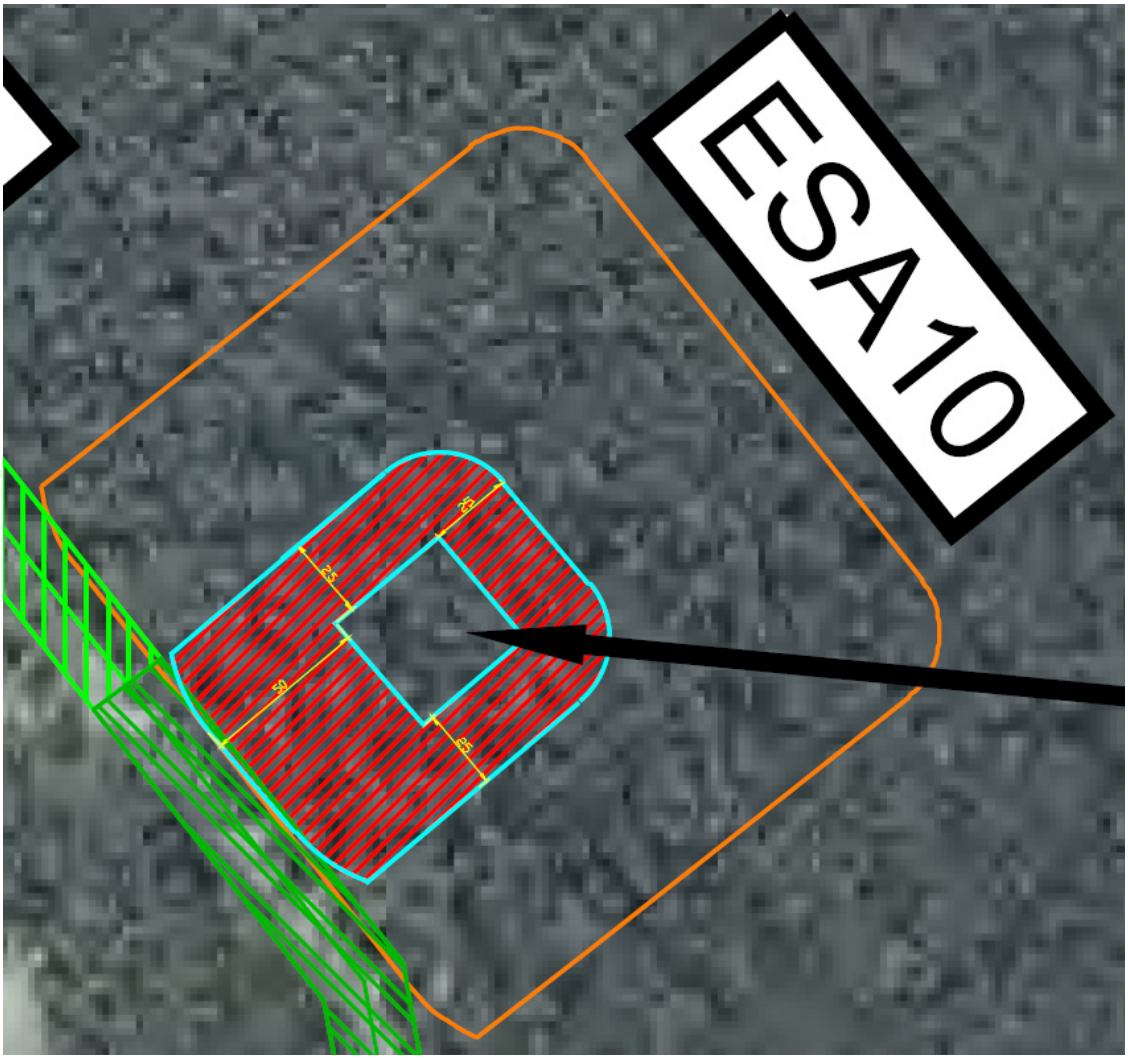
The fire behaviour will be similar with calculated tilted flame lengths of 50 metres from the west. The minimum separation between the equipment and the bushfire prone vegetation to the west should be 50 metres and 25 metres to the remaining aspects – refer to Figure 7 below.

