



# Western Coal Services Project

## Visual Impact Assessment

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Version/Date: June 2013

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Document Status

Version	Purpose of Document	Orig	Review	Review Date
Rev A	Draft for internal review	NL	TP	04/09/2012
Rev B	Draft for Client Review	NL	TP	03/10/12
Rev 0	Final incorporating DGRs, final Project Plan and comments	NL	TP	16/12/12
Rev 1	Final incorporating client comment and inclusion of Option 2 haul route and bridge	NL	BL	12/03/13
Rev 2	Final incorporating further client and technical review	NL	RD	18/03/13
Rev 3	Final incorporating further agency / DoPI feedback	NL	RD	21/06/13

Approval for Issue

Name	Signature	Date
Rob Dwyer		21/06/13

## Contents

<b>SUMMARY .....</b>	<b>5</b>
<b>1.0 PURPOSE AND METHODOLOGY .....</b>	<b>6</b>
1.1 Methodology .....	6
<b>2.0 DESCRIPTION OF PROPOSAL.....</b>	<b>8</b>
2.2 Haul Road and Bridge.....	10
2.3 Reject Emplacement Area .....	11
2.4 Washery and Conveyors .....	12
2.5 Proposal Details .....	14
<b>3.0 EXISTING VISUAL CONTEXT .....</b>	<b>15</b>
3.1 Site.....	15
3.2 Existing View-shed Model .....	15
3.3 Context and Visual Catchment .....	17
3.4 Identification of Receptors.....	17
3.5 Existing Panoramas.....	19
<b>4.0 VISUAL IMPACT ASSESSMENT.....</b>	<b>20</b>
4.1 Visually Prominent Elements.....	20
4.1.2 Reject Emplacement Areas .....	25
4.1.3 Coal Washery and Rejects Bin .....	26
4.1.4 Haul road/Bridge Options .....	26
4.2 Cumulative Impacts .....	27
4.2.2 Visual sensitivity .....	31
4.2.3 Cumulative Impacts Conclusion .....	32
4.3 Mitigation Strategy .....	32
4.3.1 General mitigation measures.....	32
4.3.2 Specific mitigation measures .....	33
<b>5.0 CONCLUSION .....</b>	<b>35</b>
<b>6.0 PLATES .....</b>	<b>36</b>

## Tables

Table 1 Mining and Industry in the Locality .....	27
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## Figures

Figure 1 Centennial Coal Services Facility Location .....	9
Figure 2 Location of the two haul road and bridge Options.....	10
Figure 3 Context of the two haul road and bridge Options.....	11
Figure 4 Springvale Coal Services Site Aerial Photo with Panorama View Angles .....	13
Figure 5 Depiction of existing ground level and proposed level with the completed REA .....	14
Figure 6 Initial View-sheds .....	16
Figure 7 Topographical Relief .....	18
Figure 8 Profile and Panorama for Photo Point 3.....	21
Figure 9 Profile and Panorama for Photo Point 8.....	22
Figure 10 Profile and Panorama for Photo Point 10.....	23
Figure 11 Profile and Panorama for Photo Point 15.....	24
Figure 12 Industrial and mining elements in the locality.....	29
Figure 13 Visual catchments – cumulative effects .....	30

## Plates

Plate 1 Existing haul route bridge approximately 2.5km north of the Springvale Coal Services Site .....	36
Plate 2 View west across Springvale Coal Services Site with Blackmans Flat to the left of picture .....	36
Plate 3 Photo Point 1: View west from Blackmans Flat towards the site and proposed bridge crossing point.....	36
Plate 4 Photo Point 8: View west from Karawatha Drive.....	37
Plate 5 Photo Point 10: View north-west from Lidsdale .....	37
Plate 6 View north opposite the Springvale Coal Services Site to the Pine Dale Overburden Emplacement .....	38
Plate 7 Coal Washery – Loader Conveyors and Rejects Bin. ....	38
Plate 8 Photo Point 12: View west towards the site from Wolgan Road .....	39
Plate 9 View north west from Castlereagh Highway to the Mount Piper Power Station site.....	39
Plate 10 Springvale Coal Services Site frontage bank shielding view into the site from the road .....	40
Plate 11 View west towards the Springvale Coal Services Site from Blackmans Flat -vegetation screening view.....	40

## Appendices

Appendix 1	Photomontages from Photo Point 3
Appendix 2	Photomontages from Photo Point 18
Appendix 3	Photomontages from Photo Point 16
Appendix 4	Photomontages from Photo Point 17
Appendix 5	Photomontages from Photo Point 12



## Summary

Centennial has developed a long-term strategy for its future operations in the Western Coalfield. This strategy is in response to future marketing opportunities for both domestic and export coal sales. The strategy centres on the transport and processing of coal from both Springvale Coal Mine and Angus Place Colliery, but also facilitates receipt of coal supplies from other areas.

In line with the Centennial strategy the Project will involve building an additional Washery adjacent to the existing Washery within the Springvale Coal Services site, linking the facility to the Angus Place Colliery via a new haul road link, and separating the transport and logistics function of the facility from the source mines.

A Visual Impact Assessment (VIA) has been carried out to both inform the design and location of key project components proposed in the Western Coal Services Project. The assessment addresses the visual context of the site and any potential visual impacts resulting from the project. Recommendations for mitigation measures have been suggested to reduce visual impacts where appropriate.

From a visual perspective the assessment determined that the Springvale Coal Services Site exists in a locale which is already largely comprised of extractive industries and power station elements across the undulating rural and forested landscape. The elements proposed are not out of character with existing elements in the visual catchment, including Haul Roads, Washery and Reject Emplacement Area (REA) mounds.

Although the character of the area is influenced by mining activities, the landscape assists with the visual absorption of the elements, as ridgelines and forested areas in the locality break up the industrial elements resulting in a reduction of the cumulative impact of multiple elements in the area. The highest visual sensitivity occurs adjacent to Blackmans Flat where it has been determined that the proposed haul route and overpass will provide additional visual intrusion to the area already compromised by the existing Pine Dale mine overburden emplacement bund opposite the entrance to the Springvale Coal Services Site.

Specific to the Springvale Coal Services Site, a number of the upgrade elements will not result in a major visual impact due to visual screening provided by the road side bank fronting the site and existing vegetation in the locality. However, the Option 1 haul road route including the bridge element in particular will interrupt and significantly alter the view lines from Blackmans Flat locality towards the north. For this reason the Option 2 route is the recommended route from a visual impact perspective as it will be more remote from Blackmans Flat, topography and vegetation in the vicinity will assist with shielding the ramp approaches to the bridge. It is noted that the proposed haul road bridge will be visually similar to an existing haul road bridge approximately 2.5 km north of the Springvale Coal Services Site.

The assessment concludes that the visual impacts associated with the other proposed elements will be minor with implementation of adequate mitigation measures, including landscaping, material selection and prompt rehabilitation. Although no private receptors were identified in the field survey that would be significantly impacted by the proposal, it is recommended that provision should be made for possible offsite landscape funding where it is later determined that the REA or proposed Washery element may become visible from private indoor and outdoor living areas of residences. The Project will not cause added cumulative visual impacts to the catchment due to the location of the proposed elements and the factors such as topography and vegetation interrupting views to and across the site. The Option 2 haul road route and bridge should be considered as the preferred Option, as it offers reduced and acceptable visual impacts.

## I.0 Purpose and Methodology

There are two main purposes of this visual impact assessment (VIA):

- (1) To inform the proponent at the design stage to avoid and minimise impacts up front by having information available when selecting route Options for the haul road, bridge and emplacement mounds.
- (2) To inform the consent authority and the community about the visual impact of the proposal and what mitigation measures are proposed.

The VIA will define the visual effects of the project from key points in the locale, most notably Blackmans Flat. It will also assess the overall impact on the character of the area. The VIA will assess impacts in the short distance (< 1km from the boundary of the Springvale Coal Services Site), middle distance (1-2 km) and long distance (>2km from the boundary of the Springvale Coal Services Site).

The preparation of the VIA has considered the relevant Director General's requirements which were issued on the 6 November 2012 and include:

*The Environmental Impact Statement must address the following key issues in relation to visual impact. A detailed assessment of the:*

- *changing landforms on site during the various stages of the development;*
- *potential visual impacts of the development on private landowners in the surrounding area as well as from key vantage points in the public domain; and*
- *a detailed description of the measures that would be implemented to minimise the visual impacts of the development.*

### I.1 Methodology

The following is a summary of the methodology which has been employed to undertake the VIA.

- (1) Field inspection and panorama pictures to identify:
  - The existing visual context in the close (<1km) middle (1- 2km) and long distance (>2km);
  - Capture existing elements in the landscape;
  - Locate spatially where new elements will be positioned, and;
  - Identify potential private receptors and or key public vantage points with view through to the site;
- (2) Use computer modelling to:
  - Advise on topographic features in the precinct;
  - Identify view catchments to assist with consideration of cumulative impacts of multiple existing and proposed elements in the precinct;
  - Model proposal elements into the landscape and identify spatially where elements could possibly be seen and visual sensitivity of the environment. This model also informed the field trip;
  - Create cross sections in the landscape to reveal what components will potentially be viewed, and;
  - Identify height change within the landscape from existing topography when elements are constructed.
- (3) Create montages in the close middle and long distance to demonstrate how the proposed elements will impact the precinct visually.

- (4) Make recommendations on:
- The preferred haul route and bridge Option;
  - Mitigation measures where impacts are considered significant, and;
  - Provision for potential offsite landscaping to take place over time.

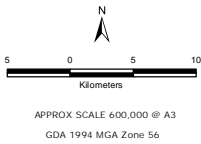
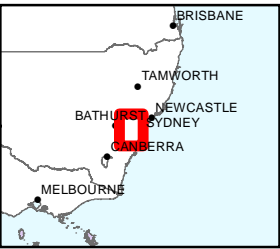
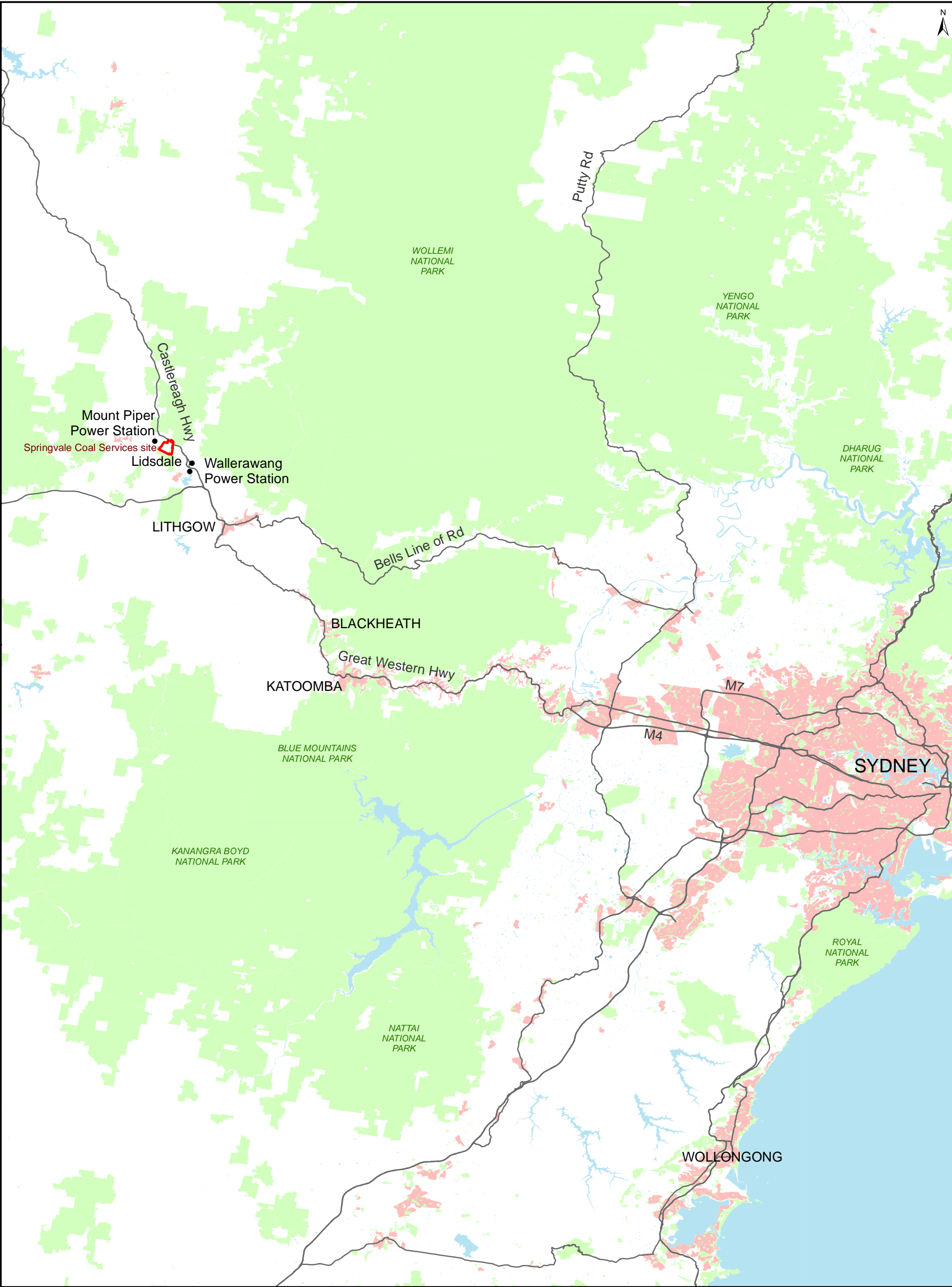
## 2.0 Description of Proposal

The key elements of the Project include:

- Upgrading the existing Washery, workshops and infrastructure within the Springvale Coal Services Site by constructing a new Washery adjacent to the existing facility that will remain operational to provide a total processing capacity of up to 7 Mtpa;
- Construction of processing infrastructure such as additional conveyors and transfer points and other coal handling requirements to cater for the upgraded Washery facility within the existing disturbance footprint of the Springvale Coal Services site;
- Extending and enlarging an existing reject emplacement area to enable sufficient reject disposal capacity for a 25 year life;
- Increasing the utilisation of the return side of the existing overland conveyor system to enable up to 6.3 Mtpa of coal to be delivered to Lidsdale Siding;
- Constructing a private haul road, approximately 1.3 km in length, linking the Springvale Coal Services Site with the existing private haul road from Angus Place Colliery to Mt Piper Power Station. This private road will cross a section of the existing Pine Dale Mine operation and over the Castlereagh Highway;
- Improving the current water management systems on the Springvale Coal Services Site by separating clean and dirty water streams prior to either reuse or discharge off site;
- Integrating the existing approved transport and processing of coal at Springvale Coal Mine and Angus Place Colliery into the one consent;
- Integrating the remaining rehabilitation, monitoring, water management and reporting requirements associated with the Lamberts Gully Mine which occupies the Springvale Coal Services Site; and
- Continued use of all existing approved infrastructure, facilities and activities associated with the transport and processing of coal from each mine gate and the point of delivery to the Springvale Coal Services site. This infrastructure includes the existing conveyors, private haul roads, Kerosene Vale Stockpile Area, reject emplacement areas, services, access roads, car parks and buildings.

