



Wyong Area Coal Joint Venture Tooheys Road, Bushells Ridge and Hue Hue Road, Buttonderry

Proposed Developments

Visual Impact Assessment Report

Job No: 06230 May 2009

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Contents:

1.0 Introduction	1
2.0 Methodology	2
3.0 Strategic Context	3
4.0 Proposed Development	5
4.1 Buttonderry Site	5
4.2 Tooheys Road Site	6
5.0 Site Analysis	7
 5.1 Regional Context 5.2 Local Context 5.2.1 Buttonderry Site 5.2.2 Tooheys Road Site 6.0 Views 	7 8 8 9 10
6.1 Buttonderry Site 6.2 Tooheys Road Site	10 12
7.0 Scenic Quality	14
7.1 Buttonderry Site 7.2 Tooheys Road Site	14 14
7.2 Tooheys Road Site 8.0 Visual Absorption Capacity	15
8.1 Buttonderry Site 8.2 Tooheys Road Site 9.0 Visual Impact Rating	15 15 16
10.0 Impacts	17
11.0 Mitigation	18
12.0 Conclusion	21
Glossary	22
Appendix 1 Landscape Concept Masterplan	23



1.0 Introduction

Andrews Neil Urban Design Group (UDG) has been engaged by the Wyong Areas Coal Joint Venture (WACJV) to prepare a Visual Impact Assessment (VIA) for Lots 1 & 2 DP 79157 Hue Hue Road, Buttonderry and PT 124 and Lots 126, 128, 103 & 102 DP 755245 and Lots 1 & 3 DP 260217 Tooheys Road, Bushells Ridge (refer to Photo 1). This report forms part of the submission to State Government under the provisions of Part 3A of the Environmental Planning & Assessment Act (EP&AA) for the proposal described in Section 3, known as the Wallarah 2 Coal Project.

The purpose of this VIA is to;

- Review the proposal within the context of significant public space;
- Identify potential visual impacts on the surrounding landscape; and
- Propose possible mitigation measures if required.



Photo 1. View North East across both sites.



2.0 Methodology

The following methodology has been applied in the preparation of this report;

- Desktop study of topographic surveys and aerial photographs;
- Review of the proposed developments within their existing context;
- Determination of key viewpoints into site from public space such as parks, roads and lookouts;
- · Site inspection and detailed site analysis;
- Determination of Scenic Quality of the site;
- Determination of Visual Absorption Capacity of the site;
- Determination of Visual Impact Rating of the site; and
- Recommendation of mitigation measures.



Photo 2. Corner of Sparks Road and Hue Hue Road.



3.0 Strategic Context

Implications From Strategic Inquiry

On the 5th of February 2007 the NSW Government Minister for Planning announced an independent strategic inquiry into potential coal mine developments in the Wyong Local Government Area, including the Dooralong and Yarramalong Valleys. An Independent Expert Panel was appointed to conduct the inquiry and report on:

- 1. Whether coal mining under the catchment for the Mardi Dam would compromise, in any significant way, the water supply of the Central Coast;
- 2. Environmental impacts of any underground coal mining, with a particular emphasis on:
 - surface and groundwater resources, especially on drinking water supply and flooding;
 - hazards and risks of subsidence impacts; and
 - the amenity of the community, including dust and noise impacts;
- 3. Social and economic significance of any underground coal mining to the local community, the region and State; and
- 4. Areas where mining should not be permitted, or if permitted the conditions under which it may proceed, having regard to the matters listed above and the NSW Government's strategic planning policies that apply to the area.

There were a number of findings and recommendations for future coal mining activities in the Wyong LGA as a result of the Inquiry and the subsequent Strategic Inquiry Report produced (dated July 2008 and released on 15 December 2008).

AndrewsNeil has reviewed the Strategic Inquiry Report in relation to its findings regarding potential visual impacts. No new issues relevant to visual amenity associated with the Wallarah 2 Coal Project (W2CP) were raised by the Strategic Inquiry which were not already considered in the initial design of the project. The W2CP includes mitigation measures in line with current industry best practice to ensure that visual are mitigated, as outlined in Section 11 of this Visual Impact Assessment Report. Furthermore, landscape masterplans have been developed to address the conceptual site landscaping proposals for the two W2CP surface facilities sites and to incorporate visual amenity protection measures.



