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AGL Dalton Power Project Environmental Assessment

MP10-0035

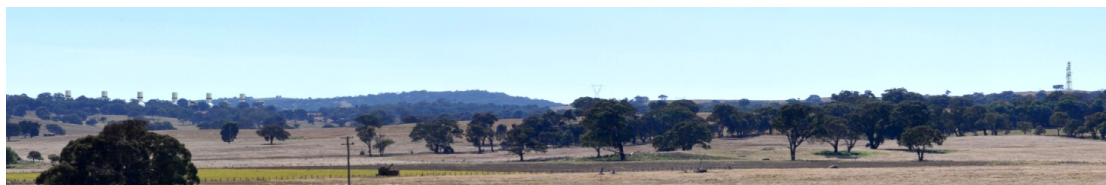
Appendix K

Landscape and Visual

URS



Switched on Business.



Proposed view toward the Dalton Power Station and communication tower.

VISUAL IMPACT ASSESSMENT

Prepared for:

URS

July 2011

Prepared by:

GREEN BEAN DESIGN

landscape architects

Dalton Power Project

VIA

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Date: July 2011

Reference: V9 – Final

Green Bean Design is an experienced landscape architectural consultancy specialising in landscape and visual impact assessment. As an independent consultant Green Bean Design provide professional advice to a range of Clients involved in large infrastructure project development.

Green Bean Design Principal Landscape Architect Andrew Homewood is a Registered Landscape Architect with over 18 years continuous employment in landscape consultancy and has participated in numerous renewable energy and gas fired power projects across New South Wales.

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Introduction and Methodology

SECTION 1

1.1 Introduction

The AGL Dalton Power Project visual assessment has been prepared by Green Bean Design (GBD) on behalf of URS Australia Pty Ltd and AGL (the Proponent).

This visual assessment involved an evaluation of the visual character of the landscape in which the gas fired power station, communication tower and valve station (the Project) would be located and an assessment of the potential visual impacts that could result from the construction and operation of the Project.

The primary objective of this visual assessment was to determine the likely visual impact of the Project on people living and working in, or travelling through the landscape surrounding the Project.

1.2 Methodology

This visual assessment adopted a methodology that has been applied to a number of visual assessments for similar electrical power projects undertaken by GBD.

A desktop study was undertaken by reference to 1:25,000 topographic maps as well as aerial photographs of the site and surrounding area. The topographic maps and aerial photographs were also used to identify potential view locations that could be verified during the fieldwork component of the visual assessment.

The field inspection involved:

- detailed site inspections to determine the potential extent of the Project's visibility;
- determination of locations from which the Project could potentially be visible;
- assessment of visual impact using:
 - potential visibility of the Project site;
 - identification and mapping of potential view locations;
 - analysis of visibility; and
- identification of mitigation measures to minimise potential visual impacts.

1.3 Assessment of Visual Impact

The potential visual impact of the Project at individual view locations would result primarily from a combination of the potential visibility of the Project structures and the visual character of the landscape between, and surrounding the viewer and the Project.

The potential degree of visibility and potential visual impact may be partly determined by a combination of factors including:

- The degree of screening provided by natural landform and existing tree cover;
- The category of situation from which people may view the Project (examples of viewer categories include residents and motorists);
- The visual sensitivity of view categories surrounding the Project;
- The potential number of people with a view toward the Project from any one view location;
- The distance between the view location and the Project; and
- The duration of time a person may view the Project from any static or dynamic view location.

Location and Environmental Factors

SECTION 2

2.1 Location and Context

The proposed Project site is located approximately 2km north of Dalton, a small rural village around 10km north west of Gunning and 28km north east of Yass. The power station site is accessed via a dirt road extending off Walsh's Road north of Dalton. The location of the Project site is illustrated in **Figure 1**.

The power station footprint is located on gently sloping land that falls in a north to north east direction toward the Lachlan River corridor. The site would be subject to some cut and fill earthworks to provide a suitably level construction platform.

The communication tower would be located on a low hill approximately 1.5km to the east of the power station site, and the valve station on relatively level ground approximately 3.2km to the south of the power station site.

The landscape immediately surrounding the site is predominantly rural and agricultural in nature. The landscape has been generally cleared for livestock pasture and agricultural cultivation, although timbered areas have been retained along a number of gullies that flow to the Lachlan River, as well as surrounding hill top and ridgeline areas.

The landscape surrounding the site is divided by a number of drainage lines that flow to the Lachlan River, and give rise to an undulating landform either side of the river corridor.

The site has a small number of clumped and individual trees scattered across it, some of which would be removed to accommodate the proposed power station and associated infrastructure.

The landscape surrounding and beyond the Project site contains a number of constructed elements that contribute to the local visual character that includes:

- A 330kV transmission line;
- Local roads and access tracks;
- Agricultural structures; and
- The Gunning Wind Farm.

A small number of rural residential and farm properties are located in the landscape around the Project site. Some of the residential properties are not visually prominent due to screening by surrounding undulating landform or the presence of trees around them.

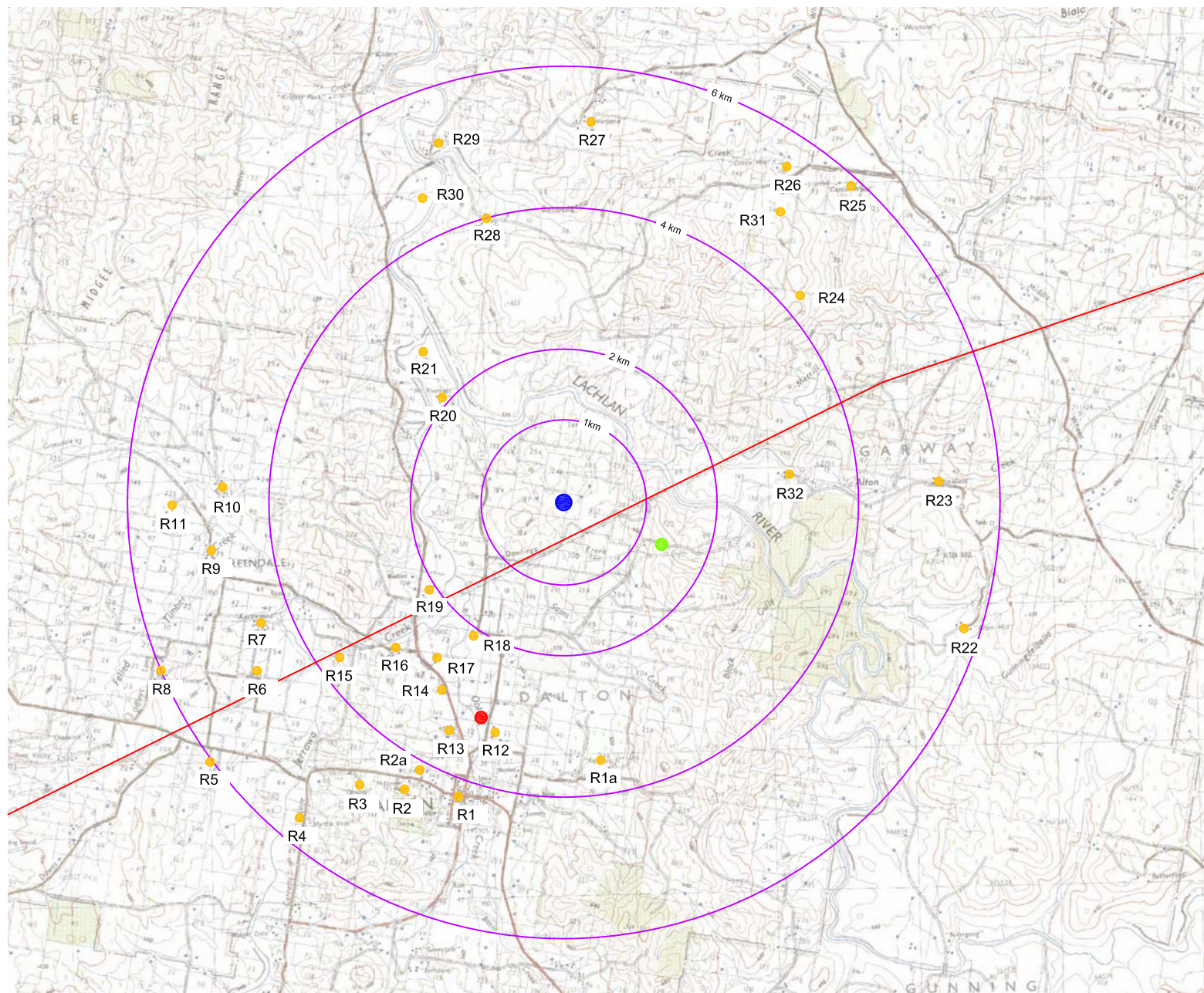
Visibility from residential properties was determined during the site analysis and fieldwork carried out as part of the visual assessment process.