The location of the Springvale Coal Services site is shown in **Figure 1**.

This report provides a discussion on elements of the Project that will have an impact on visual amenity.



Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

DATA SOURCES

Centennial Coal. Proposed features have been derived from worst case options and will not necessarily reflect final design plans.

- LEGEND**
- Highway
  - Springvale Coal Services site
  - State Forest / Reserve / Park
  - Built Up Area
  - Ocean / Waterbody

**RPS**

FIGURE 1

Coal Services location



## 2.2 Haul Road and Bridge

During the design phase, two routes were considered. The most logical route initially was that which would follow the original transport corridor into the site (Option 1). This route exists close to the eastern boundary of the property and adjacent to Blackmans Flat. The second route (Option 2) was selected further north west and would traverse the highway at more of an obtuse angle. The Option 2 route avoids two dams on the Springvale Coal Services site and vegetation to the east of the highway and due to distance from receptors. Option 1 was considered the worst case scenario with respect to potential visual impact and has been assessed to then balance against other criteria and environmental assessments to inform the proponent about the selection of the final route. Option 2 was assessed as an alternative route and also balanced against the other criteria to inform the proponent of the most appropriate Option.

The Option 1 route, involves the road being ramped up to cross the Castlereagh Highway via a bridge located approximately 300m west of the Blackmans Flat locality.

Due to topography, the Option 2 route involves less of a ramp up and will cross the highway approximately 500m beyond the Blackmans Flat locality.

**Figure 2** and **Figure 3** indicate the locations of the Option 1 and 2 routes and their relationship to the context of the site, where they cross the Castlereagh Highway and proximity to Blackmans Flat.

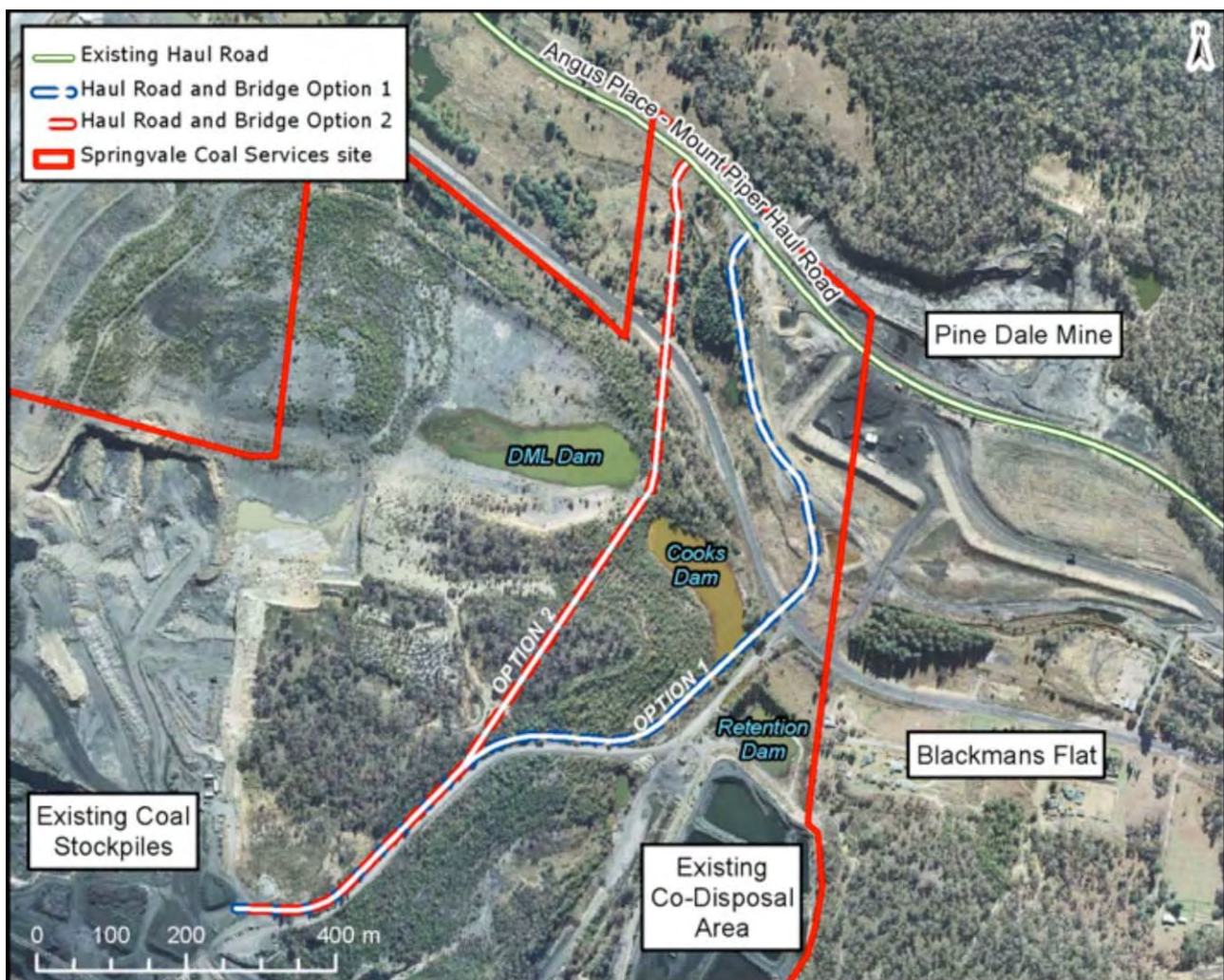
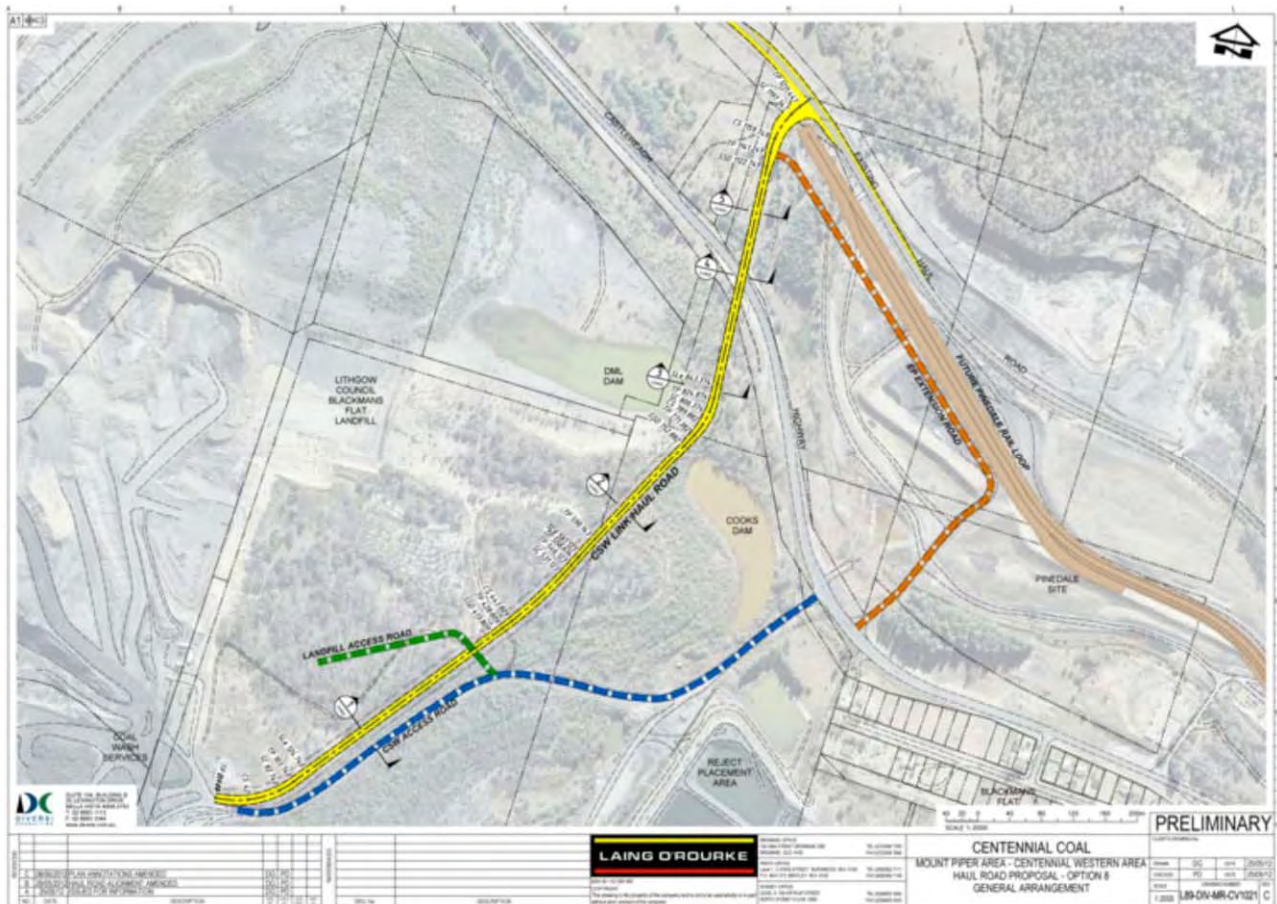


Figure 2 Location of the two haul road and bridge Options





**Figure 3 Context of the two haul road and bridge Options**

An existing haul route and bridge exists approximately 2.5 km north of the Springvale Coal Services site and, is visually similar to that proposed. A photo of the bridge is provided in **Plate 1** in Section 6.

## 2.3 Reject Emplacement Area

There are two existing REAs within the Springvale Coal Services Site. The main REA is the final void of the Lamberts Gully Open Cut Mine ('A Pit'), used to dispose of coal reject, and is located on the southern boundary, south of the existing Washery and overland conveyor.

The second existing REA is known as the Co-Disposal REA, this consists of a series of tailings ponds and the retention dam located on the eastern boundary of the Springvale Coal Services Site.

The main REA will be filled at a rate of 1Mtpa for 25 years to an RL of 1,000 ASL (approx 20m above the level of the tripper being the tipping conveyor above the ROM stockpile located approximately 400m west of the Washery). It will generally have side slopes at a slope of up to 1:3 with 5.5m wide benches for access and drainage every 5m of vertical rise. There will be two access roads cut in to the sides of the REA to allow trucks to reach the top of the mound from the rejects loading bin at a slope of 8% (1:12.5).

The main REA has been superimposed onto the aerial photograph of the site as shown in **Figure 4**.

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## 2.4 Washery and Conveyors

A new Washery is proposed which will be co-located adjacent to the east of the existing Washery in a similar but slightly expanded footprint. The height of the Washery is 20 metres. The expanded footprint will not reduce noise shielding or visibility of the proposed facilities but will result in some additional vegetation clearing which in turn may make the facility more visible from afield. Details of the extent of vegetation clearing to install the new Washery was not available at the time of the visual impact assessment, so assumptions have been made to allow the assessment to be prepared

The Rejects Bin will be approximately 300 tonnes and is located in an elevated position 75 m to the southern side of the existing overland conveyor. This enables reject trucks easier access to the proposed REA.

The proposed Washery (and conveyors) has been superimposed onto the aerial photograph of the site as shown in **Figure 4**.







## 2.5 Proposal Details

The visual impact model and the general visual assessment have been informed by the following proposal details:

### Washery

- 20 m above ground.

### Haul Road and Bridge

#### Option 1

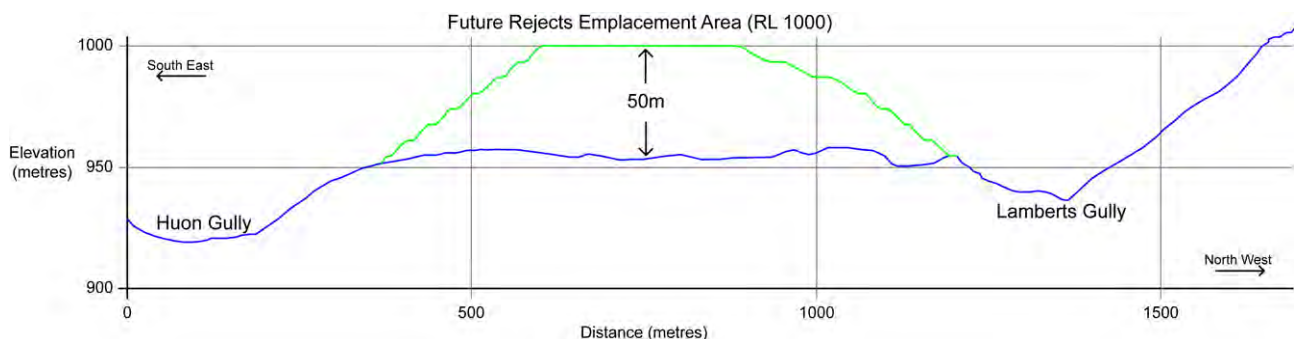
- Eastern Option, closest to Blackmans Flat;
- Bridge clearance of 6.5m;
- Bottom of Bridge to top of pavement 1.8m;
- 1.1m concrete barrier; and
- Total height of bridge above road is 8.3.

#### Option 2

- North western Option, approximately 400m to the north west of Option 2
- Bridge clearance of 6.5m;
- Bottom of Bridge to top of pavement 1.8m;
- 1.1m concrete barrier; and
- Total height of bridge above road is 8.3m.

### Future Reject Emplacement Area

- Based on cross sections from Aurecon report “Springvale Coal Services Washery and Rejects Emplacement Area – Dirty Water Management Report”, 18/7/2012;
- Shape of the mound is a series of steps made up of a 5.5m flat section then 19.5m 1/3 slope to a rise of approximately 6.5m rise for 19.5m horizontal distance, and;
- Top of mound at RL 1000m from 930 AHD – representing the establishment over twenty five years of an average of 50 m change in ground level from existing ground level. See **Figure 5**.