Table 1 – Findings and Recommendations of the Strategic Inquiry and the W2CP

Issue Raised by the Strategic Inquiry **W2CP** Assessment of the Issue (Section 2.5.4, page27) The Wyong Valleys Study – Strategy Report This assessment of the potential visual impacts of the W2CP surface section notes, among other things, that any coal mining proposal facilities confirms that the visual implications of the development would need to address "potential impacts on mine development are minor and will not have impacts on the rural character and and associated facilities and its affect on the rural character and landscape of the Wyong Valleys. This is also consistent with findings in other specialist studies completed for W2CP, including the regional landscape of the Wyong Valleys", planning context report by AndrewsNeil. (s3.3.7.5, page 78) The Inquiry report considered the issue of AndrewsNeil concurs with these findings by the Strategic Inquiry for potential visual impacts. The independent expert panel conducted the reasons clearly set out in this visual impact assessment report. site visits and noted that "there are no residential areas, either existing or proposed, within 2.5km of the Tooheys Road site". It also noted that the Buttonderry site lies immediately adjacent to Council's waste tip. The Panel stated that it "does not consider that visual impacts will be a significant constraining factor for any potential development of mine surface facilities at Tooheys Road, or for the mine ventilation and access facilities at Buttonderry".



4.0 Proposed Development

4.1 Buttonderry Site

The Buttonderry Site lies within land owned by WACJV, and will provide office buildings and landscaped carparking area. It will be the point where underground work force will commence and complete their shifts.

Inside the buildings will be showers and change rooms, offices and training rooms. Two fully enclosed shafts will transport the workers underground and provide ventilation facilities.

Landscape, including planted mounds as sound barriers and dense screen planting, are part of the proposed development.

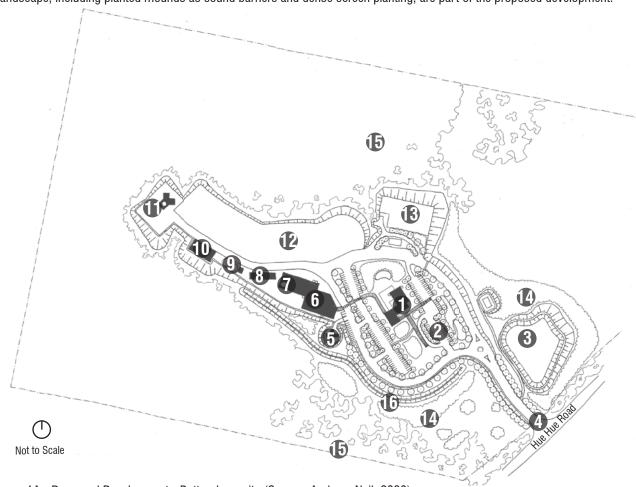


Figure 1A - Proposed Development - Buttonderry site (Source: AndrewsNeil, 2008)

Key elements of the proposal for the Buttonderry administration site include:

- 1. Single storey administration building;
- 2. Car Parking;
- 3. Dam;
- 4. Landscaped Entry;
- 5. Helipad;
- 6. Bathhouse/muster area/ first aid;
- 7. Mine access shaft;



- 3. Workshop/store;
- 9. Water tanks and fire facilities;
- 10. Dangerous goods storage;
- 11. Ventilation shaft and fan;
- 12. Open yard equipment storage;
- 13. Waste water treatment plant and transpiration area;
- 14. Landscape planting;
- 15. Existing dense vegetation; and
- 16. Planted mound sound barrier.

4.2 Tooheys Road Site

The Tooheys Road Site is largely within land owned by WACJV, and will include various underground elements including one of the longest inclined access tunnels (or 'drift') in an Australian coal mine. It is the facilities' surface elements that represent the focus for visual assessment. These elements will include a raw coal stockpile, product coal stockpile, a rail loop, overhead coal conveyors, office and workshop, carpark and helipad.

Landscaping features as part of the proposed development for aesthetic purposes and to mitigate any potential visual impacts.

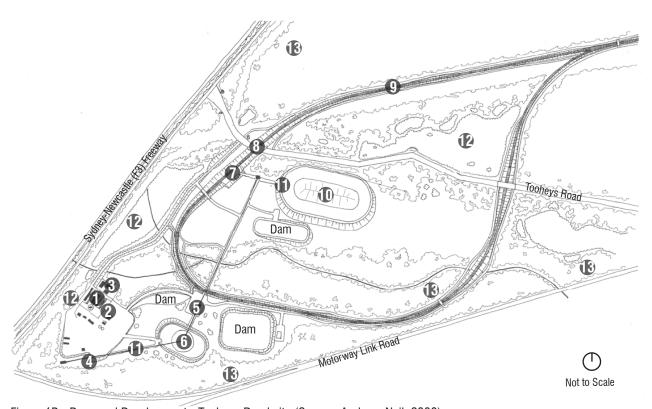


Figure 1B - Proposed Development - Tooheys Road site (Source: AndrewsNeil, 2008)

Key elements of the proposal for the Tooheys Road site include:

- 1. Office;
- 2. Car Parking and helipad;
- 3. Water and wastewater management facilities;
- 4. An underground drift entry;
- 5. Coal sizer;
- 6. Raw coal stockpile and pad;
- 7. Train loader;

- 8. Re-aligned Tooheys Road and rail bridge;
- 9. Rail loop;
- 10. Product coal stockpile and pad area;
- 11. Overhead feed coal conveyor;
- 12. Landscape planting; and
- 13. Existing dense vegetation.