***Figure 7 – Recommended location and bushfire protection measures to Substation at ESA10.***




Whilst the bushfire behaviour potential is similar across the two precincts being investigated for the location of the Substation compound, ESA7/ESA8 is preferred as it provides a large area of gently undulating land that falls to the north and permits the Substation to be located adjacent to Sunnyside Ridge Road with a setback to the west which mitigates the potential risk to the external equipment.

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If the ESA7/ESA8 Precinct is found to be unsuitable due to ecological constraints, the Substation should be sited within ESA10 on the broad spur to the east sited on the broad spur to the east of Sunnyside Ridge Road – refer to Figure 7, above.

The mitigation of the risk of bushfire impact on the equipment within the substation site can be reduced by locating the equipment beyond the calculated flame width and the protection of equipment/buildings against impact of burning embers.

### 5.4 Ventilation Shaft Site [ESA9].

The ventilation shaft site is proposed to be located on a broad ridge crown to the northwest of the ESA 7 & ESA 8 Substation Precinct.

This site [ESA9] is exposed to uphill fire paths from the north, northwest, west and southwest with an open exposure to wind turbulence from the Wolgan River Valley.

The site is unsafe when occupied during fire events in the local area with the means of escape via Sunnyside Ridge Road not providing a safe egress. This will need to be addressed in operational procedures and evacuation planning.

Equipment and buildings on the site will be exposed to fire over-run with major damage being expected due to possible flame contact, extreme levels of radiant heat and ember attack.

The landform surrounding the site falls to the northwest at 2 – 3 degrees, increasing to + 10 degrees. The landform to the west and southwest falls to the west and southwest at + 10 degrees into the Wolgan River valley resulting in a tilted flame width of 39 metres.

In order to reduce the risk of flame contact on the structures i.e. Demountable Buildings, Maintenance Sheds & Compressor Station Sheds, the minimum setback to unmanaged vegetation from these structures should be 40 metres – refer to Figure 8.

In order to minimise the risk of ignition of the structures by burning embers the structures shall be constructed to Bushfire Attack Level [BAL] 40 in accordance with A.S. 3959 – 2009 – *'Construction of Buildings in Bushfire Prone Areas'*.