2.2 Topography & Vegetation

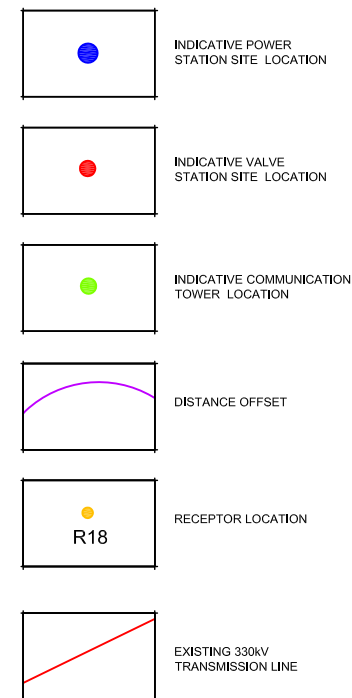
Topography and vegetation are a key influence on the extent to which the Project may be visible from surrounding areas. The key aspects are summarised below:

- The power station would be located on a saddle between a north south ridgeline extending to the west of the Lachlan River, and a small hill rising to around 600m AHD to the south west of the site.

- The ground level at the base of the exhaust stacks would be around 575m AHD. The top of the exhaust stacks would be around 621m AHD.
- Land immediately to the north and east of the site falls gently to the Lachlan River corridor, and rises moderately steeply to the west across and over a small hill.
- The Lachlan River follows a meandering course in a general north west to south east alignment. A small number of gullies extend from land surrounding the site to the river corridor.
- The site and immediate surrounding area is generally characterised by grass pasture with stands of scattered and individual trees. Denser timbered areas occur in several locations around the site, across slopes as well as within gullies and drainage lines.



LEGEND



Source: Copyright Department of Lands
Panorama Avenue Bathurst 2795
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PROJECT
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TITLE
GENERAL LOCATION AND
VIEW LOCATIONS

Figure 1

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Project Description

SECTION 3

3.1 Project description (Power station)

The various components of the power station development are described in detail in the Environmental Assessment. The key visual elements associated with the proposed power station include:

- proposed access road;
- up to six gas turbines;
- up to six 46m high exhaust stacks;
- control building;
- workshop and store;
- switchyard and transformer and
- transmission line connection.

Electricity would be connected to the grid system by overhead connection from the proposed switchyard to the existing 330kV transmission line around 100m to the south east of the power station. The transmission line connection would be generally screened from surrounding view locations by topography and existing trees within and surrounding the site.

The power stations access road, control building and ancillary infrastructure would generally not be visible from the majority of view locations beyond the AGL site boundary.

3.2 Project description (Valve station)

The proposed valve station would be located adjacent to the Moomba to Sydney Gas Pipeline and would occupy an area of approximately 0.22 ha and would be set back approximately 25 m to the west of Walshs Road. This would be the only element of the proposed gas pipeline outside of the Facility which would be located above ground. The valve station would be fenced off from public access and AGL proposes a number of mitigation measures to minimise the visual impact of this infrastructure from the road.

The key visual elements associated with the valve station include:

- Pipe and valve infrastructure;
- Security fence; and
- Small control building.

A typical arrangement for a valve station is illustrated in **Plates 1 and 2**.



Plate 1 – Valve station, typical internal arrangement



Plate 2 – Valve station, typical external arrangement

3.3 Project description (communication tower)

For the purposes of this visual impact assessment, the components of the communication tower have been assumed to comprise:

- A 60m high lattice steel tower supporting a small number of antenna dishes. The lattice tower may also include safety obstacle lighting.

A typical lattice steel communication tower is illustrated in **Plate 3**. The communication tower illustrated in **Plate 3** is located at Robertson, NSW, and is included in this report for general illustrative purposes only. The Robertson communication tower is around 50m high.



Plate 3 – Communication tower, typical arrangement

Panoramic Photographs

SECTION 4

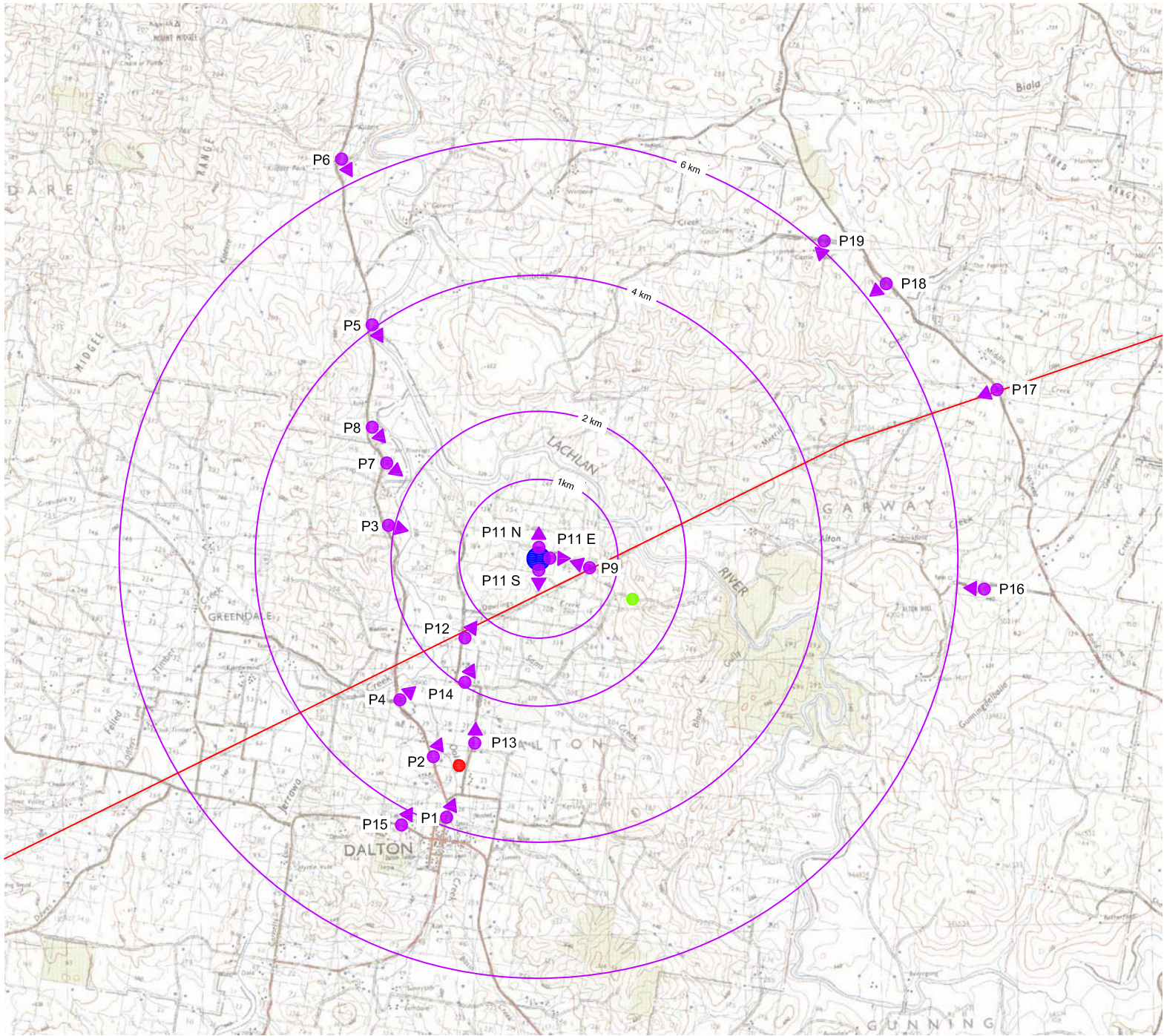
4.1 Panoramic Photographs

A series of photographs were taken during the course of the fieldwork to illustrate views from a number of potential view locations, which were inspected and assessed as part of the visual assessment process.