5.0 Site Analysis

5.1 Regional Context

The sites are situated between 8 and 9 kilometres north of Wyong.

To the north the Olney State Forest stretches into the Watagan Ranges which continue towards Wollombi and the Hunter Region. In the west beyond Jilliby and Dooralong, an area known as 'The Valleys', past the Wyong State Forest is the steep upland country that is typical of the area through the Dharug and Wollemi National Parks to merge with the Great Dividing Range. Jilliby Creek meanders south eastward to merge with the Wyong River which feeds Tuggerah Lake. Wallarah Creek moves through the Tooheys Roadsite in its journey to Budgewoi Lake.

The F3 (Sydney – Newcastle) Freeway nd the Hue Road run roughly north/south between the two sites, with Hue Hue Road running roughly parallel to the west. Sparks Road and the Motorway Link Road allow traffic to flow and disperse to the suburbs to the east and northeast. The main Northern Rail Line runs north-south to the east of the F3.

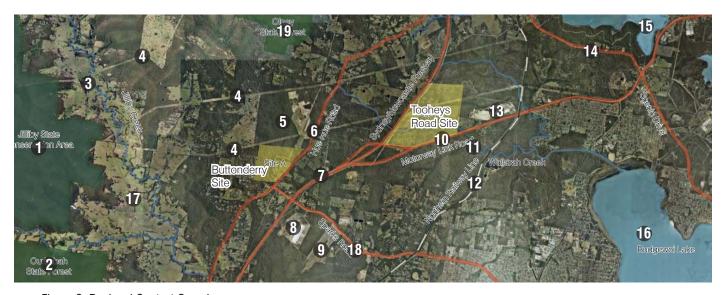


Figure 2. Regional Context Overview.

- 1. Jilliby State Conservation Area & Wyong State Forest;
- 2. Ourimbah State Forest;
- 3. Jilliby Jilliby Creek;
- 4. Overhead Transmission Line Easements;
- 5. Buttonderry Waste Management Facility;
- 6. Hue Hue Road;
- 7. F3 (Sydney Newcastle) Freeway;
- 8. Warner Industrial Park;

- 9. Warnervale Aerodrome;
- 10. Motorway Link Road;
- 11. Wallarah Creek:
- 12. Main Northern Rail Line;
- 13. Quarry and Ceramics Factory;
- 14. Wyee Road;
- 15. Mannering Lake;
- 16. Budgewoi Lake;
- 17. 'The Valleys';
- 18. Sparks Road; and
- 19. Olney State Forest.



5.2 Local Context

5.2.1 Buttonderry Site

The proposed development site falls away to the east and north-east of Hue Hue Road. There is a continuous ridge arcing around from the south towards the north. The density of tree cover falls off with the landfall, to the west of this ridge. The dense tree cover to the south of the site extends to the intersection of Hue Hue Road and Sparks Road. To the north, the dense tree cover extends for a number of kilometres and surrounds the swathe of cleared land of the Buttonderry Waste Management Facility.

The west-side arcing ridge-line mentioned above forms the north-eastern boundary of the rubbish tip, separating that boundary from visual exposure to Hue Hue Road.

Opposite the site on Hue Hue Road is an area zoned for industrial use. This parcel (Precinct A) is part of the Wyong Employment Zone (WEZ) which is an initiative of the NSW Department of Planning. To the north of this is land owned by WACJV which extends to the F3 (Sydney – Newcastle) Freeway where it runs parallel to the Tooheys Road site.

A overhead transmission line easement just north of the site runs westward across the Buttonderry Waste Management Facility, through the land owned by WACJV and across the F3 into and through Tooheys Road Site.



Figure 3A. Local Context Overview of Buttonderry Site.

- 1. Overhead Transmission Line Easements;
- 2. Buttonderry Waste Management Facility;
- 3. Sparks Road;
- 4. Hue Hue Road;
- 5. Industrial Zoned Area (WEZ) (Precinct 14);
- 6. Other land owned by WACJV;
- 7. F3 (Sydney Newcastle) Freeway.