**Figure 5 Depiction of existing ground level and proposed level with the completed REA**

## 3.0 Existing Visual Context

### 3.1 Site

The Springvale Coal Services Site is located to the west of the Blue Mountains in NSW, approximately 4 km north-west of the village of Lidsdale. Lidsdale is located approximately 15 km north of Lithgow. Wallerawang is located approximately 5 km to the south of the site and the locality of Blackmans Flat is located directly adjacent to the site to the east. The site is accessed by the Castlereagh Highway, which borders the site to the north.

The elements of the proposal are almost entirely contained within the existing Springvale Coal Services Site except for the proposed bridge which will connect the proposed haul road with the existing Angus Place to Mt Piper Haul Road located to the north of the Castlereagh Highway. **Plate 2** in Section 6 provides a view west across the Springvale Coal Services Site.

### 3.2 Existing View-shed Model

A view-shed model was created to assist with determining the visual catchment of the proposed elements at the Springvale Coal Services Site. This model assists by depicting spatially where elements may be visible in the landscape and these areas were further explored by field inspection with the generation of:

- panorama pictures where the position of elements are nominated on the panorama, and
- montages where it was considered visual impacts could result from a full or partial view of one or more elements.

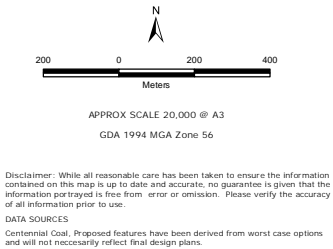
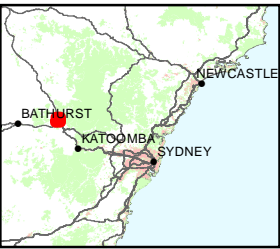
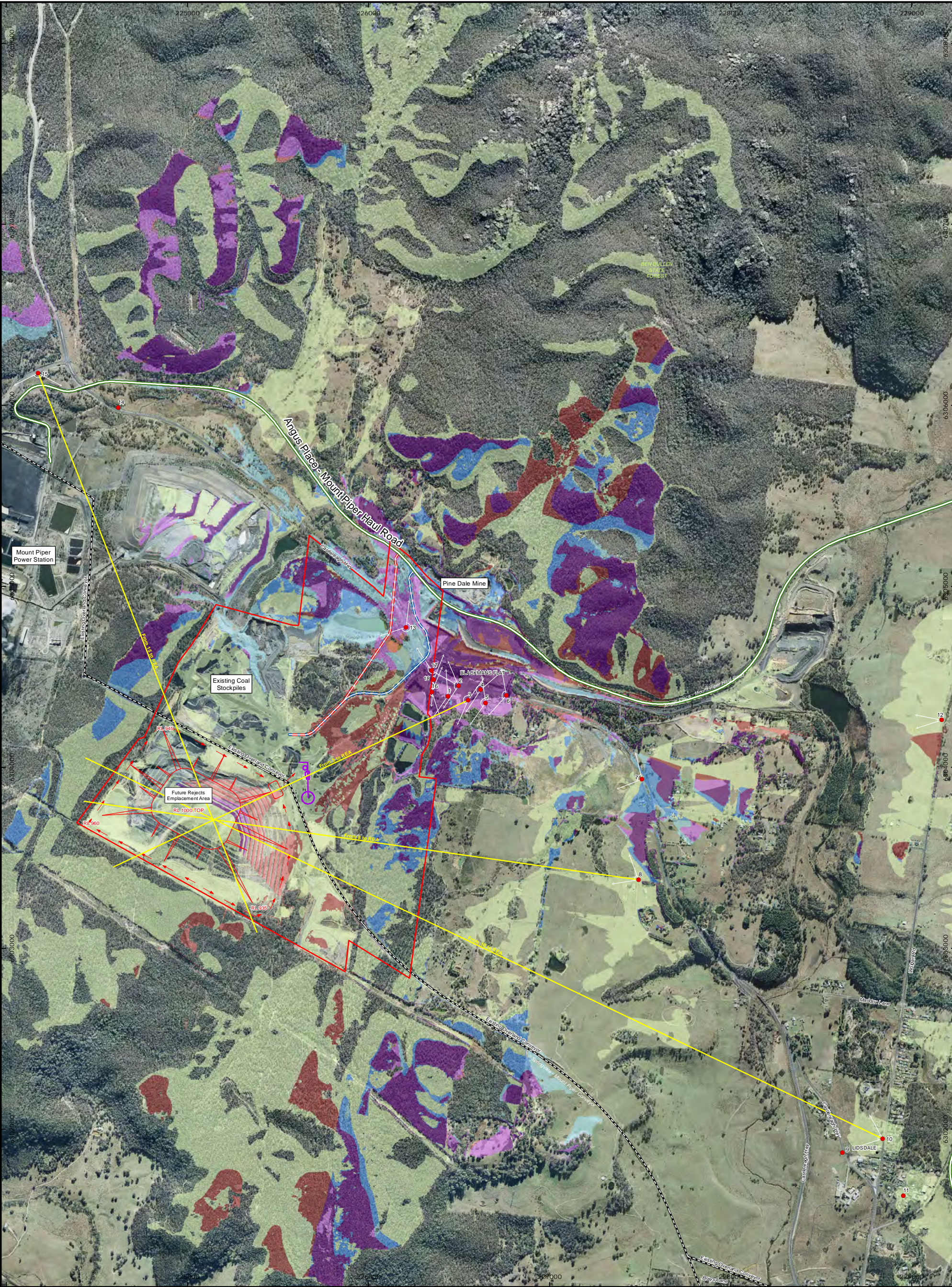
The initial view-shed model has been generated using TNTMips geospatial modelling software and was based on the features assumed in 2.5 above. A digital elevation model (DEM) with 2.5m cell size was derived from supplied 1m contours.

For the purposes of the initial view-shed model the mapped vegetation is assumed to be entirely opaque as the vegetation mapping only includes stands of trees large enough that they are likely to entirely block the view.

The Washery, future REA, both Haul Road and Haul Road Bridge Options 1 and 2 were modelled separately to assist with viewing location selection for the field investigation. Broad scale view-shed models were also generated based on a 30m DEM, a more suitable scale for landscape scale assessment. The broad scale view-shed models were combined with the initial view-shed model to produce the best model given the data available. The initial view-shed models extend approximately 2km to the south and west and 5km to the north and east. The broad scale model is applied outside of these areas to a distance of 30km.

The view-shed model map used for the VIA is shown in **Figure 6**.





**LEGEND**

- Photo Points
- Profile Lines
- Proposed Washer
- Existing Haul Road
- Existing Overland Conveyor
- Haul Road and Bridge Option 1
- Haul Road and Bridge Option 2
- ▭ Springvale Coal Services site
- ▭ Proposed Reject Emplacement Area

**Visible Features**

- ▭ Haul Road Option 1
- ▭ Haul Road Option 1 & REA
- ▭ Haul Road Option 2
- ▭ Haul Road Option 2 & REA
- ▭ REA
- ▭ Haul Road Option 1 & Haul Road Option 2
- ▭ Haul Road Option 1 & Haul Road Option 2 & REA



**Figure 6** provides a visual representation of what elements of the Project are likely to be viewed from the precinct around the site. Any colour on the map represents a point at which part or all of the development will be viewed. In this case the model reveals that in close proximity to the site all components of the proposal can be viewed from Blackmans Flat. For this reason visual impacts from this location are considered further in terms of impacts in Section 4.

The model reveals that the middle and long distance views to the site are largely shielded from view due to topography and vegetation, however, distant views of the Washery and in some cases REA will occur particularly from the Lidsdale locale. The long distance view has been further considered in Section 4.

### 3.3 Context and Visual Catchment

The area surveyed for the VIA included the 1.8km x 2.3 km area which surrounds the Springvale Coal Services site. The survey area is located in a valley surrounded to the north south and west by ridgelines with the valley itself extending to the east. The site and surrounds is dominated by extractive industries and power generation. The site sits between three mines – Angus Place Colliery to the north east, Springvale Coal Mine to the south east and Pine Dale Mine to the north. The Mt Piper Power Station is located to the north west. The site comprises a Washery and associated REAs. Where the site meets the highway it is well shielded from view by existing trees and vegetation as well as a significant embankment at the edge of the highway corridor. Immediately to the east of the site is Blackmans Flat, comprising approximately 14 dwellings that house approximately 30 people. A further 3.7 km to the east is the township of Lidsdale which has distant but interrupted views towards the site.

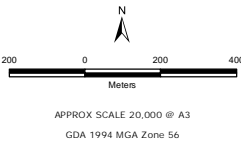
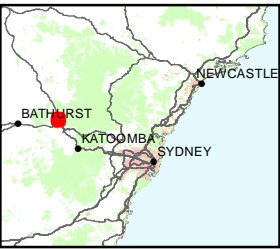
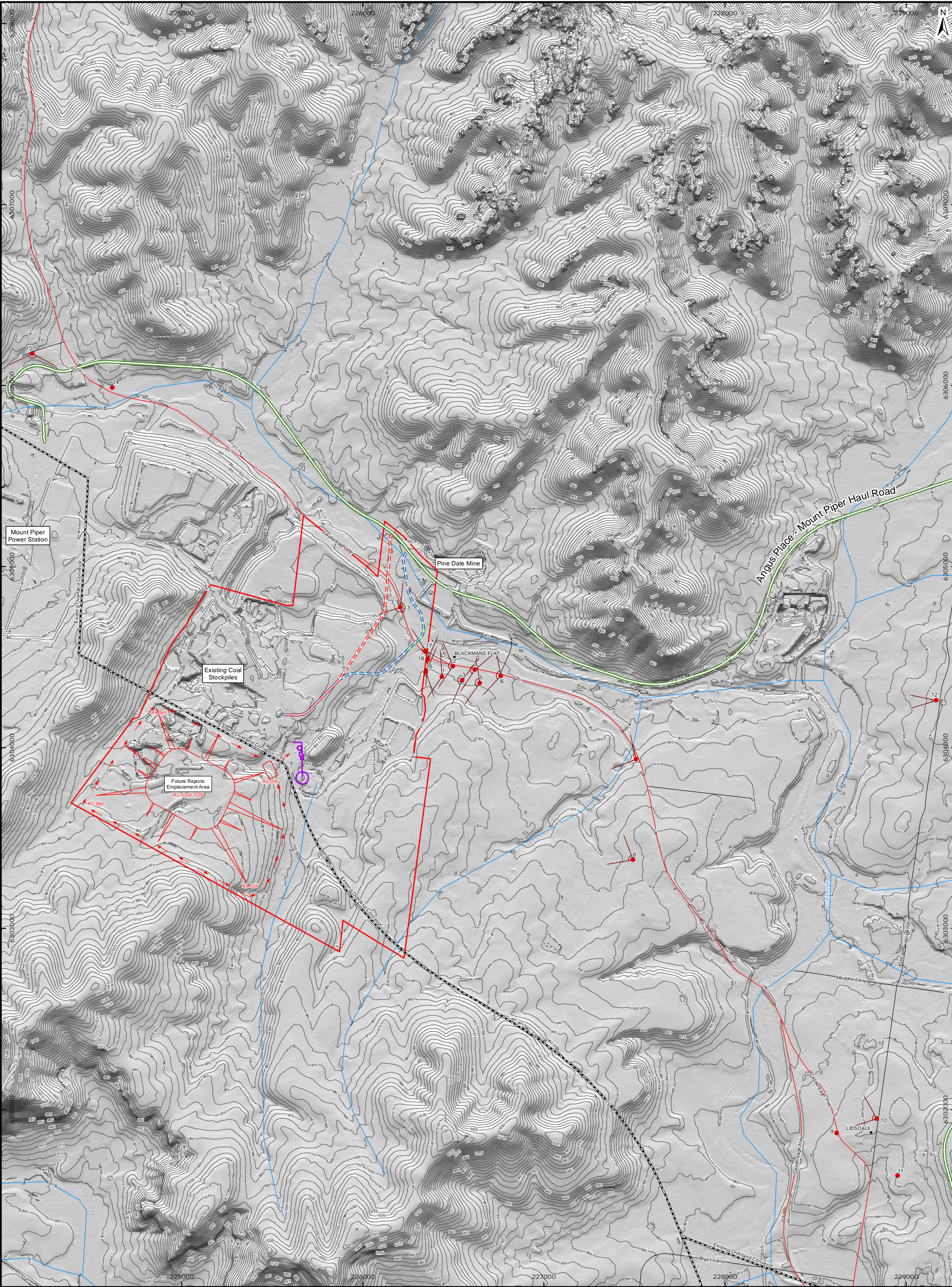
The proposed Washery, Options 1 and 2 haul road route and bridge features and the REA were modelled into the landscape. The elements that can be viewed from various points within the landscape were demonstrated spatially by using different colours. Based on the initial view-shed model the visibility of proposed features is blocked to the west and south by ridges, however, elements may be visible from the ridge tops above 1000m such as Mount Lambie.

### 3.4 Identification of Receptors

The view-shed model informed the field survey to assist with identifying potentially sensitive receptors that may be affected by the proposal. In this case the model reveals that the site is predominantly shielded from view by ridgelines to the north, west and south and sensitive receptors in those directions including residences along Pipers Flat Road will not have a view to the new facilities.

**Figure 7** has been shaded to reveal the topographical relief surrounding the site with contours added to verify potential receptors and these were further explored in the field visit that occurred 28 August 2012 and 5 March 2013.





Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

DATA SOURCES

Centennial Coal. Proposed features have been derived from worst case options and will not necessarily reflect final design plans.

LEGEND

- PhotoPoints
- Proposed Washer
- Haul Road and Bridge Option 1
- Haul Road and Bridge Option 2
- Existing Haul Road
- Existing Overland Conveyor
- Contour 5m interval
- Proposed Reject Emplacement Area
- Springvale Coal Services site



FIGURE 7  
Topographical relief



To the east the dwellings within Blackmans Flat (elevation 900 AHD) will potentially view the following elements:

- REA (1000 AHD). It should be noted that the existing ground level at the centre of the proposed site of the mound is approximately 950 AHD;
- Proposed Washery (standing 20 m above 920 AHD). Will stand alongside existing Washery;
- Option 1 Haul Road Bridge (standing 8.3 m above 905 AHD), and;
- Option 2 Haul Road Bridge (standing 8.3 m above 907 AHD).