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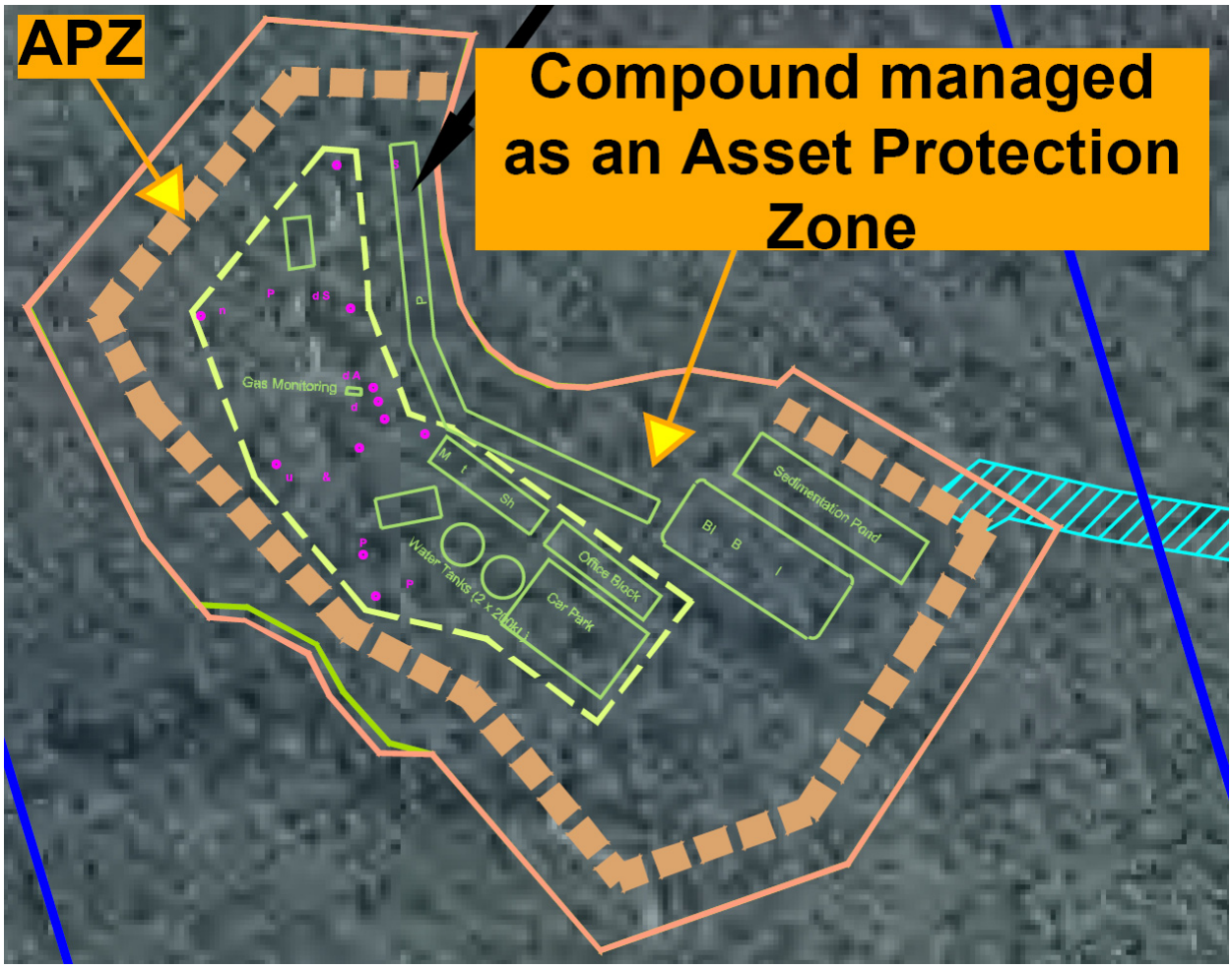
***Figure 8 – Recommended Asset Protection Zones to the buildings within the ventilation shaft site.***




## 5.5 Switchyard [ESA6].

The Switchyard site is proposed to be located on the ridgeline located to between the existing power line easement and the intersection of Blackfellows Hands Road and Sunnyside Ridge Road.

This site [ESA6] is exposed to uphill fire paths from the northeast and southwest with an open exposure to wind turbulence from the surrounding valley systems.

The site is unsafe when occupied during fire events in the local area with the means of escape via Sunnyside Ridge Road and Blackfellows Hands Road not providing a safe egress. This will need to be addressed in operational procedures and evacuation planning.