5.2.2 Tooheys Road Site

The landscape surrounding the Tooheys Road site is characterised by undulating farmland, dense native vegetation to the north (owned by the Darkinjung Local Aboriginal Land Council) and dense native vegetation to the south which is a mix of freehold and Crown Reserve. The F3 (Sydney – Newcastle) Freeway is located along the western boundary of the site and runs north to south. A overhead transmission line easement runs along the northern boundary of the site.

The Motorway Link Road follows a ridgeline to form the southern boundary of the site. Beyond this the landscape has dense tree cover to (the unformed) Mountain Road. The land to the east of the site is generally lower-lying, while that to the west and north-west of the F3 Freeway consists of a series of consistently more elevated ridgelines.

Further to the south-west, the land lying between the Freeway and Hue Hue Road is generally lower-lying and comparatively cleared. To the north-west only the southerly slope below Bushells Ridge Road has been cleared. The ridgeline which passes through the site from its north-west corner to the mid-point of the eastern boundary, extends to the east as far as the Motorway Link Road.

Directly west of the site across the F3 Freeway lies land owned by WACJV. To the east is a quarry and tile factory that, along with the proposed W2CP development site at Tooheys Road, are identified in the State Government's Central Coast Regional Strategy as Constrained Employment Land.



Figure 3B. Local Context Overview of Tooheys Road Site

- 1. F3 (Sydney Newcastle) Freeway;
- 2. Other land owned by WACJV;
- 3. Overhead Transmission Line Easements;
- 4. Motorway Link Road;

- 5. Active Quarry;
- 6. Ceramics Factory;
- 7. Wallarah Creek;
- 8. Main Northern Rail Line.



6.0 Views

6.1 Buttonderry Site

The rezoning of all lands to the east for the Wyong Employment Zone (WEZ) will make viewing zones and viewsheds in that direction compatible with the proposed development. The land immediately to the north of the development area is owned by WACJV and is not occupied by any dwellings. The Buttonderry Waste Management Facility is located beyond the northeast of the WACJV property.

In addition to a band of dense vegetation, there is a steep rise from east to west along the southern boundary of the site. This ridge and dense tree cover obscure views into the site from the south and the west.

The views into the site are limited by existing vegetation and the topography. The following figures show the views available from particular reference points. These are proposed to be reduced dramatically through mitigation (refer to Landscape Concept Masterplan, Appendix 1).

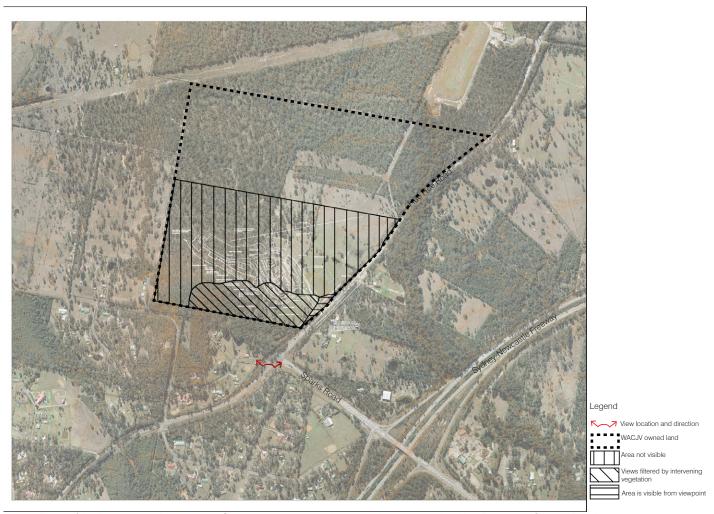


Figure 4A. View across Buttonderry Site from key view point at the juncture of Hue Hue Road and Sparks Road.



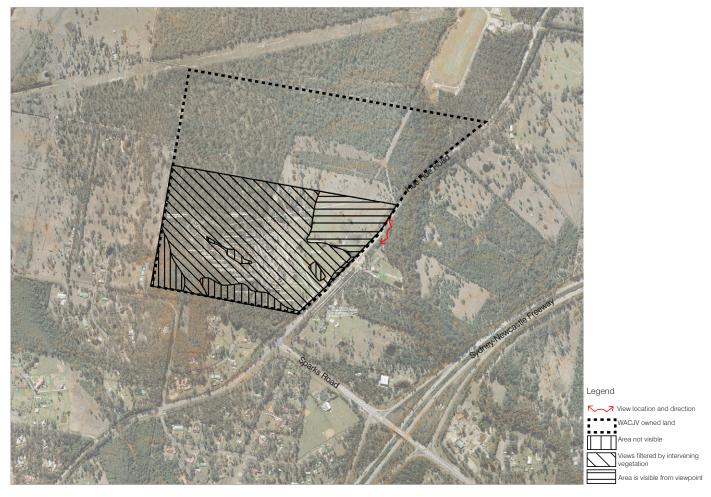


Figure 4B. View across Buttonderry Site from key view point from Hue Hue Road to the west.