Further afield, a location approximately 3.7 km to the south east of Lidsdale (elevation 905 AHD) will have distant views to the site.

The field survey revealed that existing built elements, vegetation and intermediate ridges within the landscape will naturally screen views through to and across the site. Photographs were taken in the field to determine the existing views from certain vantage points in the landscape and to determine the receptor precincts that were most likely to be impacted. These panoramas are shown and discussed in the following section.

### 3.5 Existing Panoramas

Panoramas were taken from key points that had the most potential to be impacted by the proposal. These panoramas are illustrated as **Plates 2 to 6**, **Plates 8 and 9** and **Plate 11** in Section 6. It should be noted that the panorama pictures were taken with a 28 mm wide angle camera lens which gives the broadest view catchment but distorts the depth in the picture with the horizon appearing further away than what the naked eye will see. These pictures were utilised to capture the potential view-shed only and further panoramas were taken with a 50 mm lens to reflect a view as the eye would see it.

Using the view shed model, the proposed built elements were then dropped into the images to show the post construction impact on the view catchment. These 50 mm panoramas were utilised for the montage pictures in Section 4.

## 4.0 Visual Impact Assessment

The visual analysis has revealed that the locale is largely characterised by extractive industries and power stations. Section 4.2 explores the cumulative impacts of these elements in the landscape and justifies that given the undulating nature of the locale the visual catchments and the developed elements contained within are separated such that the cumulative impacts are not considered to be significant.

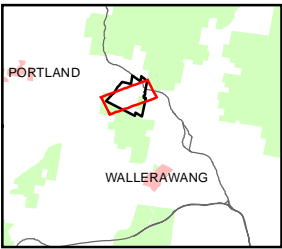
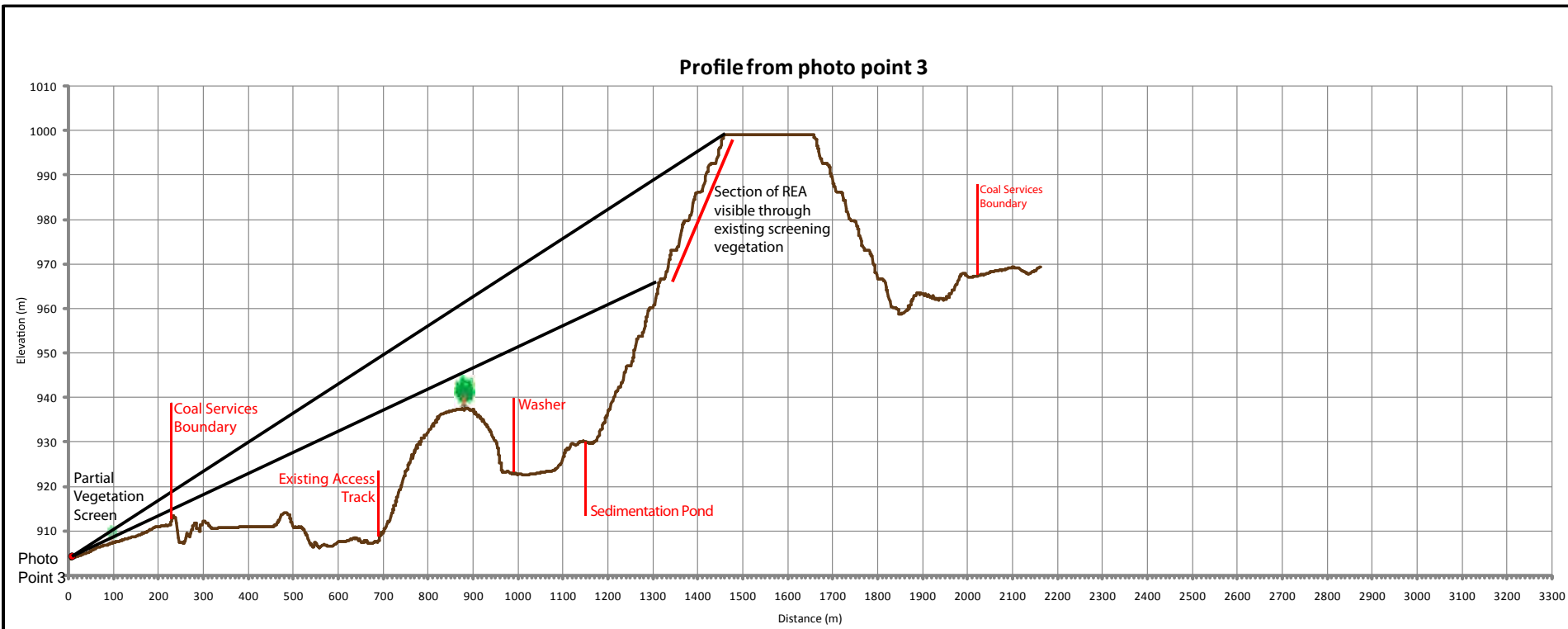
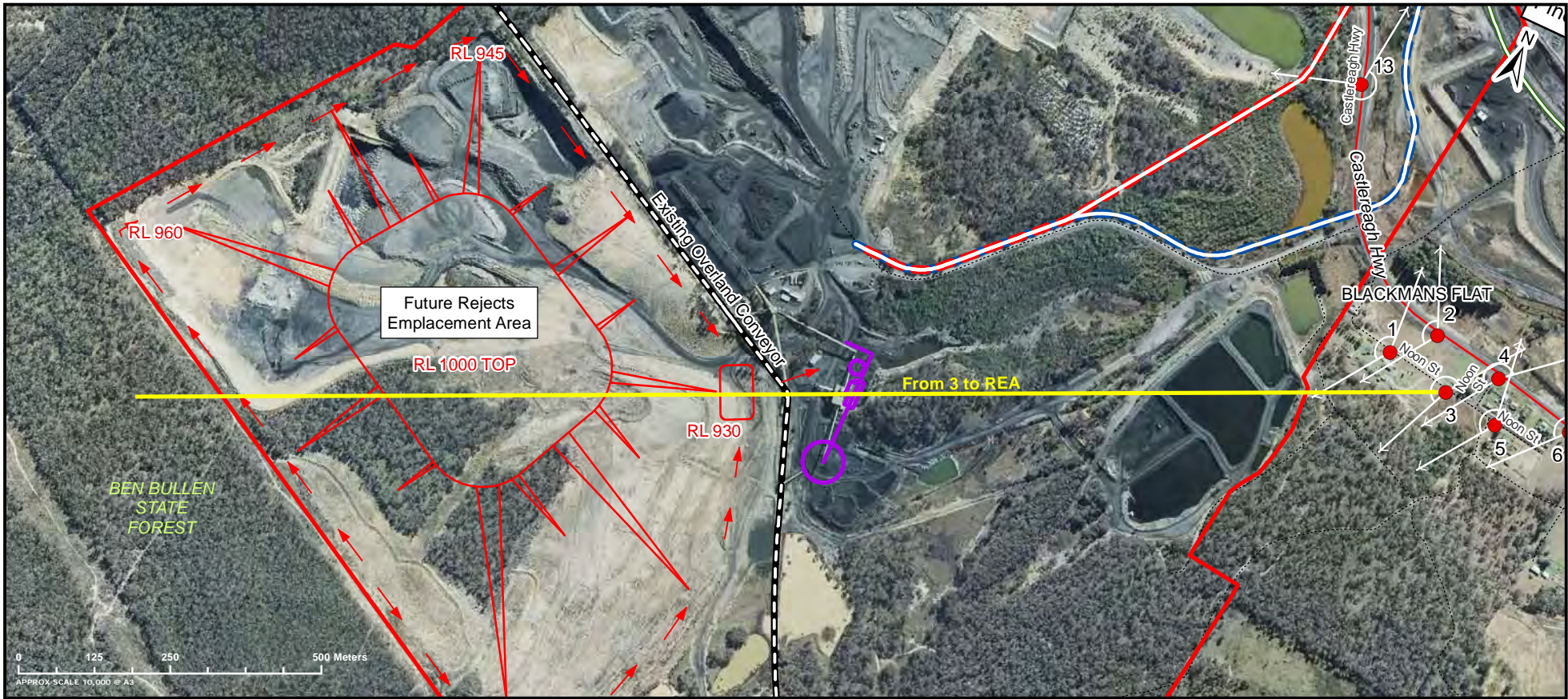
The proposed elements will not alter the character of the area and therefore the assessment is focused on the impact on views from key receptors in the landscape. Key receptors were found to be to the east of the site where views to and across the site are likely and where dwellings were located in the Blackmans Flat and Lidsdale localities. Views to the proposed elements from the highway corridor are also considered due to the corridor being regarded as a tourist route.

### 4.1 Visually Prominent Elements

The largest element of the proposal is the REA with other elements less prominent in size, however, the haul road route and bridge will also be prominent particularly when viewed from the highway corridor. The more physically significant elements of the proposal have been modelled into the landscape in profile and cross referenced with pictures from various vantage points to demonstrate their likely visibility.

**Figure 8, Figure 9, Figure 10 and Figure 11** include profile sections and panoramas that reveal the elements in the landscape from four vantage points. These are discussed below.





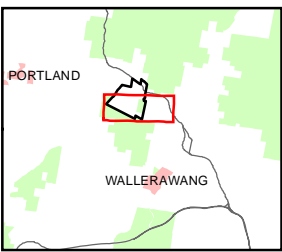
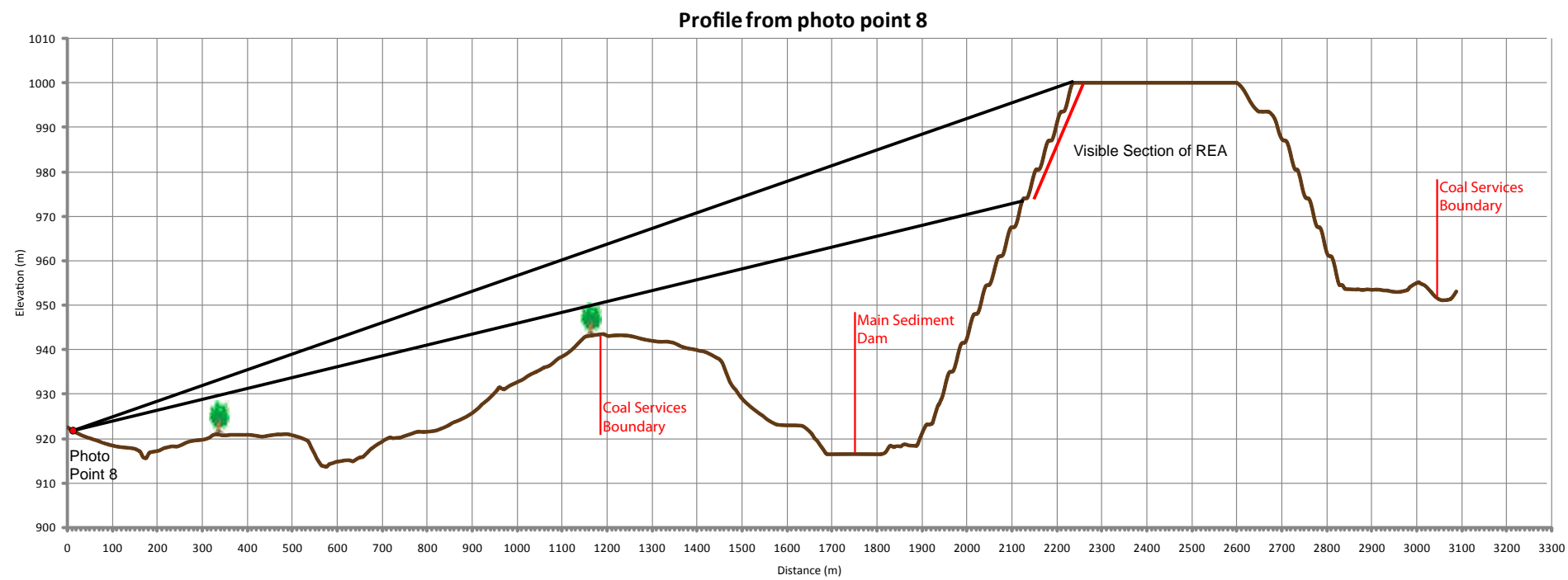
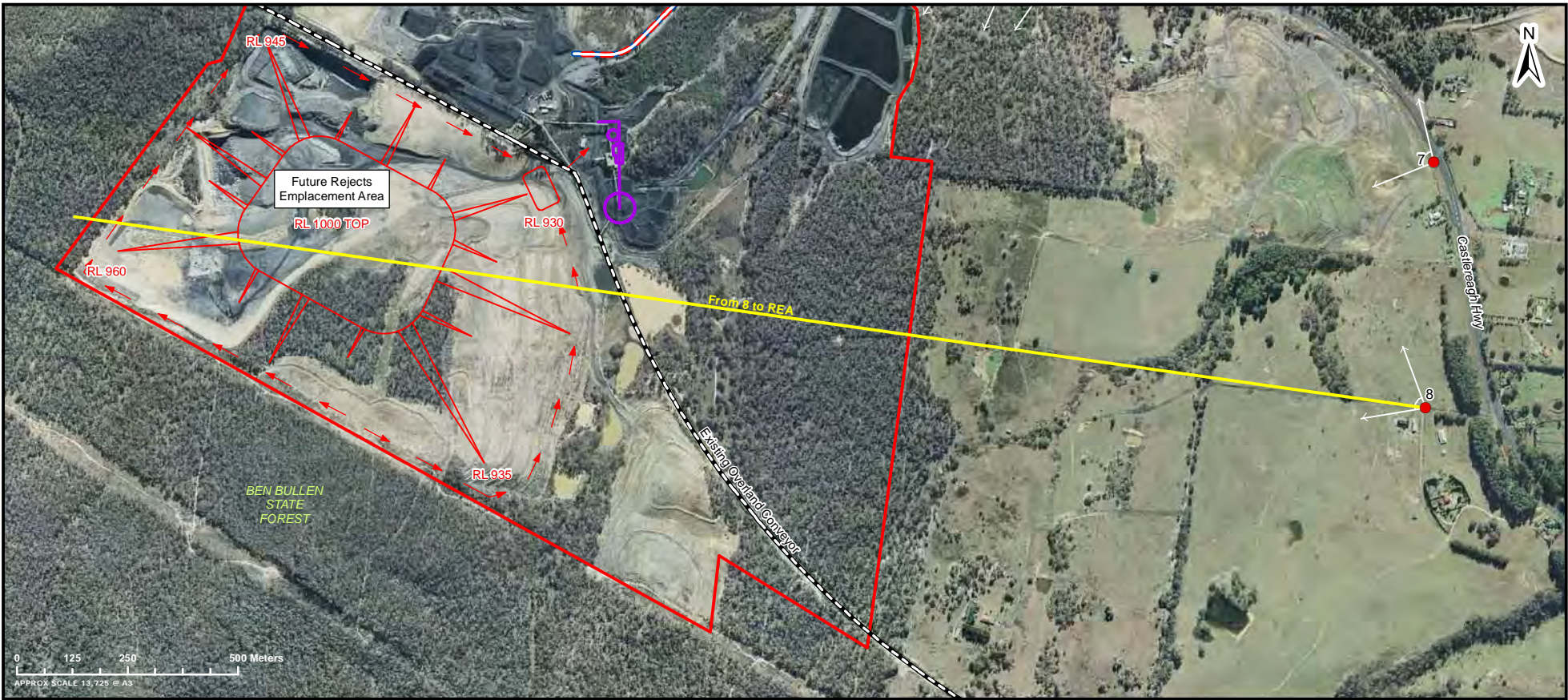
**Note:** 10x vertical exaggeration has been applied to the profile line diagram. Vegetation only shown where it affects the visibility of proposed features.