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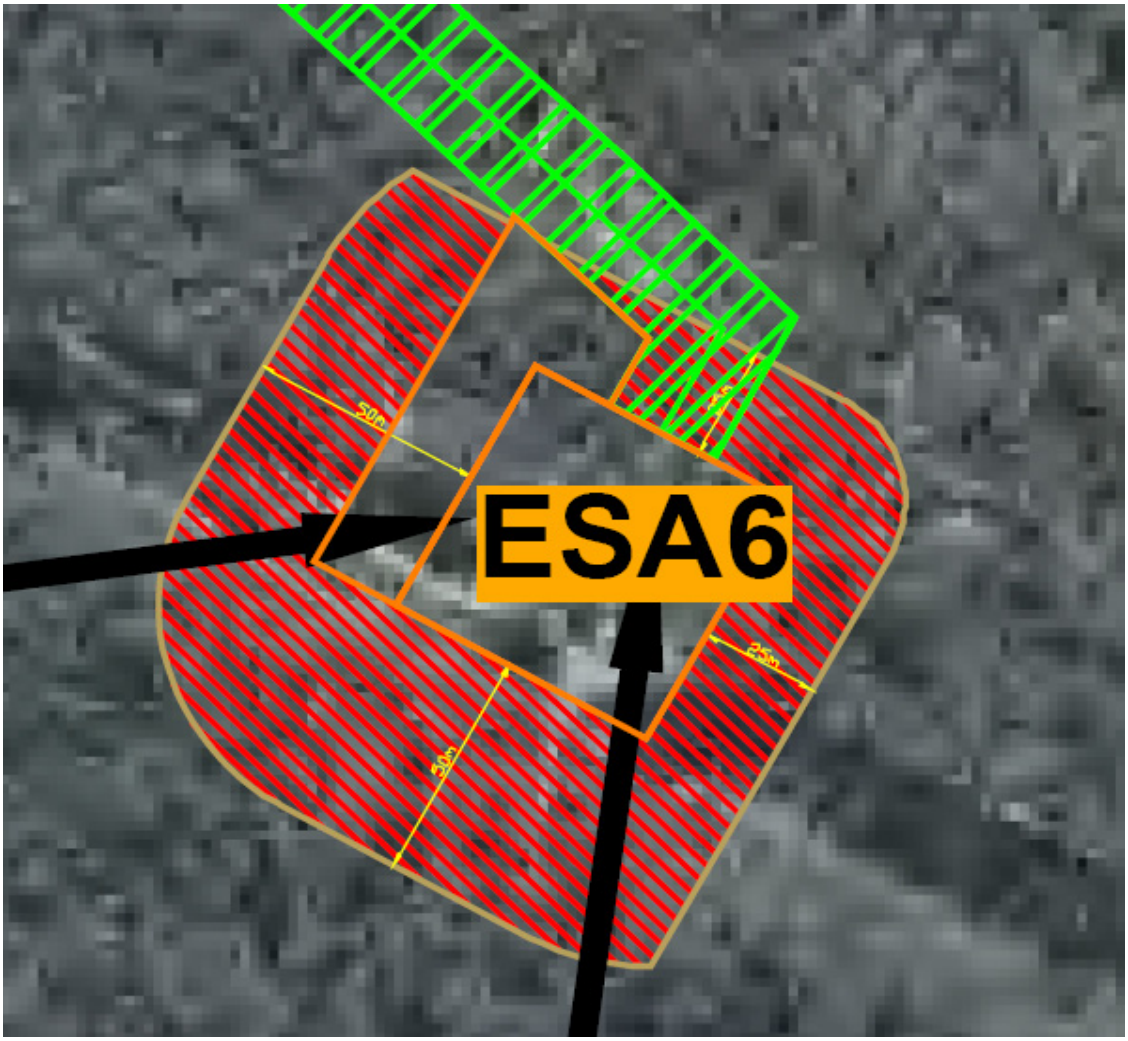
Equipment on the site will be exposed to fire over-run with major damage being expected due to possible flame contact, extreme levels of radiant heat and ember attack.

The landform surrounding the site falls to the southwest at 2 – 3 degrees, increasing to + 10 degrees. The landform to the northwest and southeast follows the contours of the ridgeline whilst the land to the northeast falls at + 10 degrees into the valley to the northeast.

In order to reduce the risk of flame contact on the switching gear the minimum setback to unmanaged vegetation should be 50 metres to the northwest and southwest and 25 metres to the northeast and southeast – refer to Figure 9.

***Figure 9 – Recommended Asset Protection Zones to the equipment within the Switchyard site.***







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## 5.6 Access provisions.

The minimum width of the proposed access road to the ventilation shaft site shall be 4.0 metres, within a cleared corridor of 6.0 metres. The road formation shall be all weather and shall have a carrying capacity of 28 tonnes GVM. Passing bays shall be provided at 200 metre intervals.