6.2 Tooheys Road Site

From the south, vegetation along the Motorway Link Road allows for filtered or no views into the site. From Bushells Ridge Road in the north, portions of the site are visible currently. From the F3 Freeway along the western boundary, intermittent, short distance views are available into the site, while the majority is screened by existing mature vegetation. To the east, visibility is restricted by dense mature vegetation.

The views into the site are limited by existing vegetation and the topography. The following figures show the views available from particular reference points. These are proposed to be reduced dramatically through mitigation (refer to Landscape Concept Masterplan, Appendix 1).



Figure 5A. View across Tooheys Road Site from key view point on Bushells Ridge Road.





Figure 5B. View across Tooheys Road Site from key view point on the F3 Freeway.



Figure 5C. View across Tooheys Road Site from key view point on Motorway Link Road.



7.0 Scenic Quality

Descriptions of the Scenic Quality have been qualified in the following categories;

- **High** Areas with a diversity of landscape elements or areas with visually prominent features of land form which may include escarpments, ridge lines, visually significant stands of vegetation, geological formations, rivers, beaches, parks, villages, city skylines or streetscape. Views from an elevated position are also usually of High scenic value.
- **Moderate** Areas of land form or built features which tend to be common throughout the region and are not outstanding in visual quality.
- Low Areas with features of minimal diversity or variety.

The sites of the proposed developments are situated within two distinct landscape character types being:

- Bushland environment with features including; dense remnant Eucalypt Woodland, undulating topography, ridge lines and ephemeral creeks.
- Rural lots composed of undulating open pasture land to semi-wooded pasture land.

7.1 Buttonderry Site

The Buttonderry Site is situated adjacent to an area that has been designated for employment purposes within the Wyong Employment Zone (WEZ) and the existing Buttonderry Waste Management Facility. The proposed elements of the W2CP have been designed to be consistent with the future business park development anticipated to occur within the adjoining WEZ.

The landscape is typical of the area with no prominent landscape features. This indicates that it has a **Moderate** scenic quality rating.

7.2 Tooheys Road Site

The Tooheys Road Site is situated in an area that currently has rural characteristics and is typical of the land forms and features of the region. It sits between the Freeway and an active quarry and ceramics factory. A large portion of the boundary to the west across the freeway is owned by WACJV.

The landscape is typical of the area with no prominent landscape features. This indicates that it has a **Moderate** scenic quality rating.



8.0 Visual Absorption Capacity

Visual Absorption Capacity can be described as the amount of change a site (or parts of), can accommodate without adversely affecting the desired character. The absorption capacity may vary across a site depending on likely visual impacts from development in relation to the site and its broader context. For the purpose of this study, qualitative criteria listed below have been used to assess the Visual Absorption Capacity.

- High Existing landscape and built environment able to absorb development with no or minimal obstruction to significant views or desired character.
- **Moderate** Existing landscape able to absorb some development with moderate obstruction to significant views and desired landscape character.
- Low Existing landscape unable to absorb development without a high degree of obstruction to significant views and desired landscape character.

8.1 Buttonderry Site

The Buttonderry Site is densely vegetated to the west where it is capable of a high level of visual absorption. The landscape viewed from the east has a moderate level of visual absorption capacity as it is characterised by open pasture and clusters of mature trees. The landscape is has a **Moderate** visual absorption capacity for the proposed development.

8.2 Tooheys Road Site

The Tooheys Road Site is situated in an area that has rural characteristics and is typical of the land forms and features of the region. It sits between the Freeway, Motorway Link Road and an active quarry and ceramics factory. A large portion of the boundary to the west across the freeway is owned by WACJV and is densely vegetated.

The landscape is typical of the area with no prominent landscape features. This indicates that it has a **Moderate** visual absorption capacity rating.



9.0 Visual Impact Rating

The visual impact rating is determined by comparing the Scenic Quality with the Visual Absorption Capacity. This cross referencing ensures that the viewer's emotional response to scenic quality is considered with the respect to the capacity for change.

The ratings shown in the Table below are described as;

- **High** Developments within this rating are likely to have a significant visual impact upon the scenic quality of the coastal landscape character.
- **Moderate** Developments within this rating will have a visual impact upon a limited area at a local scale and may be mitigated during the detail design stage.
- **Low** Developments within this rating will not have significant visual impact.