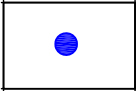
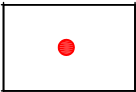
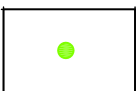
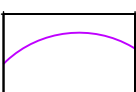

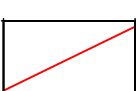
Individual photographs were digitally stitched together to form a segmented panoramic image to provide a visual illustration of the existing view from each photographic location.

Each panoramic image presented in this report has been annotated to identify key existing features located within the field of view.

The location of photographs taken from surrounding view locations are illustrated in **Figure 2**, and individual panorama photographs illustrated in **Figures 3 to 7**.



LEGEND

-  INDICATIVE SITE LOCATION
-  INDICATIVE VALVE STATION SITE LOCATION
-  INDICATIVE COMMUNICATION TOWER LOCATION
-  DISTANCE OFFSET
-  PHOTO LOCATION
-  EXISTING 330kV TRANSMISSION LINE

Source: Copyright Department of Lands
Panorama Avenue Bathurst 2795
(www.lands.nsw.gov.au)



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PHOTO LOCATIONS

Figure 2

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Photo Location 1 View north from Chappel Street, Dalton



Photo Location 2 View north from road



Photo Location 3 View east to south east from road



Photo Location 4 View north east from road at creek crossing

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PHOTOSHEET 1

Figure 3

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Photo Location 5 View south to south east from road



Photo Location 6 View south to south east from road cutting



Photo Location 7 View south east from road



Photo Location 8 View south east from road

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PHOTOSHEET 2

Figure 4

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Photo Location 9 View west from within AGL site boundary



Photo Location 11N - View north from proposed power station site



Photo Location 11S - View south from proposed power station site



Photo Location 11E - View east from proposed power station site

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TITLE
PHOTOSHEET 3

Figure 5

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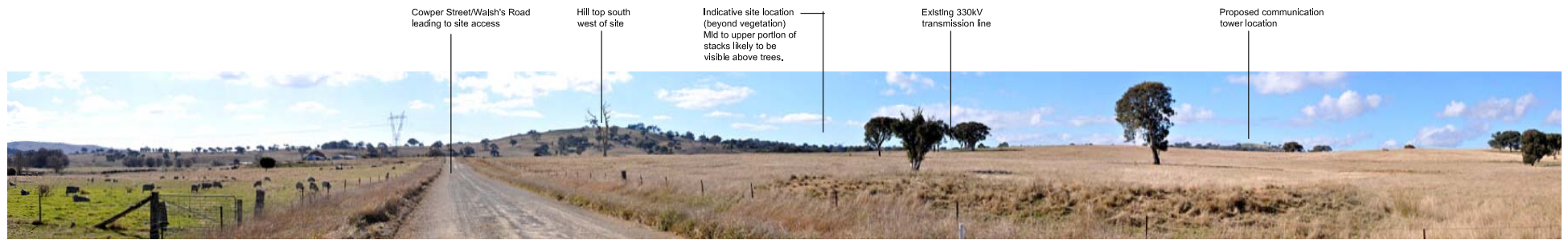


Photo Location 12 View north east from Cowper Street



Photo Location 13 View north from Cowper Street

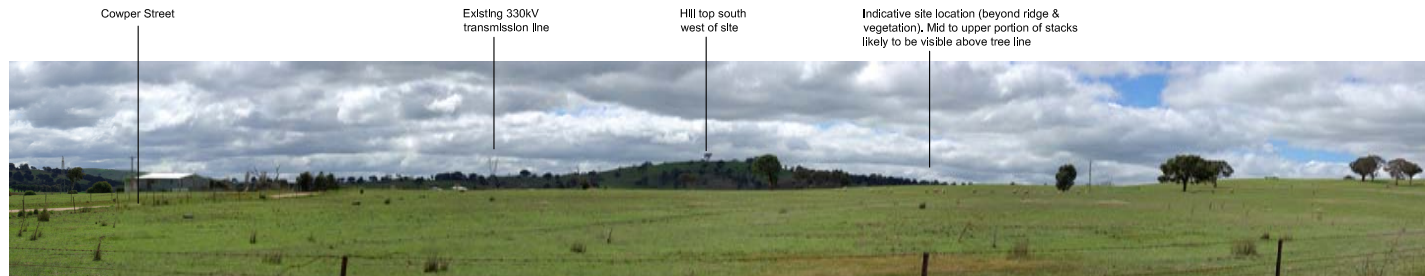


Photo Location 14 View north from Cowper Street



Photo Location 15 View north from Boorowa Road

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PHOTOSHEET 4

Figure 6

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Photo Location 16 View west from Alton Lane



Photo Location 17 View west from Wheeo Road (along existing transmission line easement)

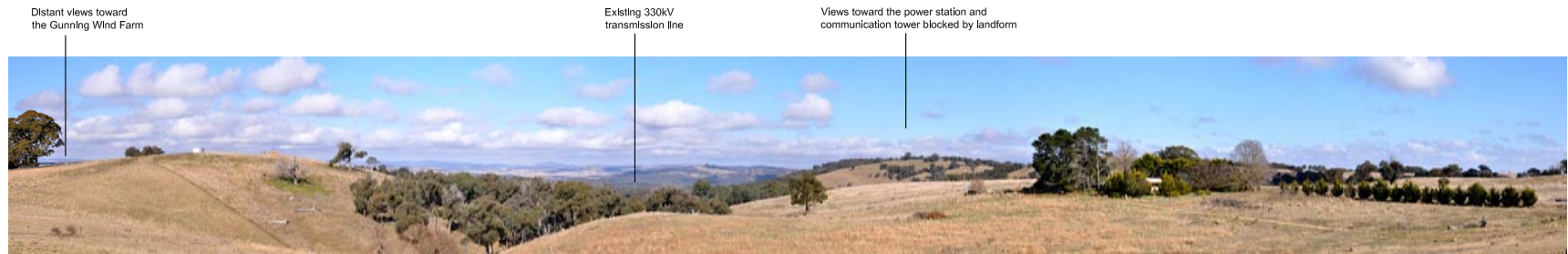


Photo Location 18 View west to south from Wheeo Road

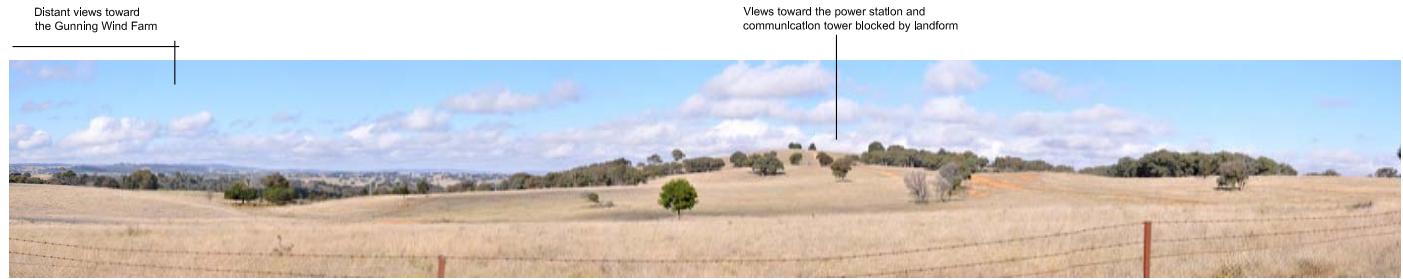


Photo Location 19 View south from residential access road

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PHOTOSHEET 5

Figure 7

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Visibility

SECTION 5

5.1 Introduction

The potential visual impact of the Project would result primarily from the combination of two factors:

- The level of visibility or extent to which the Projects structures would be visible from surrounding areas; and
- The degree of visual contrast between the Projects structures and the capability of the surrounding landscape to visually accommodate them.