## 5.7 Water supplies for fire-fighting operations.

Whilst it is not likely that fire-fighting resources will be deployed to the ventilation shaft site during extreme bushfire weather, the onsite water storage tanks shall be equipped with a 65mm outlet to enable fire service tanker replenishment. The outlet/s shall be fitted with a 65mm Ball Valve and Stortz Coupling and Cap.

It is recommended that a fire-fighting water supply be installed within the ventilation shaft site, including a diesel powered pump-set supplying hydrants and hose reels to the buildings – supplied from the Water Storage Tanks.

The pump-set shall be remote start from the Office and Maintenance Shed with back-up power provided to the pump from batteries charged by solar panels.

Hose Reels shall be strategically located in order to provide wet-down of the buildings and the hydrants shall be located on the periphery of the compound with two-way Millcock Valves complete with ball valves and Stortz Couplings.

Lay-flat canvas hose, nozzles and spanners shall be stored in the Maintenance Shed in sufficient quantities to enable at least 2 x 30 metre hose line lengths to be used on three hydrant points at any one time.

## 5.8 Emergency Management.

In order to address the high risk to personnel who may be travelling to or leaving the ventilation shaft site, Substation or Switchyard, or undertaking operations there-in during periods when this activity is subject to the risk of bushfire, protocols shall be established in the form of operational policies for the safe occupation of the ventilation shaft site [Office and Maintenance Sheds], Substation, Switchyard and access / egress during potential bushfire emergencies.

These protocols shall include training in emergency management [evacuation planning] bushfire fighting, the use of structural and bushfire fighting equipment and clear guidelines on attendance at the facility during bushfire danger days [high to catastrophic].




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It is also recommended that an emergency Helipad be investigated at either the substation site or preferably at the ventilation shaft site.

## 5.9 Bushfire Hazard Management.

The intention of bushfire hazard management is to prevent flame contact with an asset, reduce radiant heat to below the ignition thresholds for various elements of the asset so as to minimize the potential for flame contact and wind driven ember ignition of the asset.

The management of the recommended Defendable Spaces [Asset Protection Zones] shall comply with the recommendations of Appendix A5.4 & Appendix A5.5 of *Planning for Bushfire Protection 2006* and *Standards for Asset Protection Zones*.

Management of the recommended Defendable Space to the ventilation shaft site, Substation and Switchyard compound shall comply with the following:

- Maintain a clear area of low cut lawn, pavement or gravel adjacent to the asset;

- Keep areas under shrubs and trees raked and clear of combustible fuels;

- Trees and shrubs should be maintained in such a manner that tree canopies are separated by 2 metres and understorey vegetation is not continuous [retained as clumps].

## 5.10 Bushfire risk created during Site Works.

Site works during the construction of the ventilation shaft facility and associated infrastructure may present a short term threat of ignition of adjoining unmanaged forest vegetation, resulting in a risk to forestry assets and the broader community.

This risk maybe created through the use of earth-moving machinery, welding/drilling equipment etc. and shall be assessed, monitored and addressed through the implementation of protocols which mitigate the chance of ignition caused by sparks or other ignitions sources [molten metal].

If this risk prevails on Total Fire Ban Days, all works shall be suspended until cessation of the ban.




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## 5.11 Bushfire risk created during operations of the Ventilation Shaft site, Substation and Switchyard.

Site operations such as cutting, grinding, welding and inappropriate storage/use of materials that may be subject to spontaneous combustion can cause the ignition of unmanaged vegetation within and external to the ventilation shaft site, Substation and Switchyard compounds and associated facilities.

This risk shall be assessed, monitored and addressed through the implementation of protocols which include the examination of the work proposed; training of operators and the establishment of work methods which mitigate the chance of ignition caused by sparks or other ignition sources [molten metal].