Visual Impact Rating		Scenic Quality		
		Low	Moderate	High
Visual Absorption Capacity	Low	Moderate	High	High
	Moderate	Low	Moderate	High
	High	Low	Low	Moderate

From the matrix shown above the Visual Impact Rating for the site is **Moderate**.

This means that the site in its existing state is not particularly significant, there are no heritage items to be considered and the landscape is consistent and typical of the areas surrounding the sites. Also, the landscape will neither completely conceal nor expose the proposed development but has the ability to soften the visual impact from outside the boundaries of the sites prior to mitigation. However, in conjunction with the proposed mitigation as shown in the Landscape Concept Masterplans (refer to Appendix 1), the visual impact will be reduced.



10.0 Impacts

To identify the impacts, the proposed developments have been assessed against the existing fabric of the sites. These impacts are on the fabric, character and quality of the landscape. They are concerned with the;

- Landscape Components;
- Landscape Character;
- Special Interests, e.g. conservation or heritage sites;
- Effects on people of the changes in available views through intrusion or obstruction and whether important opportunities to enjoy views may be improved or reduced.

The visual impacts for each of the project sites are summarised below.

The Buttonderry Site

Impacts;

- Excavations for buildings and dams;
- The addition of hardscape elements and surfaces;
- Removal of existing trees;
- Cutting and filling to implement level changes for access, buildings and storage areas;
- Introduction of formal landscape elements;
- Mass planted acoustic mound.

The Tooheys Road Site

Impacts:

- Excavations for buildings and dams;
- The addition of hardscape elements and surfaces;
- Removal of existing trees;
- Cutting and filling to implement level changes for rail loop, access, buildings and storage areas;
- Formalisation of access to site via Tooheys Road involving the introduction of railway bridges and the sealing of the existing road;
- Wallarah Creek will have engineered crossings for the access track and rail loop;
- Conveyor belts used in the transfer of coal.



11.0 Mitigation

Even though the Visual Impact Rating has been identified as **Moderate**, recommendations for mitigation measures should be considered to ensure the impacts are kept to a minimum. Recommendations include the following;

The Buttonderry Site

Mitigation Measures;

- The proposed detention dam should be screened with selective planting to form a landscape feature, while still functioning as a mine utility;
- Dense mass planting of endemic species will screen the majority of the site from view;
- Dense mass planting of endemic species to form screen and barrier to the dam and site;
- Species proposed and formal landscape design to reflect the existing landscape character;
- Acoustic mound will screen and deflect noise associated with activities occurring on the site and as a visual screen;
- Possibility to design entry road to retain existing landscape and prevent direct views into the site;
- In the area to the west where it is proposed to retain the existing vegetation, a maintenance program should be implemented;
- The proposed built forms to show a consistent character with those proposed for the business park opposite.



The Tooheys Road Site

Mitigation Measures;

- Retention of vegetation along road fronts and riparian corridors and supplementary planting to thicken existing vegetation;
- Dense mass planting of endemic species are proposed to screen buildings on site from view;
- Retain vegetation along Tooheys Road and use erosion control measures where disturbances occur. Proposed bridges to cross rail line will not be visible below the cutting;
- Riparian vegetation will be retained with the possibility of a maintenance program to be implemented;
- Dense mass planting of endemic species are proposed to screen coal conveyor belts;
- Removal of the existing residence will create a more consistent landscape panorama;
- Dense mass planting of endemic species are proposed to screen dams on site from view.

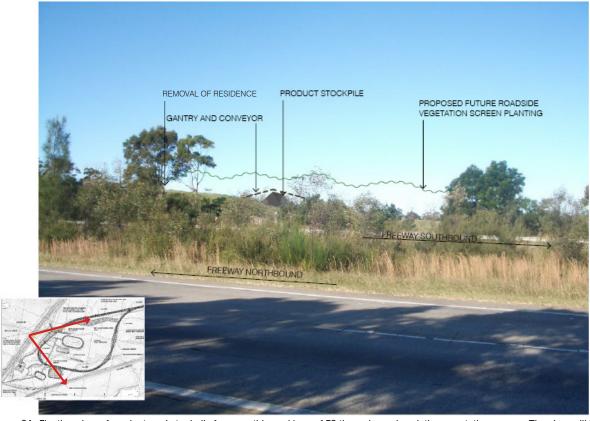


Figure 6A. Fleeting view of product coal stockpile from northbound lane of F3 through gap in existing vegetation screen. The view will be further reduced by proposed roadside vegetation (refer to outline of proposed roadside vegetation screen above).