The potential visual impact from particular view locations is strongly dependant on the level of visibility from that location, which in turn is dependent on a number of criteria which are defined in **Table 1**.

5.2 Visibility

Visibility is a measure of the extent to which particular structures of the Project would be visible from surrounding areas and considers the relative number and type of viewers, the period of the view, view distance and context of the view.

The underlying rationale for this component of the visual assessment is that, if a part of the power station, communication tower, or valve station is not visible from a particular area then the potential visual impact would be nil. Similarly, if the number of people who would potentially see portions of the Projects structures is low, then the visual impact would be low compared to a situation in which a large number of people have the same view.

The distance between the Project and the potential viewers has been illustrated as a series of concentric band widths extending out from the proposed site across the landscape. Individual view locations can be identified and assessed in relation to their distance and the degree of potential visual impact.

The influence of distance on visibility results primarily from two factors:

- With increasing distance the proportion of the horizontal and vertical view cone occupied by the Projects structures would decline.
- As the view distance increases so does the atmospheric effects resulting from dust and moisture in the atmosphere, which tends to make constructed elements of the Project appear grey, thus reducing the contrast between the Project and the background against which it is viewed.

5.3 Visual Absorption Capability

Visual Absorption Capability (VAC) is a classification system used to describe the relative ability of the landscape to accept modifications and alterations without the loss of landscape character or deterioration of visual amenity.

VAC relates to physical characteristics of the landscape that are often inherent and often quite static in the long term.

Undulating areas with a combination of open views interrupted by groups of trees and small forested areas would tend to have a high capability to visually absorb the Project without significantly changing its amenity.

On the other hand, areas of cleared vegetation on level ground with limited screening, or areas spanning across prominent ridgelines without significant vegetation, would have a lower capacity to visually absorb the Project without changing the visual character and potentially reducing visual amenity.

Given the extent and combination of existing natural and cultural character surrounding the Project, the capability of the landscape to absorb the key components of the Project is considered to be high.

Visual Assessment Criteria and Matrix

SECTION 6

6.1 Introduction

A visibility rating for each view location has been assessed and determined against the criteria outlined in **Table 1** below:

Table 1 - View Location Assessment Criteria

Criteria	Definition
Number of Viewers High Moderate Low Very Low	>200 people per day 150 - 199 people per day 50 - 149 people per day <50 people per day
View Distance Distant Long Medium Short Very short	>6km 3km – 6km 2km – 3km 1km – 2km <1km
Period of View Long term Moderate term Short term Very Short Term	> 2 hours 30 - 120 minutes 10 – 30 minutes < 10 minutes

An indicative visibility rating resulting from various combinations of the above criteria is listed in the following Table.

Table 2 - Visual Criteria Matrix

	Distant and Long Distance			Medium Distance			Short Distance			Very Short Distance		
Period of View	L/M	S	VS	L/M	S	VS	L/M	S	VS	L/M	S	VS
High No. of Viewers	M	L	L	H	M	M	H	H	M	H	H	H
Moderate No. of Viewers	L	L	L	M	M	L	H	M	M	H	H	M
Low No. of Viewers	L	L	L	M	L	L	M	M	L	H	M	L
Very Low No. of Viewers	L	L	L	L	L	L	M	L	L	M	M	L

- **Period of View** L/M=Long to Moderate term, S=Short term , VS=Very Short term
- **Levels of visibility** L=low, M=medium and H=high

The visual criteria matrix is used **as a guide** to determine the Projects potential visual impact. The Projects visual impact upon individual view locations is also considered against other factors, which include the sensitivity of the viewer. The general relationship between the view category and the potential level of sensitivity is outlined in **Table 3** below:

Table 3 – Viewer Sensitivity

Viewer Category	Sensitivity
Residential Properties	Highest Sensitivity
Pedestrians (recreational)	▽
Public Recreational Space	▽
Pedestrians (non-recreational)	▽
Motorists	▽
Business (commercial)	▽
Industry	Lower Sensitivity

6.2 Visibility Matrix and Visual Impact

Table 4 presents the Visibility Matrix for the potential view locations and outlines the:

- Category of viewer;
- Context of view;
- Approximate distance between the view location and the power station;
- Relative numbers of people; and
- Estimated period of view.

The overall visual impact has been determined by considering the combined outcomes of visual criteria matrix for each view location together with the VAC of the landscape within which the viewer is located.

The visual impact is expressed as a rating of High, Moderate, Low or Nil, and for the purposes of this visual assessment visual impact ratings have been defined as:

High – The construction and operation of the Project may result in a very prominent physical change to the landscape, and includes the potential for proximate views toward extensive portions of the Project from sensitive view locations.

Moderate – The construction and operation of the Project may result in a noticeable physical change to the landscape although the Project would not appear to be substantially different in scale and character to the existing landscape from surrounding view locations.

Low – The construction and operation of the Project is unlikely to result in a prominent change to the landscape and views from surrounding view locations toward the Project may be difficult to distinguish from elements within the surrounding landscape.

Nil – The construction and operation of the Project would not create a noticeable change to the landscape and is unlikely to result in views toward the Project from surrounding view locations.

Potential view locations are illustrated in **Figure 1**.

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
R1	Resident	<p>Long distance views north toward the proposed power station from Dalton rural township are partially screened by buildings and vegetation within the Dalton built area. Potential views may extend toward the upper portions of the exhaust stacks from residences on the north fringe of the village which, at a long distance, are unlikely to create a significant visual impact.</p> <p>Long distance views toward the communication tower will be largely screened by tree cover within and surrounding residences within the village, although a small number of residences will experience direct and indirect views toward the tower, including views from garden areas or land immediately surrounding dwellings.</p> <p>Short to very short distance views toward the valve station will be largely screened by tree cover, as well as built structures within the village.</p>	<p>Power Station: 4.1km</p> <p>Communication Tower: 4.3km</p> <p>Valve Station: 870m</p>	Low	Potentially Long Term	High	<p>Power Station Low (and generally Nil) for the majority of dwellings within the Dalton village area.</p> <p>Communication Tower Low (and generally Nil) for the majority of dwellings within the Dalton village area.</p> <p>Valve Station Low (and generally Nil) for the majority of dwellings within the Dalton village area.</p>

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
R1a	Resident	<p>Long distance views north toward the proposed power station from rural residential dwelling are generally screened by the influence of topography and vegetation. Potential views may extend toward the upper portions of the exhaust stacks which, at a medium distance, are unlikely to create a significant visual impact.</p> <p>Long distance views toward the communication tower will be partially screened by low undulating landform and scattered tree cover to the north of the residence.</p> <p>Short distance views toward the valve station will be largely screened by tree planting to the west of the residence.</p>	<p>Power Station: 3.7km</p> <p>Communication Tower: 3.2km</p> <p>Valve Station: 1.8km</p>	Low	Potentially Long Term	High	<p>Power Station Low</p> <p>Communication Tower Low</p> <p>Valve Station Nil</p>
R2	Resident	Long distance views north to north east toward the proposed power station from residential dwellings are partially screened by vegetation and the influence of topography. Potential views may extend toward the upper portions of the exhaust stacks which, at a long distance,	<p>Power Station: 4.6km</p> <p>Communication Tower: 5km</p> <p>Valve Station: 1.5km</p>	Low	Potentially Long Term	High	<p>Power Station Low</p> <p>Communication Tower Low</p>

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
		<p>are unlikely to create a significant visual impact.</p> <p>Long distance views will extend toward the communication tower, which would not be expected to be visually prominent at this long distance view.</p> <p>Short distance views will extend toward the valve station which would not tend to be visually prominent.</p>					Valve Station Low
R2a	Residents	<p>Long distance views north to north east toward the proposed power station from residential dwellings are partially screened by vegetation and the influence of topography. Potential views may extend toward the upper portions of the exhaust stacks which, at a long distance, are unlikely to create a significant visual impact.</p> <p>Long distance views will extend toward the communication tower, which would not be expected to be visually prominent at this long distance view.</p> <p>Short distance views will extend toward the valve station which would not tend to</p>	<p>Power Station: 4.3km</p> <p>Communication Tower: 4.7km</p> <p>Valve Station: 1.1km</p>	Low	Potentially Long Term	High	<p>Power Station Low</p> <p>Communication Tower Low</p> <p>Valve Station Low</p>