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# SECTION 6
# SUMMARY OF MITIGATION MEASURES

## 6.1 Ventilation Shaft Site:

1. Operational procedures and evacuation planning shall be prepared in order to address the unsafe location of the site and unsafe access/egress;

2. The provision of a Helipad within or within close proximity to the ventilation shaft site shall be investigated;

3. The site shall not be manned during Total Fire Ban days and catastrophic fire weather days;

4. All 'hot work' within the site shall be assessed and monitored to determine the risk of ignition of surrounding unmanaged vegetation;

5. In order to reduce the risk of flame contact on the structures i.e. Office Block, Maintenance Sheds & Compressor Station Sheds, the minimum setback to unmanaged vegetation from these structures should be 40 metres – refer to Figure 7;

6. In order to minimise the ignition of the structures by burning embers the structures shall be constructed to Bushfire Attack Level [BAL] 40 in accordance with A.S. 3959 – 2009;

7. The whole of the site shall be managed as an Inner Protection Area [IPA] as defined by the NSW Rural Fire Service's *"Specifications for Asset Protection Zones"*;

8. A 'back-to-base' radio network shall be installed in the Office Building, complete with either back-up power or solar power supply;

9. All vehicles shall be equipped with a two-way, back to base radio system;

10. At least one building within the site shall be constructed and equipped as a safe refuge, capable of protecting occupants against ember and smoke impact – refer to *Performance Standards for Private Bushfire Shelters – ABCB – 2010*.




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## 6.2 Preferred Substation Site ESA 7 & ESA 8:

1. Operational procedures and evacuation planning shall be prepared in order to address the unsafe location of the Substation site and unsafe access/egress;

2. The preferred substation site shall be ESA 7 & ESA 8 with the substation equipment located within the north-eastern corner of the site, adjacent to Sunnyside Ridge Road – refer to Figure 6;

3. The minimum separation between the equipment and the bushfire prone vegetation to the west of the perimeter track should be 50 metres and 25 metres to the north. A separation of 25 metres is recommended to the east with the compound located in the north-eastern corner of the former plantation site – refer to Figure 6;

4. It is recommended that the Pinus Radiata be removed and the area of the former plantation managed as an Asset Protection Zone;

5. The equipment yard shall be maintained free of vegetation and combustible materials;

6. All 'hot work' within the site shall be assessed and monitored to determine the risk of ignition of surrounding unmanaged vegetation.

## 6.3 Alternate Substation Site ESA 10:

1. Should the preferred substation site at ESA 7 & ESA 8 not be suitable the equipment shall be located within the alternate Substation Site as shown on Figure 6;

2. A 50 metre wide Asset Protection Zone shall be provided to the western aspect of the equipment and a 25 metre wide Asset Protection Zone provided to the remaining aspects;

3. The equipment yard shall be maintained free of vegetation and combustible materials;

4. Operational procedures and evacuation planning shall be prepared in order to address the unsafe location of the alternate Substation site and unsafe access/egress;

5. All 'hot work' within the site shall be assessed and monitored to determine the risk of ignition of surrounding unmanaged vegetation.




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## 6.4 Switching Yard:

1. A 50 metre wide Asset Protection Zone shall be provided to the south-western, western and north-western aspects of the Switching Equipment and a 25 metre wide Asset Protection Zone provided to the remaining aspects;

2. Operational procedures and evacuation planning shall be prepared in order to address the unsafe location of the Switching Yard and unsafe access/egress.

## 6.5 Power line – Aerial Connection to Exiting Supply:

1. Bundled or insulated cable shall be used;

2. Periodic inspection of the line/poles shall also be undertaken by a qualified power line technician and the base of the poles shall be kept clear of tall grasses/shrubs;

3. Clearance to the aerial connection to the underground cables shall be undertaken, and maintained in accordance with the electricity supply company's best practice standards. Trees located on the western side of the overhead line connection shall be assessed and removed if the 'drop-zone' of the tree impacts the overhead line.