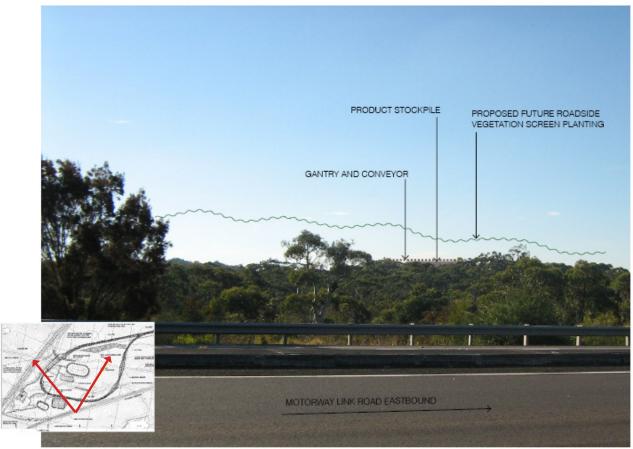


Figure 6B. Fleeting view of product coal stockpile from eastbound lane of Motorway Link Road, assuming no vegetation screen. The view will be further reduced by proposed roadside vegetation (refer to outline of proposed roadside vegetation screen above).

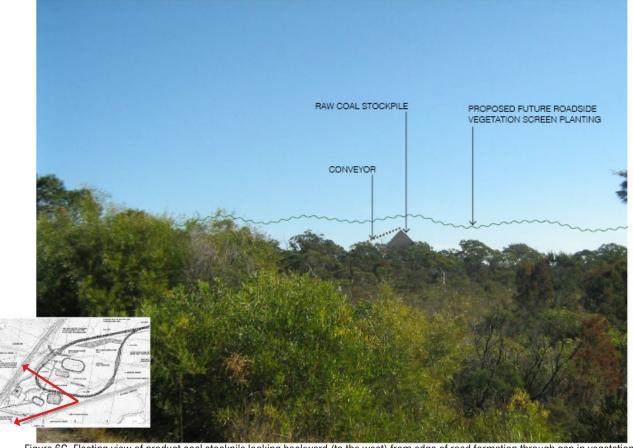


Figure 6C. Fleeting view of product coal stockpile looking backward (to the west) from edge of road formation through gap in vegetation screen adjacent to eastbound lane of Motorway Link Road. The view is significantly reduced from traffic lane locations. Proposed future vegetation screening is shown by outline.



12.0 Conclusion

This Visual Impact Assessment has:

- Reviewed the proposed development sites;
- Analysed the sites in both a regional and local context;
- Looked at the views as they relate to the current landscape and its associated character;
- Assessed the Scenic Quality of the sites:
- Assessed the Visual Absorption Capacity of the sites;
- Assessed the Visual Impact Rating of the sites;
- Looked at the impacts the proposed developments will have on the sites in their current state;
- Identified the mitigation measures that can be implemented in response to the developments.

The findings of this Visual Impact Assessment Report are that the sites have a consistently **moderate** rating in the areas of Scenic Quality, Visual Absorption Capacity and Visual Impact Rating.

This means that the sites in their existing states are not particularly significant, there are no heritage items to be considered and the landscape is consistent and typical of the area surrounding the sites. Also, the landscape will neither completely conceal nor expose the proposed development but has the ability to soften the visual impact from outside the boundaries of the sites prior to mitigation. However, in conjunction with the proposed mitigation as shown in the Landscape Concept Masterplans (refer to Appendix 1), the visual impact will be reduced to low levels.

The Landscape Concept Masterplans for the sites (refer to Appendix 1) show a sensitivity to the issues of scenic quality and visual impact. The mitigation measures proposed will include the continuation and enhancement of the endemic vegetation, and the design intention is to screen the major built components from identified key viewpoints. This proposes that both sites receive supplementary planting of endemic species to thicken existing screening vegetation. This will result in more effective screening of the sites from major transport arteries and identified key view points as well as providing stronger flora/fauna connectivity across the sites.

Additionally, the Buttonderry Site, has a proposed utility dam that will be landscaped in such a way that it can become an aesthetic landscape feature. An acoustic mound, which is proposed to be mass planted, will also continue and thicken the proposed screening.



Glossary

Mitigation- relates to the approaches undertaken to lessen the effects of developments on the character of the landscape and its views.

Scenic Quality- relates to the standard of quality of an area's scenic features. For the purposes of the methodology used in this report, they are High, Moderate and Low: High being where there are exceptional landscape features that are rare or of particular significance for the area, Moderate being where the landscape character is typical of the area and much the same as its surrounds, and Low being of a low quality for the areas standards.

Visual Absorption Capacity- is a measure of the site's ability to, without mitigation measures, contain a development without it changing the existing face of the landscape. For the purposes of this report they are High, Moderate and Low: High being the ability of the landscape to absorb the development with little or no impact on the existing views and landscape character, Moderate being some impact on the existing views and landscape character, and Low being a significant impact on the existing views and landscape character.