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
		be visually prominent.					
R3	Resident	Long distance views north to north east toward the proposed power station, communication tower and valve station from residential dwelling are partially screened by vegetation and the influence of topography. Potential views may extend toward the upper portions of the exhaust stacks which, at a long distance, are unlikely to create a significant visual impact.	Power Station: 4.9km Communication Tower: 5.5km Valve Station: 1.9km	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station Low
R4	Residents	Long distance views north to north east toward the proposed power station, communication tower and valve station from residential dwelling are partially screened by vegetation surrounding the residence and the influence of topography. Potential views may extend toward the upper portions of the exhaust stacks which, at a long distance, are unlikely to create a significant visual impact.	Power Station: 5.8km Communication Tower: 6.4km Valve Station: 2.9km	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station Low

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
R5	Residents	Long distance views north to north east toward the proposed power station, communication tower and valve station from residential dwelling are partially screened by vegetation surrounding and beyond the residence and the influence of topography. Potential views may extend toward the upper portions of the exhaust stacks which, at a long distance, are unlikely to create a significant visual impact.	Power Station: 6.2km Communication Tower: 7km Valve Station: 3.9km	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station Low
R6	Resident	Long distance views north east to east toward the proposed power station, communication tower and valve station from residential dwelling are generally screened by agricultural buildings to the east of the residence.	Power Station: 4.9km Communication Tower: 6km Valve Station: 3.2km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil
R7	Resident	Long distance views north east to east toward the proposed power station, communication tower and valve station from residential dwelling are largely screened by influence of local topography.	Power Station: 4.8km Communication Tower: 6km	Low	Potentially Long Term	High	Power Station Nil Communication Tower

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
			Valve Station: 3.4km				Low Valve Station Nil
R8	Resident	Long distance views north east to east toward the proposed power station, communication tower and valve station from residential dwelling are largely screened by influence of local topography.	Power Station: 6.2km Communication Tower: 7.3km Valve Station: 4.6km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil
R9	Resident	Long distance views north east to east toward the proposed power station, communication tower and valve station from residential dwelling are screened by influence of local topography	Power Station: 5km Communication Tower: 6.4km Valve Station: 4.5km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil
R10	Resident	Long distance views north east to east toward the proposed power station,	Power Station: 4.8km	Low	Potentially Long Term	High	Power Station Nil

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
		communication tower and valve station from residential dwelling are screened by influence of local topography.	Communication Tower: 6.2km Valve Station: 4.9km				Communication Tower Nil Valve Station Nil
R11	Resident	Long distance views north east to east toward the proposed power station, communication tower and valve station from residential dwelling are screened by influence of local topography.	Power Station: 5.5km Communication Tower: 6.9km Valve Station: 5.3km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil
R12	Resident	Long distance views north toward the proposed power station and communication tower from residential dwelling are generally screened by influence of topography and vegetation. Very short distance views toward the valve station will occur from areas surrounding the residence, with some partial screening provided by tree planting	Power Station: 3.4km Communication Tower: 3.5km Valve Station: 290m	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Low

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
		within the property.					
R13	Resident	Long distance views north east to east toward the proposed power station, communication tower from the residential dwelling are generally screened by influence of topography and vegetation. Potential views may extend toward the upper portions of the exhaust stacks which, at a medium to long distance, are unlikely to create a significant visual impact. Very short distance views toward the valve station will occur from areas surrounding the residence, with some partial screening provided by tree planting within the property.	Power Station: 4km Communication Tower: 3.5km Valve Station: 490m	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station Low
R14	Resident	Long distance views north east to east toward the proposed power station, communication tower from the residential dwelling are partially screened by influence of topography and vegetation. Potential views may extend toward the upper portions of the exhaust stacks which, at a medium to long distance, are unlikely to create a significant visual	Power Station: 3.2km Communication Tower: 3.7km Valve Station: 680m	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station Low

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
		<p>impact.</p> <p>Very short distance views toward the valve station will occur from areas surrounding the residence, with some partial screening provided by tree planting within the property.</p>					
R15	Resident	<p>Long distance views north east toward the proposed power station and communication tower from residential dwelling are largely screened by vegetation surrounding the residence.</p> <p>Medium distance views toward the valve station will be screened by scattered tree cover and low undulating landform to the east of the residence.</p>	<p>Power Station: 3.8km</p> <p>Communication Tower: 4.8km</p> <p>Valve Station: 2.2km</p>	Low	Potentially Long Term	High	<p>Power Station Low</p> <p>Communication Tower Low</p> <p>Valve Station Nil</p>
R16	Resident	<p>Long distance views north east toward the proposed power station and communication tower from residential dwelling are generally screened by influence of topography and vegetation.</p> <p>Potential views may extend toward the upper portions of the exhaust stacks which, at a medium to long distance, are unlikely to create a significant visual impact.</p>	<p>Power Station: 3.2km</p> <p>Communication Tower: 4km</p> <p>Valve Station: 1.5km</p>	Low	Potentially Long Term	High	<p>Power Station Low</p> <p>Communication Tower Low</p> <p>Valve Station Nil</p>

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
		Medium distance views toward the valve station will be screened by scattered tree cover and low undulating landform to the east of the residence.					
R17	Resident	Medium and long distance views north east and east toward the proposed power station and communication tower from residential dwelling are generally screened by vegetation surrounding the residence. Potential views may extend toward the upper portions of the exhaust stacks which, at a medium to long distance, are unlikely to create a significant visual impact. Medium distance views will extend toward the valve station.	Power Station: 2.8km Communication Tower: 3.5km Valve Station: 1.1km	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station Low
R18	Resident	Medium and long distance views north east and east toward the proposed power station and communication tower from residential dwelling are generally screened by vegetation surrounding the residence. Potential views may extend toward the upper portions of the exhaust stacks which, at a medium to long distance, are unlikely to create a	Power Station: 2.3km Communication Tower: 2.9km Valve Station: 1.2km	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station Low

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
		significant visual impact. Medium distance views will extend toward the valve station.					
R19	Resident	Medium and long distance views north east and east toward the proposed power station and communication tower from residential dwelling are generally screened by vegetation surrounding and beyond the residence. Potential views may extend toward the upper portions of the exhaust stacks which, at a medium to long distance, are unlikely to create a significant visual impact. Medium distance views toward the valve station will be partially screened by scattered tree cover beyond the residence.	Power Station: 2.3km Communication Tower: 3.4km Valve Station: 2km	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station Low
R20	Resident	Medium distance views south east toward the proposed power station and communication tower from the residential dwelling are largely screened by vegetation surrounding the residence. Long distance views toward the valve station will be screened by vegetation surrounding and beyond the residence.	Power Station: 2.3km Communication Tower: 3.7km Valve Station: 4.6km	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
							Nil
R21	Resident	Medium distance views south east toward the proposed power station and communication tower from residential dwelling are partially screened by vegetation. Potential views may extend toward the mid to upper portions of the exhaust stacks which, at a medium to long distance, are unlikely to create a significant visual impact. Long distance views toward the valve station will be blocked by landform and tree cover to the south and east of the residence.	Power Station: 2.9km Communication Tower: 4.3km Valve Station: 5.2km	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station Nil
R22	Resident	Long distance views west to north west toward the proposed power station, communication tower and valve station from the residential dwelling are screened by the influence of topography and tree cover..	Power Station: 5.9km Communication Tower: 4.4km Valve Station: 6.9km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
R23	Resident	Long distance views west to north west toward the proposed power station, communication tower and valve station from the residential dwelling are screened by the influence of topography and tree cover as well as localised vegetation surrounding the residence. Distant view toward the communication tower may extend from open agricultural areas within the property boundary.	Power Station: 5.3km Communication Tower: 4km Valve Station: 7.3km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Low Valve Station Nil
R24	Resident	Long distance views west to north west toward the proposed power station, communication tower and valve station from the residential dwelling are screened by the influence of topography and tree cover.	Power Station: 4.4km Communication Tower: 4km Valve Station: 7.5km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil
R25	Resident	Long distance views west to north west toward the proposed power station, communication tower and valve station from the residential dwelling are screened by the influence of topography and tree cover.	Power Station: 6km Communication Tower: 5.7km Valve Station: 9.2km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
							Valve Station Nil
R26	Resident	Long distance views west to north west toward the proposed power station, communication tower and valve station from the residential dwelling are screened by the influence of topography and tree cover.	Power Station: 5.7km Communication Tower: 5.6km Valve Station: 8.9km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil
R27	Resident	Long distance views west to north west toward the proposed power station, communication tower and valve station from the residential dwelling are screened by the influence of topography and tree cover.	Power Station: 5.4km Communication Tower: 6km Valve Station: 8.6km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil
R28	Resident	Long distance views west to north west toward the proposed power station, communication tower and valve station	Power Station: 4.2km Communication Tower: 5.2km	Low	Potentially Long Term	High	Power Station Nil