**Disclaimer:** While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

**DATA SOURCES**  
Centennial Coal, Proposed features have been derived from worst case options and will not necessarily reflect final design plans.

- LEGEND**
- Photo Point
  - Profile Line
  - Existing Haul Road
  - Existing Overland Conveyor
  - Proposed Washer
  - Haul Road and Bridge Option 1
  - Haul Road and Bridge Option 2
  - ▭ Proposed Reject Emplacement Area
  - ▭ Coal Services Boundary





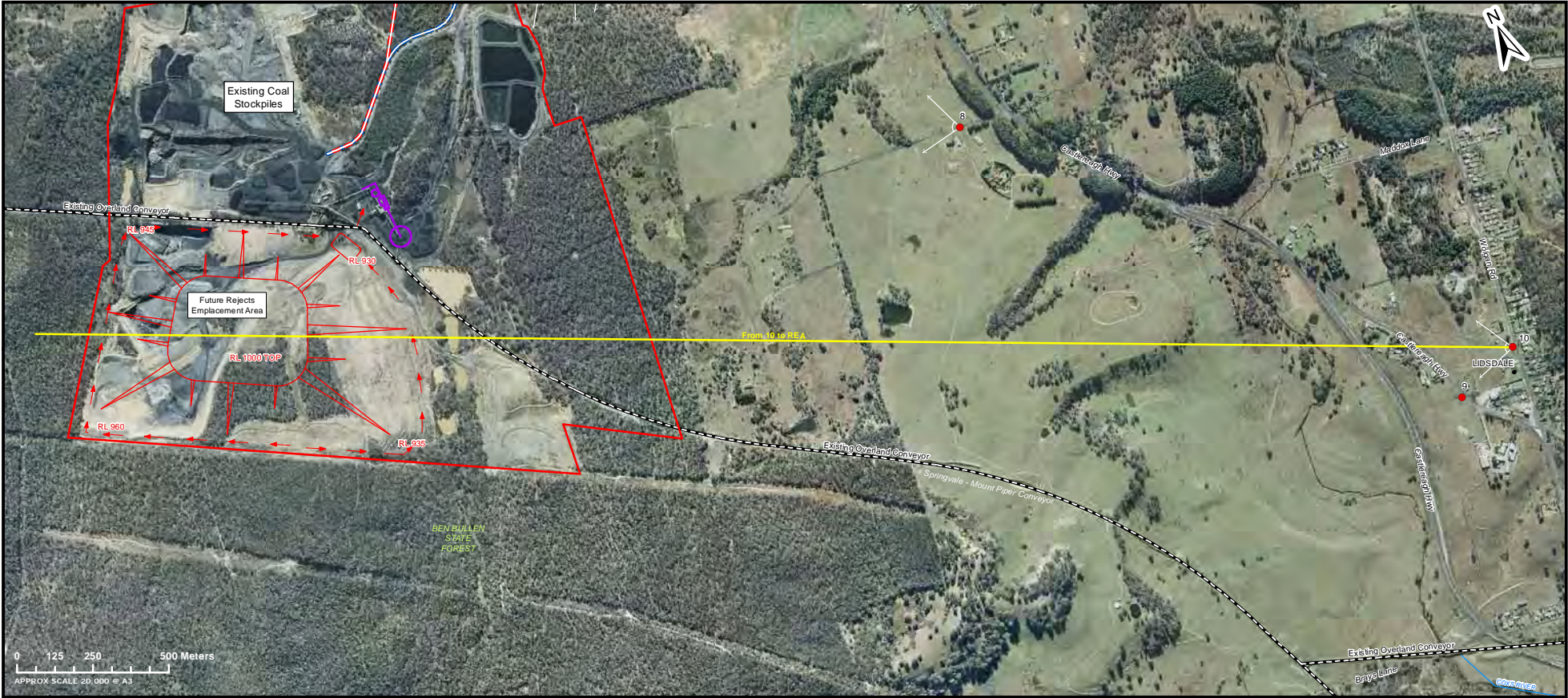
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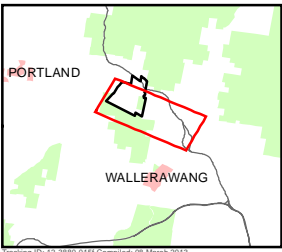
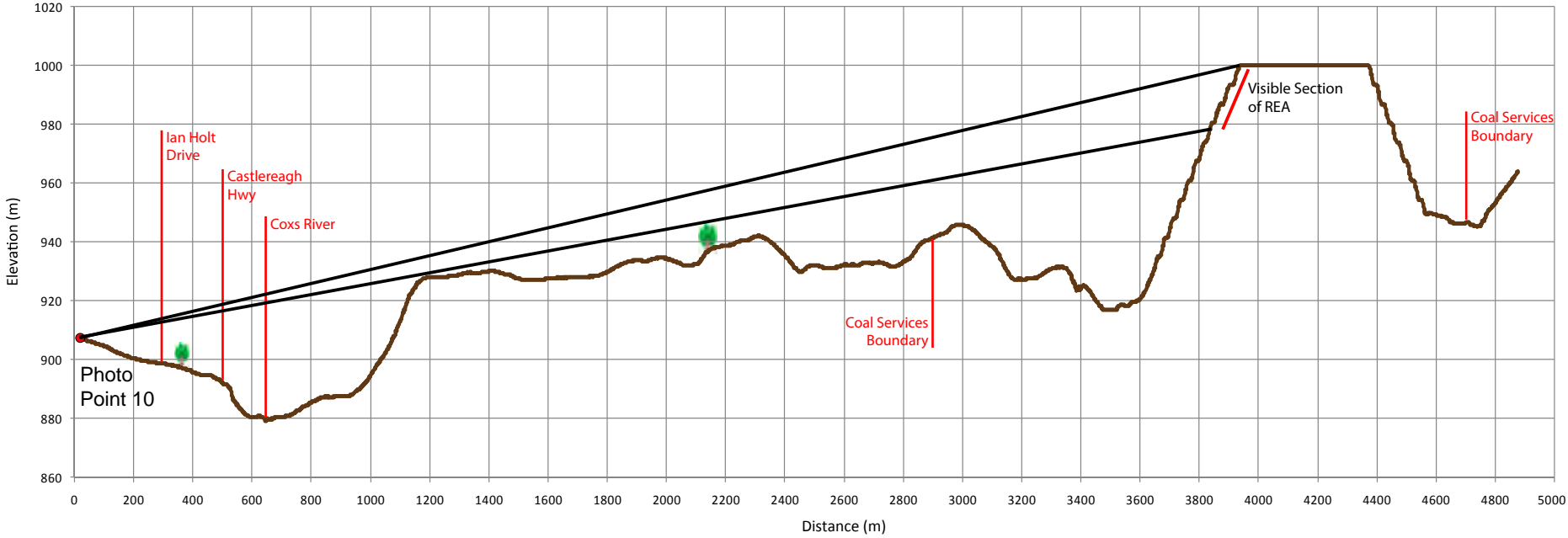
**DATA SOURCES**  
Centennial Coal, Proposed features have been derived from worst case options and will not necessarily reflect final design plans.

- LEGEND**
- Photo Points
  - Profile Lines
  - Existing Overland Conveyor
  - Proposed Washer
  - Haul Road and Bridge Option 1
  - Haul Road and Bridge Option 2
  - Proposed Reject Emplacement Area
  - Springvale Coal Services site





Profile from photo point 10



**Note:** 10x vertical exaggeration has been applied to the profile line diagram. Vegetation only shown where it affects the visibility of proposed features.

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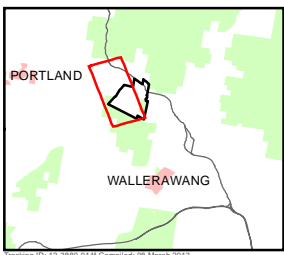
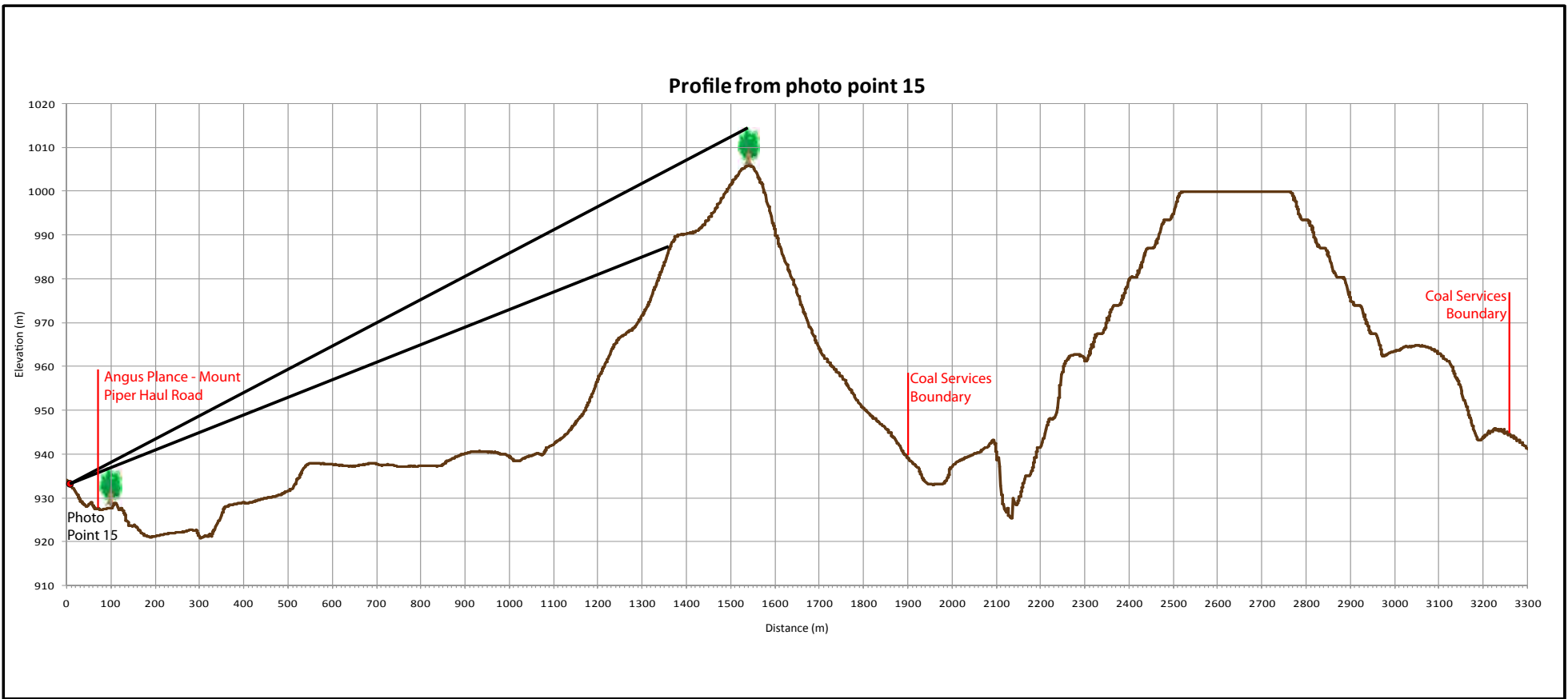
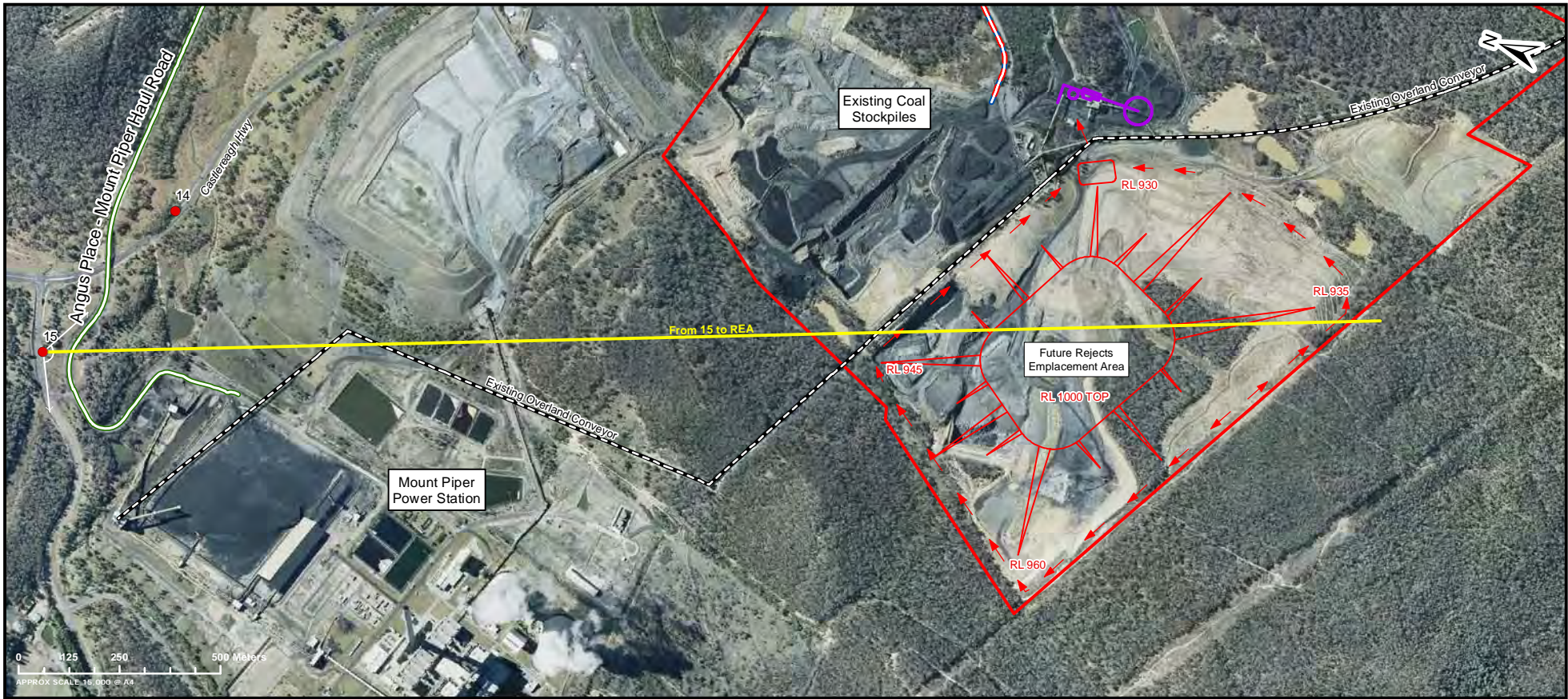
**DATA SOURCES**  
Centennial Coal, Proposed features have been derived from worst case options and will not necessarily reflect final design plans.