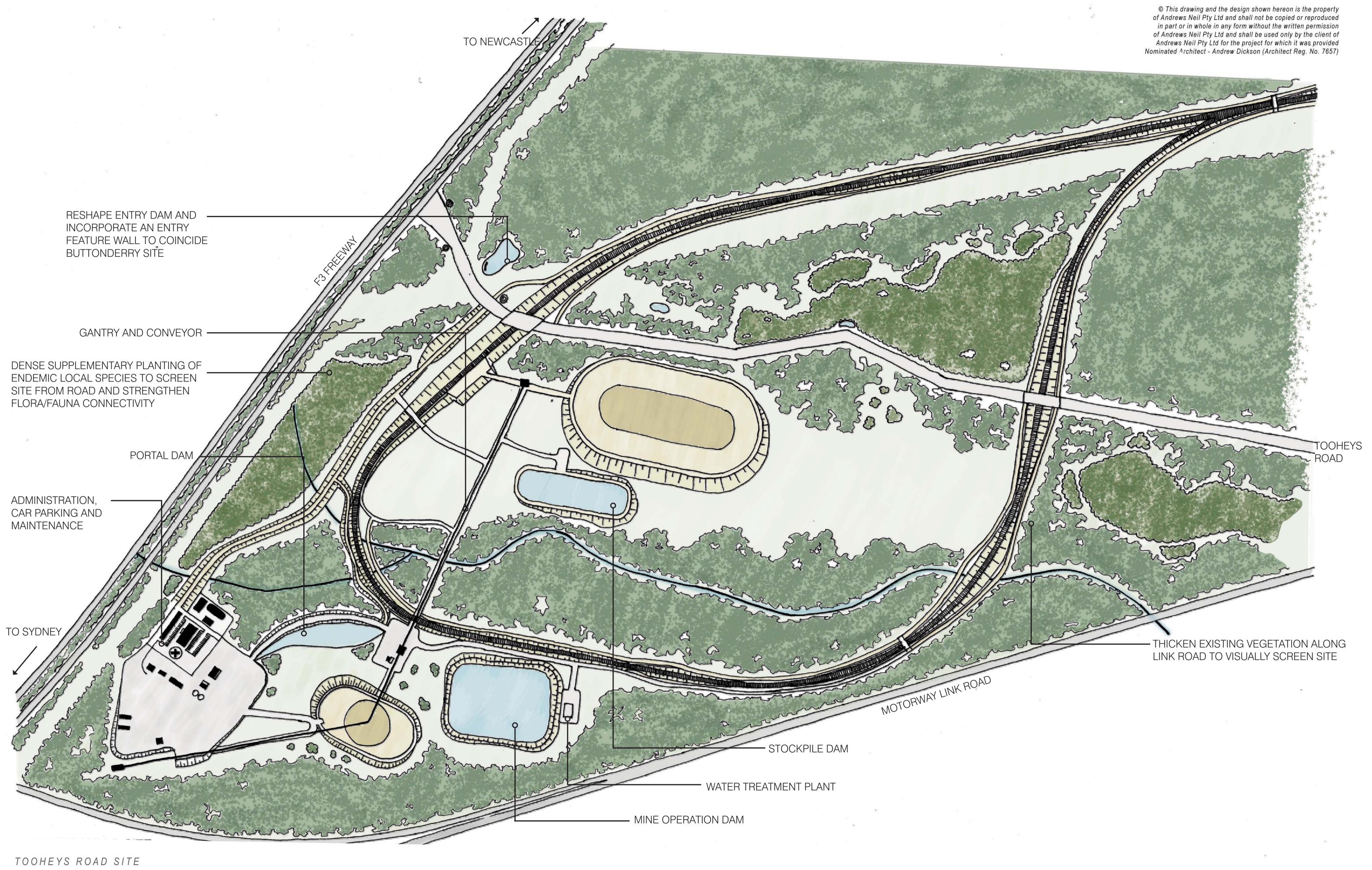
Visual Impact Assessment- a visual impact assessment is a study to determine the state of an area proposed for development and the effect that the proposed development will have, both with and without mitigation measures.

Visual Impact Rating- this is a rating determined by the results of the Scenic Quality and Visual Absorption Capacity.



Appendix 1 Landscape Concept Masterplans





Wallarah 2
COAL PROJECT

WACJV Hue Hue Road, Buttonderry and Tooheys Road, Bushells Ridge Wallarah 2 Coal Project

SCALE 1:2500 @A1
200m

Wallarah 2 Coal Project
06230 May 2008 SK01

SCALE 1:2500 @ A1