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
		from the residential dwelling are screened by the influence of topography and tree cover.	Valve Station: 7km				Communication Tower Nil Valve Station Nil
R29	Resident	Long distance views south toward the proposed power station, communication tower and valve station from residential dwelling are generally screened by influence of topography and vegetation.	Power Station: 5.4km Communication Tower: 6.5km Valve Station: 8.1km	Low430456ezm	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil
R30	Resident	Long distance views south toward the proposed power station, communication tower and valve station from residential dwelling are generally screened by influence of topography and vegetation.	Power Station: 4.7km Communication Tower: 6km Valve Station: 7.4km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil

Table 4 - Visibility Matrix

View Location	Category of Viewer	View context	Approx. distance toward the proposed power station communication tower and valve station	Relative number of viewers	Estimated period of view	Viewer sensitivity	Potential Visual Impact
R31	Resident	Long distance views south toward the proposed power station from residential dwelling are generally screened by influence of topography and vegetation.	Power Station: 5.1km Communication Tower: 5km Valve Station: 8.3km	Low	Potentially Long Term	High	Power Station Nil Communication Tower Nil Valve Station Nil
R32	Resident	Long distance view west to south west toward the proposed power station from residential dwelling are likely to be screened by the influence of topography and vegetation as well as tree cover surrounding the residence. Short to medium distance views from the residence toward the communication tower will be partially screened by tree cover surrounding the residence.	Power Station: 3.2km Communication Tower: 2.1km Valve Station: 5.5km	Low	Potentially Long Term	High	Power Station Low Communication Tower Low Valve Station Nil

6.3 Summary of Visual Impact

A total of thirty four potential view locations were identified as part of the visual assessment process.

The following table summarises the assessment of the visual impact for potential view locations surrounding the Project.

Table 5 Summary of Visual Impact

	Visual Impact			
Key Project Structure	Nil	Low	Medium	High
Power Station	16	18	0	0
Communication Tower	15	19	0	0
Valve Station	22	12	0	0

There are unlikely to be any significant and direct views toward the power station and communication tower and valve station from the majority of local roads or access tracks. Views toward the power station are likely to be restricted to portions of the exhaust stacks and will be generally for a short duration where visible.

Photomontages

SECTION 7

7.1 Photomontages

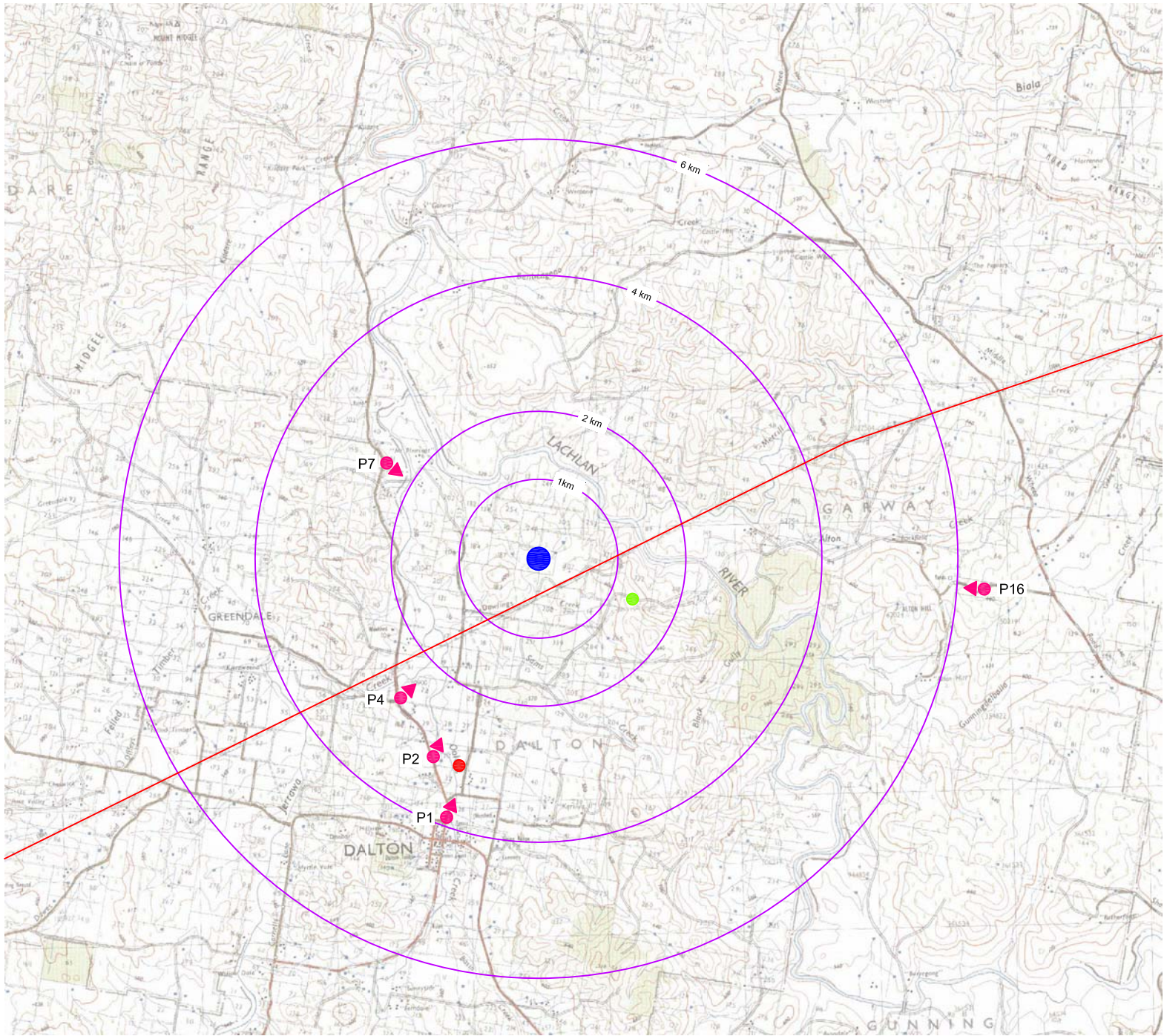
Photomontages have been prepared to illustrate the general appearance of the Project following construction. Four locations were selected to illustrate the proposed power station and communication tower from view locations in surrounding areas.

The photomontages locations were selected from publically accessible sections of surrounding road corridors and represent a range of distances between viewpoint locations and the Project to illustrate the potential influence of distance on visibility. Where possible photomontages locations were selected to provide representative views from single or multiple residential properties located within the vicinity of the photo location.

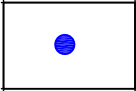

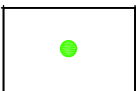
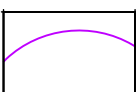

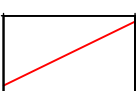
The photo location for each photomontage is illustrated in **Figure 8** and the photomontage presented in **Figures 9 to 13**.

The horizontal and vertical field of view within the photomontage generally exceed the parameters of normal human vision. However, in reality the eyes, head and body can all move and under normal conditions a person would sample a broad area of landscape within a panoramic view. Rather than restricting the extent of each photomontage to a single photographic image, a broader field of view is presented to more fully illustrate the power station and communication tower.

Whilst a photomontage can provide an image that illustrates a very accurate representation of an object in relation to its proposed location and scale relative to the surrounding landscape, this assessment acknowledges that large scale objects in the landscape can appear smaller in photomontage than in real life and is partly due to the fact that a flat image does not allow the viewer to perceive any information relating to depth or distance.