- LEGEND**
- Photo Points
  - Profile Lines
  - Proposed Washer
  - Existing Haul Road
  - Existing Overland Conveyor
  - Haul Road and Bridge Option 1
  - Haul Road and Bridge Option 2
  - Proposed Reject Emplacement Area
  - Springvale Coal Services site

RPS

FIGURE 10  
Profile and Panorama for  
Photo Point 10





**Note:** 10x vertical exaggeration has been applied to the profile line diagram. Vegetation only shown where it affects the visibility of proposed features.

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**DATA SOURCES**  
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- LEGEND**
- Photo Point
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  - Existing Haul Road
  - Existing Overland Conveyor
  - Haul Road and Bridge Option 1
  - Haul Road and Bridge Option 2
  - Proposed Washer
  - Proposed Reject Emplacement Area
  - Springvale Coal Services site



## 4.1.2 Reject Emplacement Areas

### Future REA

The future REA is located to the rear of the site and will on finalisation be approximately RL 930 at northeast corner lowest point – to RL 1000 at top. The ground level difference will average approximately 50 m due to existing changes in topography at the site of the proposed REA. It is envisaged that the mound will facilitate the management of reject for approximately 25 years before it reaches its proposed height.

This REA will potentially have the most wide ranging visual impact as the view-shed model denotes it will be seen from various points in the landscape particularly to the east. **Figure 7** reveals natural topography climbing to the northwest of the REA and Lamberts Gully will essentially shield views through to the REA from further north-west. The view-shed model reveals that views of the REA from the highway will be possibly available at several locations, however, these view lines will be reduced in reality by any significant trees and roadside vegetation which are not necessarily included in the model.

An approved overburden emplacement bund similar to the future REA is already established on the Pine Dale mine site opposite the Springvale Coal Services Site. This is depicted in **Plate 6** in Section 6. Director-General Requirements (DGR's) for the Pine Dale Stage 2 Extension Project (SSD\_5086) were issued on 10 February 2012 and documentation supporting the request for the DGR's indicate that the Project will remove the hill behind the existing overburden emplacement bund and also retain and potentially enlarge the overburden emplacement bund to reduce visibility of the approved Yarraboldy Extension area and the proposed Pine Dale Stage 2 Extension activities, particularly for residences within Blackmans Flat.

Within the context of the locality, it is considered that the future REA will not alter the character of the area for the first 15 years of its life and that glimpses of the mound from residential properties through existing vegetation or larger views of the mound from public spaces (such as roads and or highways) in the middle and longer distance is not considered an impact of magnitude requiring extensive mitigation. However, the mound will become more visible from more locations in its final 10 years of existence and offsite landscape screening may be required to shield the view from private receptors in the locality.

The type of management or mitigation considered appropriate includes:

- The installation of additional landscaping and trees at the boundaries of the Springvale Coal Services site which will assist with obstruction of views to the mound from a short distance,
- Possible offsite landscape screening to private receptors if and when the mound becomes visible over time, and;
- Appropriate rehabilitation and landscaped works when the mound is complete to ensure the long term result is a structure that resembles a natural feature.

Cumulative impacts of multiple visual elements are discussed in Section 4.2 below.

The view-shed model and the montage pictures in **Appendices 1 – 5** depict the potential view lines to the Springvale Coal Services Site from Blackmans Flat and Lidsdale localities.

The montages show the following:

- The REA is largely shielded from the viewpoints within Blackmans Flat (See **Appendices 1 and 3**);
- The REA can be viewed from the Pine Dale Mine access point across the road (See **Appendix 4**), however, existing trees will successfully screen the majority of its visual impact as demonstrated by the montage, and;
- Part of the REA can be viewed from long distance (See **Appendix 5**) but is not expected to significantly alter the view or horizon, particularly when rehabilitation works take place at the completion of its service life.

## Co-disposal REA

The existing co-disposal REA is located to the south of residents in Blackmans Flat. This site was originally the pit top and surface facilities area for the eastern main underground mine. The area has been used for reject disposal and primarily tailings, since the mid 1990's. As the project will incorporate a fines recovery system, this site will only be used during periods of maintenance or emergency. The site would be available for partial covering and rehabilitation work that may necessitate laying an additional capping layer over the tailings ponds. At least one, possibly two ponds will be left open for use as required. The rehabilitation work will involve raising the existing height by around 2 m to create a stable landform.

This would result in some minor additional visual impacts on Blackmans Flat and only from the western most end of the locality. Living areas and private outdoor entertaining spaces of residences are not expected to be impacted by this minor mound. Due to the minor nature of this mound it was not modelled into the view-shed model.

### 4.1.3 Coal Washery and Rejects Bin

The existing Washery and rejects bin is an element that is not easily viewed from a distance. The skyline tripper which is the highest point of the coal conveyor can be seen from various points in the middle (1–2km) to long distance (over 2 km). The proposed additional Washery will be co-located east of the existing Washery and will be of the same height. The rejects bin will be visible from the surrounding elevated vantage points but unlikely to be viewed from any private receptors.

**Plate 8** in Section 6 shows the photo taken from Wolgan Road and depicts the existing overhead gantry (main coal conveyor from Springvale Colliery) and Mt Piper Power Station stacks and the point where the major REA is proposed.

The overhead gantry exists beyond the proposed and existing Washery but at a higher level, which is why it is in the view. The proposed rejects bin will be located in the vicinity of the over head gantry but will not be as tall so will unlikely be viewed from any private receptors. The new Washery will be the same height as the existing Washery both of which are well shielded from surrounding vantage points by topography and vegetation. Both of these additional elements will form part of the existing view from a distance, refer to **Plate 8** in Section 6, which is not considered a major visual impact.

### 4.1.4 Haul road/Bridge Options

The Haul Road route Option 1 will follow the existing access road into the facility and will likely have the most impact on the locality of Blackmans Flat. **Appendix 1** depicts a panorama with the location of proposed elements that can be viewed from the locality. It also incorporates a montage with an image of the proposed bridged dropped into the landscape to gain a full appreciation of the visual impact.

The bridge will block views through to the road side vegetation and trees on the curve of the Castlereagh Highway. This element will have the greatest impact on the locality of Blackmans Flat. Although a bridge is considered compatible with the existing highway environs, if this Option was built careful consideration would need to be made in terms of the landscape treatment to the earthworks required to ramp up to the bridge crossing.

The Option 2 haul road and bridge will be approximately 500m further north from Blackmans Flat. Due to the existing ground level being two metres higher than the level at Option 1 this bridge will be at least two metres higher than any proposed at Option 1. However, due to the vegetation and topography existing on either side of the highway it is considered that the approaches to the bridge will be largely shielded from view. For the reasons outlined below it is considered that the Option 2 bridge is the most suitable in terms of visual impact:

- Greater distance will greatly reduce the visual impact on Blackmans Flat;

- Existing topography and trees will assist with shielding views from Blackmans Flat through to the haul route bridge approaches.

## 4.2 Cumulative Impacts

As this development is not taking place in isolation of other similar land uses in the locality the cumulative visual impact of the various activities and changes to the visual landscape needs to be considered and assessed.

The cumulative visual impact needs to evaluate the following:

- Any visual elements occurring in the landscape;
- Receiving environment, and;
- Visual sensitivity of the environment.

The various mining and industry elements in the locality are depicted in **Figure 12**. These are described in **Table 1** below.

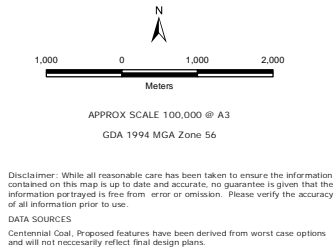
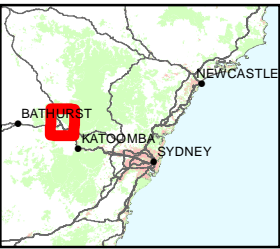
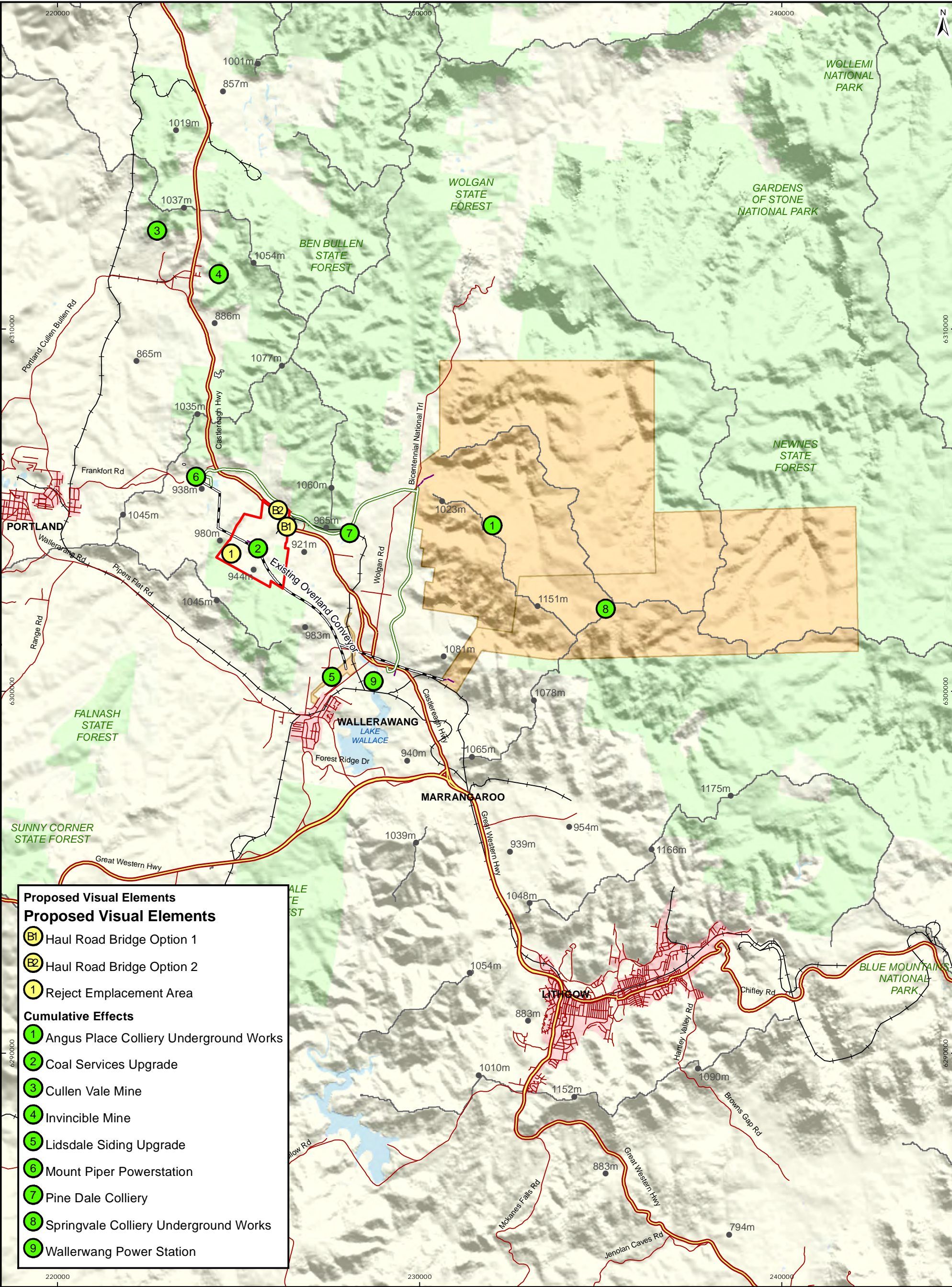
**Table 1 Mining and Industry in the Locality**

Element	Comment	Visual impact
1. Lidsdale Siding Upgrade	Upgrade existing coal loader approx 3kms to south east. Centennial is currently seeking a Project Approval under Part 3A of the Environmental Planning and Assessment Act 1979 for the project- currently with the PAC.	Minor visual impact expected due to additional height of coal loader facility.
2. Angus Place Colliery Mine – underground	This mining element is underground.	Nil impact expected on the visual catchment
3. Springvale Coal Mine	Underground (Long wall and Continuous Miner) mining operations	Nil additional visual impact.
4. Pine Dale Mine	<p>Open Cut mine expansion approved to the north of existing mine. Part 3A approved 20/02/2011 Mod 1 to Part 3A approval determined on 4/4/12 The proposal included:</p> <ul style="list-style-type: none"> <li>Extracting coal from existing approved mining areas and extending the open cut mining area by 24 hectares (ha) to the north of the existing coal mine facilities;</li> <li>Accessing an additional 800,000 tonnes of run-of-mine (ROM) coal;</li> <li>Extracting 350,000 tonnes of ROM coal per year;</li> <li>Extending the mine's life for three years until 2012;</li> <li>Upgrading the existing access to the private haul road between Angus Place and Mt Piper Power Station;</li> <li>Continued delivery of up to 350,000 tonnes of coal by road to local customers;</li> <li>Continued importation of 50,000 tonnes per annum of boiler ash from the Oberon Timber Processing Works for rehabilitation purposes;</li> <li>Dewatering of old underground workings, if required;</li> <li>Continued use of the mine's surface infrastructure; and</li> <li>Rehabilitating the site.</li> </ul>	<p>The expansion of the open cut mine is further north and removed from the Castlereagh Highway. However, it is expected to add some cumulative visual impact being within the same visual catchment as the Springvale Coal Services Site – the experience of the landscape will change due to the further intensification of general mining activity in the area.</p> <p>Cumulative impacts will not be great as, view lines to Springvale Coal Services Site and Pine Dale are in opposite directions and therefore should not be shared in the same view.</p>