## 6.6 Water supplies for fire-fighting operations:

1. The onsite water storage tanks shall be equipped with 65mm outlet to enable fire service tanker replenishment. The outlet/s shall be fitted with a 65mm Ball Valve and Stortz Coupling;

2. It is recommended that a fire-fighting water supply be installed within the ventilation shaft site, including a diesel powered pump-set supplying hydrants and hose reels to the buildings – supplied from the Water Storage Tanks. The pump-set shall be remote start from the Office and Maintenance Shed with back-up power provided to the pump from batteries charged by solar panels;

3. Hose Reels shall be strategically located in order to provide a wet-down of the buildings and the hydrants shall be located on the periphery of the compound with two-way Millcock Valves complete with ball valves and Stortz Couplings;

4. Lay-flat canvas hose, nozzles and spanners shall be stored on the Maintenance Shed in sufficient quantities to enable at least 2 x 30 metre hose line lengths to be used on three hydrant points at any one time.




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## 6.7 Emergency Management Protocols/Training:

1. Protocols shall be established in the form of operational policies for the safe occupation of the ventilation shaft site and access/egress during potential bushfire emergencies;

2. These protocols shall include training in emergency management / evacuation, bushfire fighting, the use of structural and bushfire fighting equipment and clear guidelines on [emergency] attendance at the facility during bushfire danger days [high to catastrophic];

3. During the construction phase the Site Manager/s and during the operations phase key engineering personnel shall undertake, and be certified in, the NSW Rural Fire Service's Basic Fire Fighting Course;

## 6.8 Management of Asset Protection Zones [Defendable Spaces]:

Management of the Defendable Spaces within the ventilation shaft site, the Substation and Switchyard compounds shall comply with the following:

- Maintain a clear area of low cut lawn, pavement or gravel adjacent to the asset;

- Keep areas under shrubs and trees raked and clear of combustible fuels;

- Trees and shrubs should be maintained in such a manner that tree canopies are separated by 2 metres and understorey vegetation is not continuous [retained as clumps].

The maintenance of the vegetation within the ventilation shaft site, Substation and Switchyard compounds shall be monitored to determine the risk posed by machinery undertaking taking this work. Operators must be trained in bushfire fighting and have appropriate 'first response' fire-fighting capabilities [Knapsacks / Fire Extinguishers].




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## SECTION 7

# CONCLUSION

This report has reviewed the bushfire hazard to the proposed Ventilation Shaft Project at the Angus Place Colliery, in accordance with the Key Issues identified by the Director General's Environmental Assessment Requirements issued on the 18th January 2012 and has found that the location of the Substation, Switchyard compounds and ventilation shaft site creates an extreme level of risk of damage to the assets and danger to occupants remaining at, accessing or leaving the sites during a significant bushfire event within the Newnes State Forest.

Measures have been recommended to mitigate the level of impact on the assets however the occupation of the ventilation shaft site, Substation and Switchyard compounds during a fire event which occurs during periods of high – catastrophic levels of bushfire danger will create the possibility of a loss of life unless protocols are strictly enforced to limit the use of the access roads and the facilities during such bushfire events.

In order to address the possible need to evacuate staff from the ventilation shaft site and Substation compound this report recommends the provision of a Helipad be investigated to enable removal of the occupants by air.

The report also examines the risk from a fire which occurs within and spreads from the proposed ventilation shaft site, Substation and Switchyard compounds and associated infrastructure during construction and there-after during operations and provides recommendations on protection measures and operational procedures designed to mitigate the potential damage to the environment and adjoining assets [State Forest and private property beyond the State Forests boundary].

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## REFERENCES:


- N.S.W Rural Fire Service – *Planning for Bushfire Protection 2006*;
- *Environmental Planning & Assessment Act – 1979;*
- *Rural Fires Act – 1997;*
- *Rural Fires and Environmental Assessment Legislation Amendment Act 2002;*
- *Rural Fires Regulation 2008;*
- NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping 2002;*
- *Threatened Species Conservation Act 1995;*
- *Native Vegetation Act;*
- *Bushfire Environmental Assessment Code 2006;*
- Building Code of Australia;
- Australian Standard A.S 3959-2009 "*Construction of Buildings in Bushfire Prone Areas";*
- *Lithgow Bushfire Prone Land Map;*
- Google Maps;
- SixViewer.





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