LEGEND

-  INDICATIVE SITE LOCATION
-  INDICATIVE VALVE STATION SITE LOCATION
-  INDICATIVE COMMUNICATION TOWER LOCATION
-  DISTANCE OFFSET
-  PHOTO LOCATION
-  EXISTING 330KV TRANSMISSION LINE

Source: Copyright Department of Lands
Panorama Avenue Bathurst 2795
(www.lands.nsw.gov.au)



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FINAL		23.02.11
DRAFT	FOR REVIEW	26.09.09
ISSUE	REVISION/AMENDMENT	DATE

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PROJECT
AGL Dalton
Environmental Assessment

TITLE
PHOTOMONTAGE LOCATIONS

Figure 8

DATE: 26/09/09
DRAWN/CHECKED: AH



Photo Location 1 Existing view north to north east from Chapel Street, Dalton

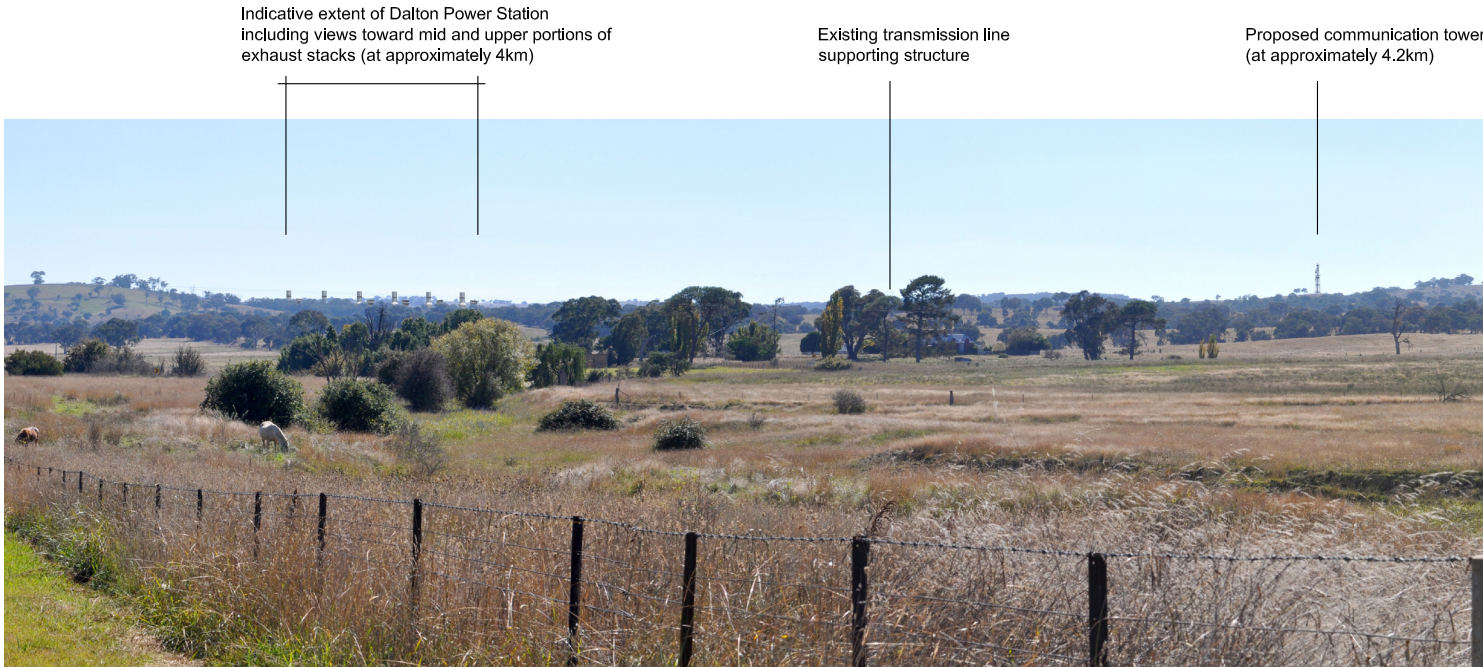


Photo Location 1 Proposed view north to north east from Chapel Street, Dalton

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ISSUE	REVISION/AMENDMENT	DATE

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PROJECT
AGL Dalton
Environmental Assessment

TITLE
PHOTOMONTAGE (Photo Location 1)

Figure 9

DATE: 09/05/11	DRAWN/CHECKED: AH
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Photo Location 2 Existing view north east from Bevendale Street, Dalton



Photo Location 2 Proposed view north east from Bevendale Street, Dalton

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PHOTOMONTAGE (Photo Location 2)

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Photo Location 4 Existing view north east from Bevendale Street, Dalton

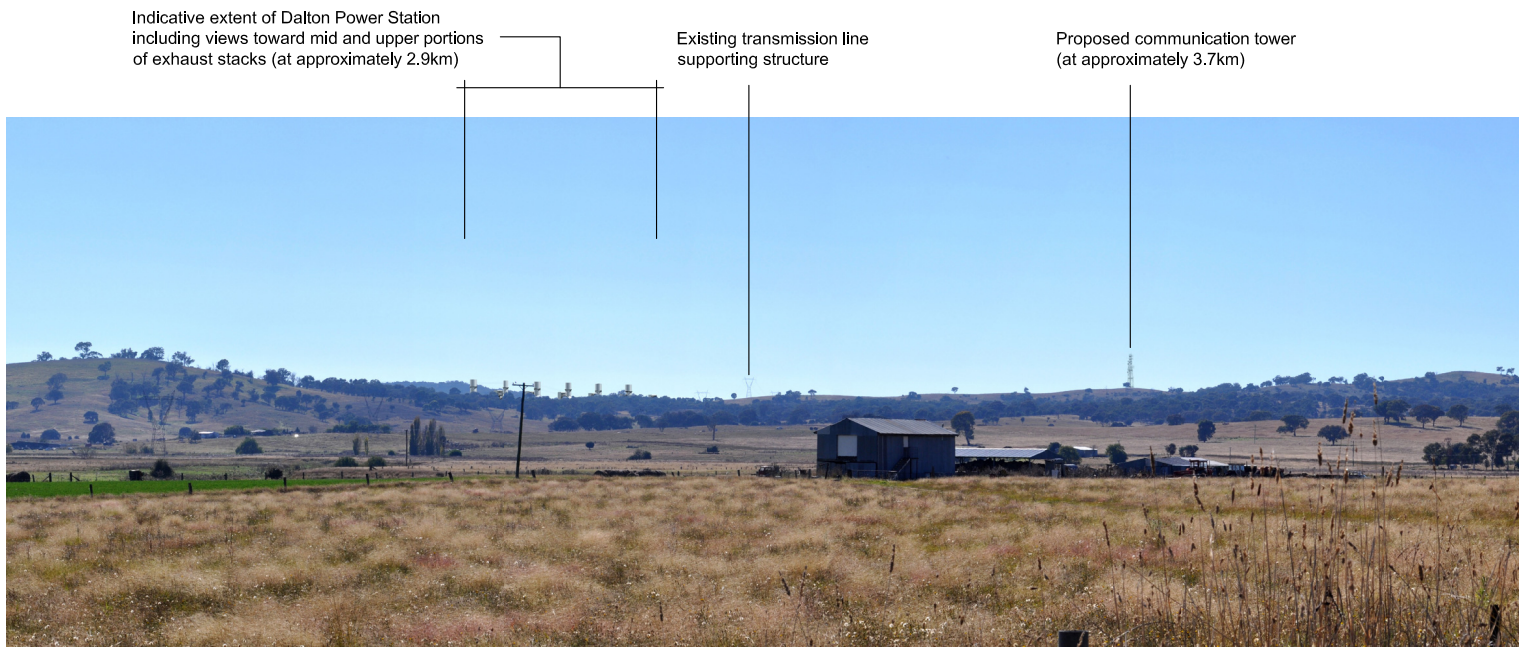


Photo Location 4 Proposed view north east from Bevendale Street, Dalton

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PHOTOMONTAGE (Photo Location 4)