Element	Comment	Visual impact
	<p>Pine Dale Stage 2 Extension Project (SSD_5086) DGR's issued on 10 February 2012.</p> <p>Documentation supporting the request for the DGR's indicates that the Project will remove the hill behind the existing overburden emplacement bund on the northern side of the Castlereagh Highway. The Project will retain and potentially enlarge the existing overburden emplacement bund to reduce visibility of the approved Yarraboldy Extension area and the proposed Pine Dale Stage 2 Extension activities, particularly for residences within Blackmans Flat.</p>	Visual exposure of the existing and proposed operations of the Pine Dale Mine Site is already high particularly for residences within Blackmans Flat.
5. Wallerawang Power Station	<p>Wallerawang Power Station began operation in 1957 and played an important part in the development of the western coalfields of New South Wales and the provision of power for the western rail electrification. The power station has a total capacity of 1,000 megawatts provided by two generating units of 500 megawatts capacity.</p> <p>No expansion proposals known.</p>	Nil additional visual impact.
6. Mt Piper Power Station	<p>The existing Mt Piper Power station was commissioned in two stages over 1992 and 1993, and now comprises two 700 MW coal-fired steam turbine generators (Units 1 and 2). Four generators were originally intended to be constructed on the site, but the third and fourth units were not built due to a fall-off in energy demand growth in the 1980s.</p>	Visual impact will result if the two additional generators are ever constructed.
7. Western Coal Services Project	The subject of this application.	Minor to moderate impact from public places. Nil to minor impact expected from private receptors.

Due to the topography of the locality industrial/mining elements are visually separated by catchments which are depicted on **Figure 12**. Although there are multiple potential visual elements in the locality, the catchments assist by reducing the number of elements which may collectively create cumulative effects on landscape character and visual intrusion within each catchment.





LEGEND

Proposed Visual Elements

Proposed Visual Elements

- B1 Haul Road Bridge Option 1
- B2 Haul Road Bridge Option 2
- 1 Reject Emplacement Area
- Spot Elevation

Ridgeline

Springvale Coal Services site

Other Centennial Works

State Forest

Built Up Area

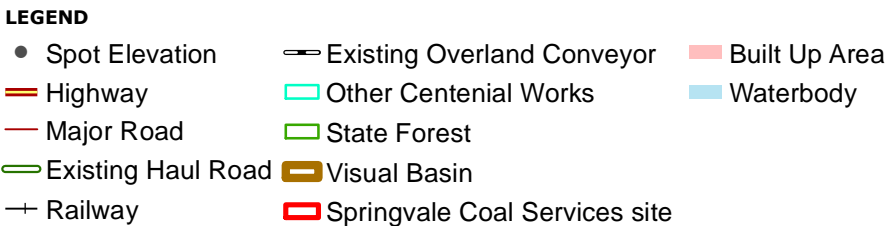
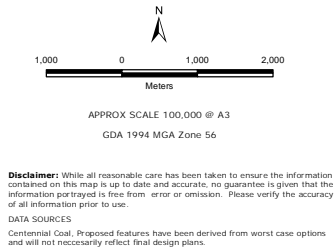
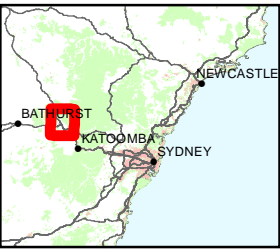
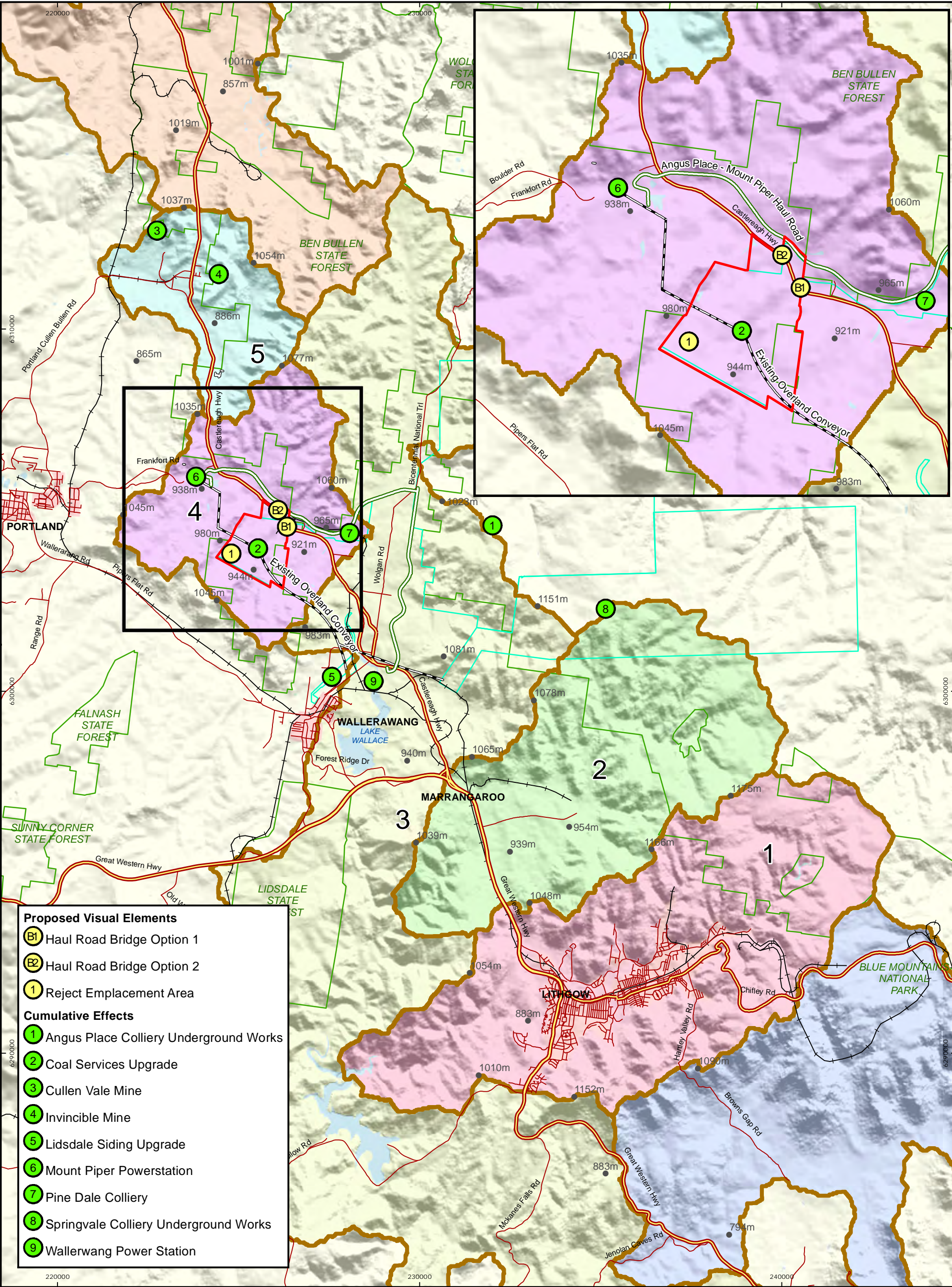
Waterbody



FIGURE 12

Industrial and mining elements in the locality







#### 4.2.2 Visual sensitivity

Catchment 4 is of most relevance to the assessment of cumulative visual impacts potentially created by the Western Coal Services Project. This catchment includes Pine Dale coal mine, associated haul route and the existing overburden emplacement bund which is located to the north of the Castlereagh Highway and is visually prominent as you enter the catchment from the south and pass Blackmans Flat on the left. The visual sensitivity of this site is considered high due to the following factors:

- The site exists lower than the road and there are various points where road side vegetation is sparse allowing full views across the site and of the future REA;
- The future REA mound interrupts the horizon of the ridgeline behind, which makes this element stand out further, and;
- Proximity to the dwellings of Blackmans Flat.

Further to the north is the Mt Piper Power Station which features coal conveying and loading facilities, coal mounds and the large power station structures and stacks which are fully visible from the road. The stacks can be partially viewed from several other locations within the catchment. The visual sensitivity of this element is considered moderate given that it is remote from receptors, but elements can be clearly seen from the road and various vantage points throughout the catchment. An existing haul road bridge exists approximately 2.5 km north of the Springvale Coal Services site close to the Mt Piper Power Station and, is visually similar to that proposed the Western Coal Services Project.

More central to the visual catchment is the existing infrastructure which features coal conveyors that can be seen from various vantage points in the catchment. Other existing onsite elements including the future REA are currently well shielded from the highway and Blackmans Flat. The visual sensitivity of this site ranges from low to high.

The majority of the Springvale Coal Services site with its existing elements would be classified has low sensitivity due to the following:

- The dark green colour of the coal conveyor belts blend in reasonably well with the vegetated back drop;
- A bank on the western side of the highway and fronting the Springvale Coal Services site blocks views through to and across the site. See **Plate 11** in Section 6;
- Other views across and into the site are shielded by vegetated areas, e.g. the vegetation that exists between Blackmans Flat and the Springvale Coal Services Site. See **Plate 12** in Section 6, and;
- The future REA is located to the rear of the site and will take 25 years to gain its full height.

The future REA has been located to the rear of the Springvale Coal Services Site and will not create any visual impact until the last 10 of the 25 years when the mound height may rise above surrounding topography and vegetation screening, particularly to the east.

The south eastern portion of the Springvale Coal Services site is considered to have high visual sensitivity due to its interface with Blackmans Flat and where the topography is flatter allowing views to penetrate into this area. The visual impact of the Option 1 haul road route with its exposed ramps is considered significant due to the sensitivity of this area and its inability to visually absorb such change discretely.

The Western Coal Services Project element likely to create the most visual intrusion and further compound the visual sensitivity of the area is the haul road bridge Option 1. The reasons for this include:

- Direct and prominent views from Blackmans Flat;
- Location adjacent to the Pine Dale mine and existing and approved overburden emplacement bund that will be retained and potentially enlarged with the Pine Dale Stage 2 Extension Project; and

- Proximity to Blackmans Flat dwellings – the embankments required to ramp up to the cross over in particular will be most prominent;

Option 2 would result in a fewer cumulative visual impacts than Option 1. Benefits will include:

- Greater distance from Blackmans Flat, decreasing visual intrusion;
- Reduction in direct view lines from Blackmans Flat to the overpass, and;
- Less requirement for visually prominent ramping to the bridge cross over.

### 4.2.3 Cumulative Impacts Conclusion

The existing Pine Dale mine site, including the existing and potentially expanded overburden emplacement bund, and the Mt Piper Power Station site are considered more visually prominent and contributing more to visual intrusion than the proposed activities within the Springvale Coal Services Site.

The majority of elements proposed by Springvale Coal will not cause added cumulative visual impacts to the catchment due to the location of the proposed elements and the factors such as topography and vegetation interrupting views to and across the site.

The Option 2 haul road route and bridge should be considered as the preferred Option, as it offers reduced and acceptable visual impacts and will be visually similar to an existing haul road bridge approximately 2.5 km north of the Springvale Coal Services Site.

## 4.3 Mitigation Strategy

The following mitigation strategy is recommended for the proposal.

### 4.3.1 General mitigation measures

#### 4.3.1.1 Materials

It is acknowledged that the new Washery and majority of other built elements will be shielded by existing topography and vegetation. Notwithstanding, it is recommended that non reflective and neutral toned materials be utilised where ever possible to reduce visual impacts where views to the site and infrastructure are available.

#### 4.3.1.2 Lighting

Lighting is provided at the Washery, workshop and key infrastructure areas as required to provide a safe working environment. The proponent states that lighting is minimised where possible to reduce energy consumption. Lighting is directional to ensure its efficient use however, the conveyor gantry lighting is visible from surrounding areas. No further high level lighting is proposed and therefore no mitigation measures are recommended beyond existing best practice to ensure lighting is managed to prevent light spill and intrusion into the receiving environment.

#### 4.3.1.3 Colours

The proponent is proposing to utilise the same colours as existing within the facility, which are neutral. It is recommended that neutral tones also be used for the bridge and ramping component.

#### 4.3.1.4 Landscaping

No formal proposals for specific landscaping works, other than stabilising slopes and disturbed areas following construction are proposed.

It is recommended that the battered slopes to the bridge be planted out with low maintenance hardy ground cover flowering species that may provide some visual interest to this component.

A treed buffer planting strip along the eastern and northern boundary of the Springvale Coal Services Site will also facilitate further shielding of views into and across the site.

Informal landscaping arrangements may be required off site to shield views through to the private indoor or outdoor living areas of residences within Blackmans Flat if or when the REA mound and or proposed Washery element became a visual concern.

#### 4.3.1.5 [Rehabilitation](#)

Rehabilitation works are ongoing at the Springvale Coal Services site in accordance with the Lamberts Gully Open Cut approval. The open cut has now ceased, however, the requirements for rehabilitation will still remain. Additionally, there are several areas within the existing Springvale Coal Services site which will be taken over by Delta Electricity for ash disposal or which are proposed to be used for reject disposal that will change the timing of rehabilitation works.

Due to the evolving use of the site over time and the current proposal it is recommended that a combined rehabilitation plan be developed for the site that will ensure the timely and appropriate rehabilitation of the proposed mound element and decommissioning and removal of built infrastructure when the site is no longer required for its current use.

### 4.3.2 **Specific mitigation measures**

#### 4.3.2.1 [Mitigation recommendations REA](#)

No formal mitigation requirements are suggested for the REA beyond the timely rehabilitation of the mound to make it appear as a natural topographical feature once it is no longer in use.

It is possible that individual receptors may have larger views of the mound than depicted in **Figure 10**. It may take considerable time for these views to become apparent (>10 years).

Where views to the mound are found to be clearly visible from indoor or outdoor living areas of residences within the short to middle distance (0 – 2km), it is suggested that the proponent offer to implement some off-site landscape screening to shield the view if residents require.

Due to distance and minor nature of view to the REA from further afield, no formal mitigation requirements are suggested to shield middle distance views (1 – 2km) and long distance (> 2km) views to the REA.

#### 4.3.2.2 [Mitigation recommendations – Washery and rejects bin](#)

Minimise the removal of existing vegetation surrounding the Washery site and plant additional screen plantings where views through to the Washery and rejects bin components may be opened up by vegetation removal. Springvale Coal should facilitate off site planting to receptors where views through to these elements may occur due to vegetation removal during construction.

#### 4.3.2.3 [Haul road bridge](#)

From a visual impact perspective the Option 1 haul road bridge will have a moderate to major visual impact both to the Blackmans Flat locality and highway users. The topography at this location will require significant ramping up of the haul route on both sides of the highway to the cross over point, which will create extensive and rather steep embankments. Significant landscape treatment would be required to be applied to the embankments to add some aesthetic value, reduce visual impact and prevent erosion. If this Option is

selected then it should be constructed of non reflective materials in a grey or wheat tone so that it is absorbed into the background as much as possible.

Option 2 is the recommended Option. It will result in reduced visual impact from Blackmans Flat due to the greater distance to this element. It will also benefit from screening by existing vegetation and topography adjacent to the bridge on both sides of the highway. It will also require lower ramping which will be partially obscured. The intrusion of this element into the scenic backdrop will be well below the skyline and will result in an infrastructure element very similar to the haul route bridge adjacent to the Mt Piper Power Station. Option 2 will only represent a minor to moderate visual impact from Blackmans Flat and Highway users. Vegetation, trees and any natural topography that exists adjacent to the bridge crossing should be maintained to assist with obstructing views to the haul route and bridge approaches.

## 5.0 Conclusion

The VIA demonstrates that the existing character of the locale surrounding the subject site includes major extractive industry and power station elements evidenced in most panorama photographs taken around the precinct.

The undulating nature of the locale along with the ridgelines surrounding three sides of the site shield the existing development and the proposed elements from the north west and south from the short, middle and long distance views, including dwellings along Pipers Flat Road. The topography also assists in breaking up the elements of the locality into separate visual catchments, which reduces cumulative impacts of the various component elements.

The valley continues east from the site and the short and middle distance views towards the it from the locality of Blackmans Flat and long distance from Lidsdale will be impacted by the haul road route and bridge (although to a much lesser extent with Option 2), and over time the REA and Washery. As the proposed Washery will be located adjacent to the existing Washery (that is difficult to pick up visually in the field), it is not considered an element likely to cause significant visual impact.

While the visual impact analysis did not locate any residential receptors that will get a clear view of any proposed elements from their indoor or outdoor living areas, it has been recommended that the proponent remain open to negotiating funds for offsite landscape works should views through to the proposal establish over time.

It is considered that the impacts of the onsite works (REA, Washery, rejects bin) from Blackmans Flat will be minor to moderate while the impacts to areas in the middle to long distance will be negligible to minor. The following formal mitigation measures are therefore suggested:

- Planting a 20m wide buffer of trees to the eastern boundary of the Springvale Coal Services Site;
- Some gap planting to the highway frontage of the site to facilitate further shielding of views to and across the site over time; and
- Offsite planting facilitated by Springvale Coal is recommended where private receptors demonstrate visual impacts from the REA over time. Some consideration to offsite planting may also be required where vegetation removal during the construction phase opens up any views to the Washery and or Rejects Bin elements.
- Vegetation, trees and any natural topography that exists adjacent to the bridge crossing should be maintained to assist with obstructing views to the haul route and bridge approaches.

The bridge element in Option 1 will have the maximum impact from the Blackmans Flat locality as this Option is closer to Blackmans flat and the bridge element will be larger in the view. For this reason Option 2 is the preferred route which would reduce proximity and impact to Blackmans Flat. The assessment concludes that neutral tones and non reflective materials should be chosen for the hard built elements of the bridge and consideration be given to planting the battered slopes with a low maintenance revegetation planting that will provide some visual interest to this element as viewed from the highway and locale.



6.0 Plates



Plate 1 Existing haul route bridge approximately 2.5km north of the Springvale Coal Services Site



Plate 2 View west across Springvale Coal Services Site with Blackmans Flat to the left of picture



Plate 3 Photo Point 1: View west from Blackmans Flat towards the site and proposed bridge crossing point



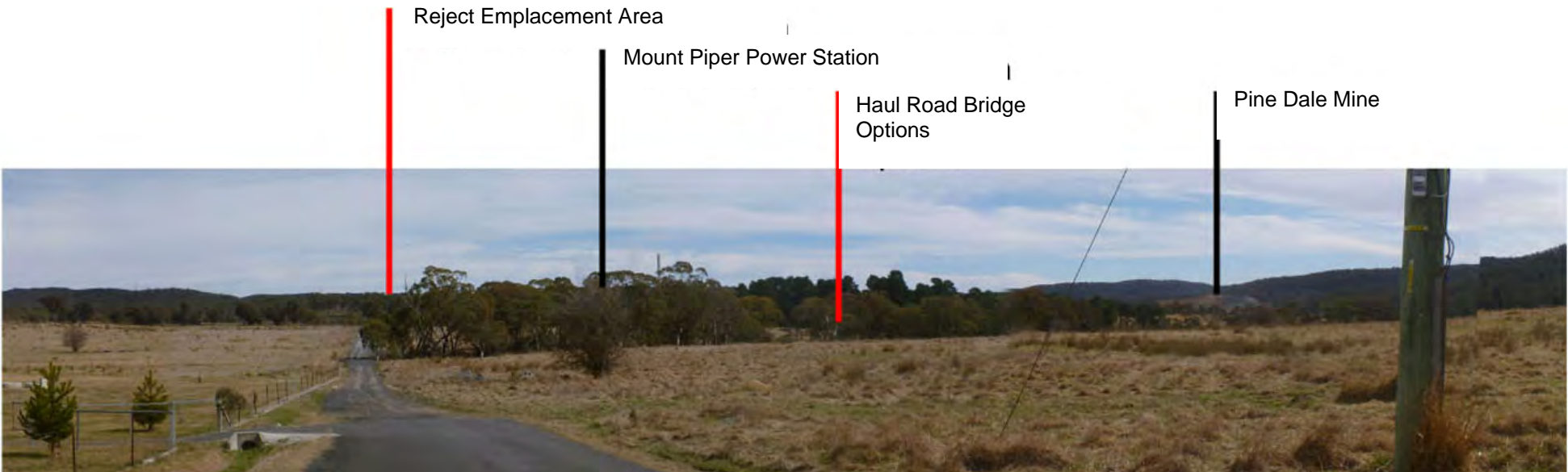


Plate 4 Photo Point 8: View west from Karawatha Drive



Plate 5 Photo Point 10: View north-west from Lidsdale



Plate 6 View north opposite the Springvale Coal Services Site to the Pine Dale Overburden Emplacement



Plate 7 Coal Washery – Loader Conveyors and Rejects Bin.



Reject Emplacement Area      Washery      Mount Piper Power Station



Plate 8 Photo Point 12: View west towards the site from Wolgan Road



Plate 9 View north west from Castlereagh Highway to the Mount Piper Power Station site





Plate 10 Springvale Coal Services Site frontage bank shielding view into the site from the road



Plate 11 View west towards the Springvale Coal Services Site from Blackmans Flat -vegetation screening view

# Appendix I

## Photomontages from Photo Point 3



View from photo point 3 - pre-construction



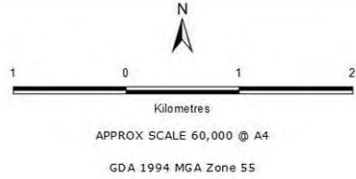
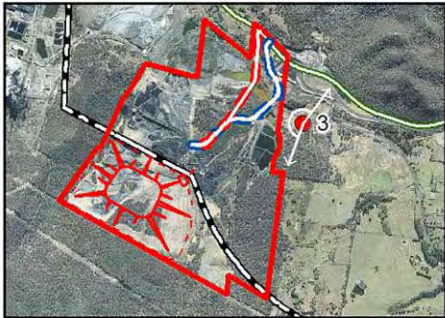
View from photo point 3 - post-construction



Zoomed view from photo point 3 - pre-construction



Zoomed view from photo point 3 - post-construction



**Disclaimer:** While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

**DATA SOURCES**  
RPS 2013.

**LEGEND**

- Photo Point
- == Haul Road and Bridge Option 1
- == Haul Road and Bridge Option 2
- Proposed Reject Emplacement Area



## Appendix 2

### Photomontages from Photo Point 18



View from photo point 18 - pre-construction



View from photo point 18 - post-construction - Bridge Option 2



View from photo point 18 - post-construction - Bridge Option 1



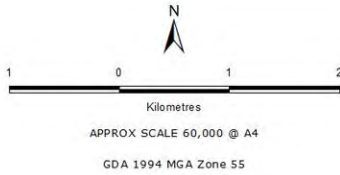
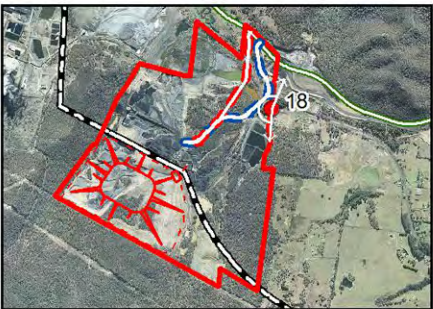
Zoomed view from photo point 18 - pre-construction



Zoomed view from photo point 18 - post-construction - Bridge Option 2



Zoomed view from photo point 18 - post-construction - Bridge Option 1



**Disclaimer:** While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

DATA SOURCES  
RPS 2013.

LEGEND

- Photo Point
- == Haul Road and Bridge Option 1
- == Haul Road and Bridge Option 2
- Proposed Reject Emplacement Area



## Appendix 3

### Photomontages from Photo Point 16



View from photo point 18 - pre-construction



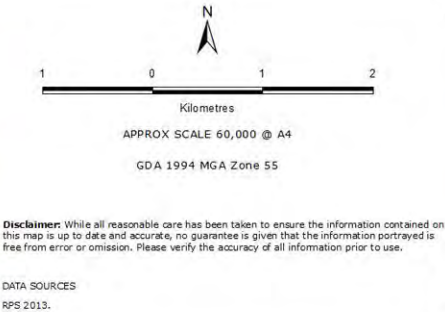
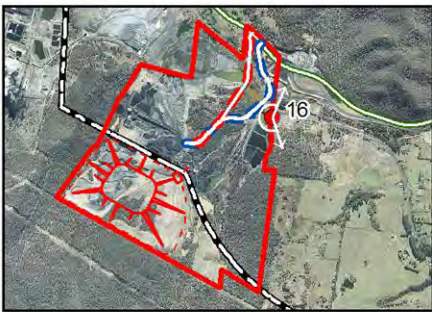
View from photo point 18 - post-construction



Zoomed view from photo point 18 - pre-construction



Zoomed view from photo point 18 - post-construction



- LEGEND**
- Photo Point
  - == Haul Road and Bridge Option 1
  - == Haul Road and Bridge Option 2
  - Proposed Reject Emplacement Area

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**DATA SOURCES:**  
RPS 2013.



## Appendix 4

### Photomontages from Photo Point 17



View from photo point 17 - pre-construction



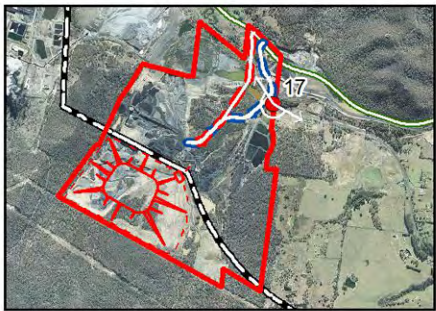
View from photo point 17 - post-construction



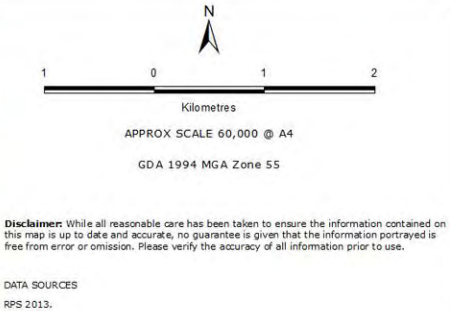
Zoomed view from photo point 17 - pre-construction



Zoomed view from photo point 17 - post-construction



Tracking ID: 26473-024a Compiled: 25 March 2013



- LEGEND**
- Photo Point
  - == Haul Road and Bridge Option 1
  - == Haul Road and Bridge Option 2
  - Proposed Reject Emplacement Area



## Appendix 5

### Photomontages from Photo Point 12



View from photo point 12 - pre-construction



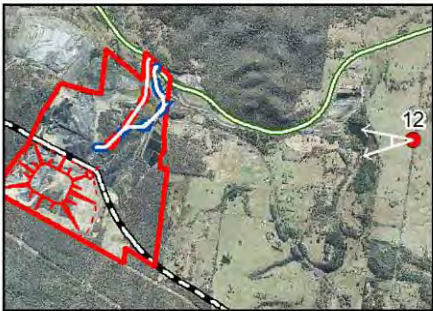
View from photo point 12 - post-construction



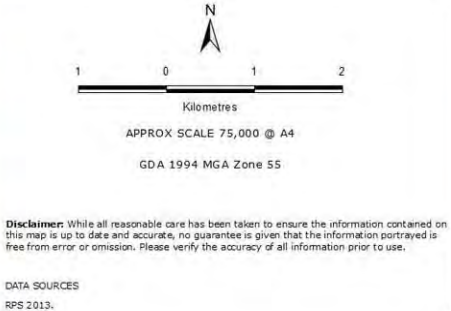
Zoomed view from photo point 12 - pre-construction



Zoomed view from photo point 12 - post-construction



Tracking ID: 20473-025a, Compiled: 25 March 2013



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**DATA SOURCES**  
RPS 2013.

**LEGEND**

- Photo Point
- Haul Road and Bridge Option 1
- == Haul Road and Bridge Option 2
- Proposed Reject Emplacement Area