Figure 11

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Photo Location 7 Existing view east to south east from Bevendale Street, Dalton



Photo Location 7 Proposed view east to south east from Bevendale Street, Dalton

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PHOTOMONTAGE (Photo Location 7)

Figure 12

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Photo Location 16 Existing view west to north west from Alton Lane

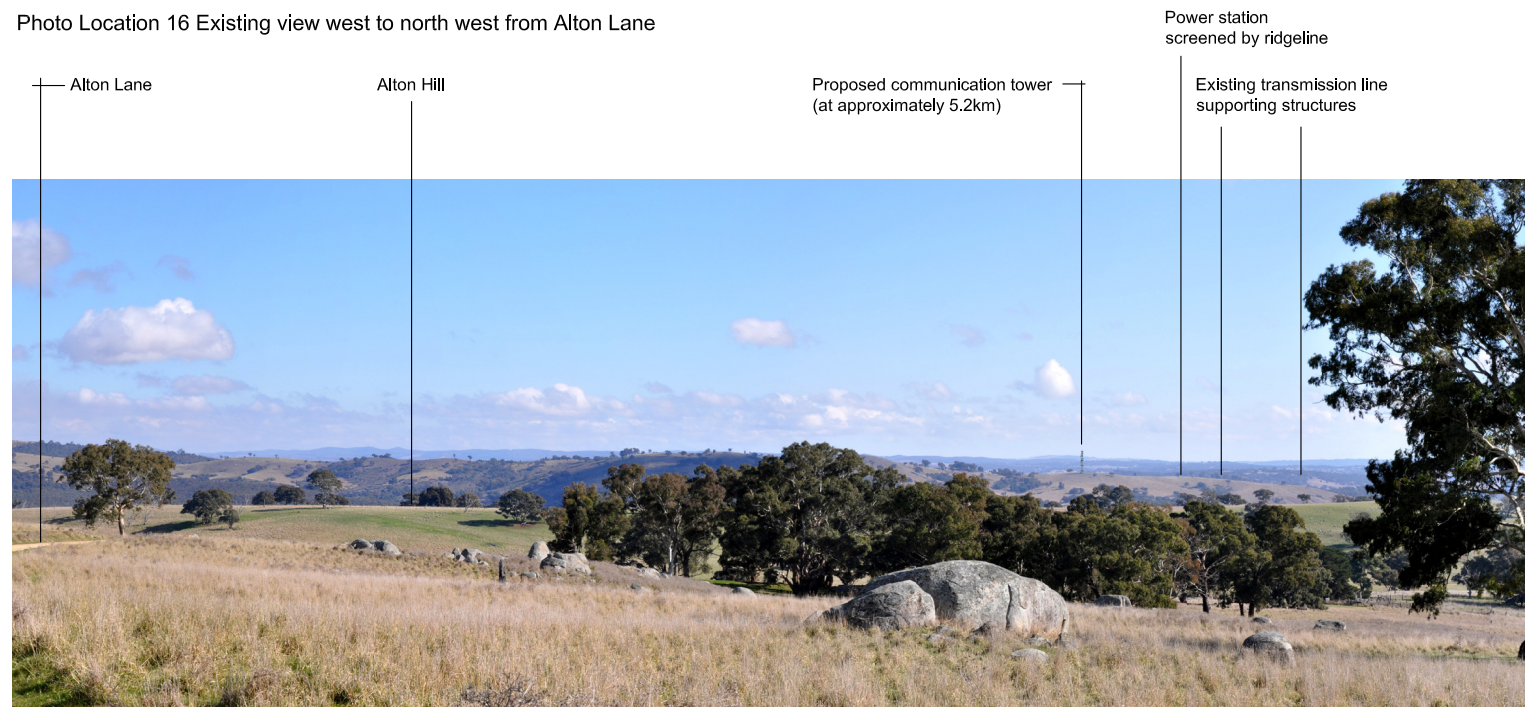


Photo Location 16 Proposed view west to north west from Alton Lane

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PHOTOMONTAGE (Photo Location 16)

Figure 13

DATE: 09/05/11	DRAWN/CHECKED: AH
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Mitigation Measures

SECTION 8

8.1 Mitigation Measures

While the overall potential visual impact of the power station, communication tower and valve station has been assessed as low, the following mitigation measures would potentially help to minimise the level of visual impact. The mitigation measures generally involve reducing the extent of visual contrast between the visible portions of the Project structures and the surrounding landscape.

Structures

- The colour and texture of structures in the Project should be dark in tone and utilise non-reflective materials. This would potentially minimise the visual contrast between the structures and denser timbered areas that form a background to a number of views locations surrounding the site.

Lighting

- Lighting associated with the power station would be designed to avoid direct line of sight from areas surrounding the site from which the mid to upper portions of power station stacks may be visible at night.
- The top of the stacks would not have lighting.
- Large floodlights would generally not be used, although it is likely that some lights may be required for emergency lighting to allow emergency maintenance.
- Security lighting would be designed not to spill light onto neighbouring residences.

A summary of the visual mitigation measures is presented in **Table 6**.

Table 6 Summary of visual Mitigation Measures

Mitigation Measures	Planning & Design	Operation
Materials utilised in the construction of the power station would be generally dark in tone and where possible non reflective.	✓	✓
Lighting would avoid direct line of sight toward homesteads beyond the site.	✓	✓
Top of the stacks would not have lighting.	✓	✓
Large floodlights not to be used other than for emergency lighting.	✓	✓
Security lighting would not spill onto neighbouring residences. This would be achieved through the use of down lights and motion sensor lighting.	✓	✓

Conclusions

SECTION 9

9.1 Summary

The GBD visual assessment concludes that overall the Project would have a low visual impact on people living in or travelling through areas surrounding the Project site. The low visual impact would be due to a combination of the following factors:

- The majority of view locations surrounding the Project, including sensitive residential locations, would experience a low visual impact in relation to the power station, communication tower and valve station infrastructure.
- Existing trees and more dense timbered areas combine with natural undulating landform to screen the majority of views toward the power station site from surrounding areas including views from rural residential dwellings.
- There are no significant views toward the power station site from surrounding local roads or property access tracks.
- The majority of ancillary structures associated with the power station including control building, workshop and electrical infrastructure would be largely screened by existing tree and timbered areas within the AGL site boundary as well as the undulating topography surrounding the site.
- The exhaust stacks, which are the tallest structures associated with the power station, would be visible from a number of surrounding rural residential properties as well as some surrounding local roads and private access tracks. The exhaust stacks may also be visible above the skyline from some view locations surrounding the power station site. Given the generally narrow profile of the exhaust stacks and taking into account the proposed mitigation measures, it is unlikely that the exhaust stacks would result in a significant visual impact on people at surrounding view locations.
- It is understood that during operation there is unlikely to be a visible emissions plume above the power station exhaust stacks.
- Views toward the exhaust stacks from the majority of rural residential properties would generally be restricted to mid or upper portions of the exhaust stacks, with views to the lower sections and associated power station infrastructure blocked by existing trees and undulating landform.
- There are no known existing developments of a similar nature within the local or surrounding area, therefore it is considered that no cumulative visual impacts are likely to occur.
- The valve station is unlikely to result in significant visual impacts due to its location within an area of low density population as well as the small number of motorists travelling along Walshs Road on a daily basis.

- Distant views toward the tower are likely to be influenced by atmospheric conditions which will tend to reduce the visibility of the tower.
- The use of dark colours and non-reflective materials would help to minimise the potential for visual contrast between the power station and tree canopy background when viewed from some view locations beyond the AGL site boundary or valve station location.
- The used of appropriate colours and finishes to elements within the valve station would help to minimise the visibility of the valve station from surrounding view locations.

Limitations

Green Bean Design has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of URS Australia Pty Ltd and only those third parties who have been authorised in writing by Green Bean Design to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The methodology adopted and sources of information used are outlined in this report. Green Bean Design has made no independent verification of this information beyond the agreed scope of works and Green Bean Design assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to Green Bean Design was false.

This report was prepared between October 2009 and July 2011 and is based on the conditions encountered and information reviewed at the time of preparation. Green Bean Design disclaims responsibility for any changes that may have occurred after this time.

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