APPENDIX I

Visual Impact Assessment – Addendum

VISUAL IMPACT ASSESSMENT – ADDENDUM

WALLARAH 2 COAL PROJECT

MAY 2016

THE DESIGN PARTNERSHIP
Planning and Designing the Built Environment

VISUAL IMPACT ASSESSMENT – ADDENDUM

WALLARAH 2 COAL PROJECT

PROJECT NUMBER: 11.050

ISSUE	DATE	DESCRIPTION	AUTHOR
A	21/04/16	First Draft	KR
B	09/05/16	Second Draft	KR
C	11/05/16	Final	KR
D	09/06/16	Amendments to Project Description & Figure 1	KR

Report prepared by:

THE DESIGN PARTNERSHIP

TDP2 Pty Ltd ATF The Design Unit Trust T/A The Design Partnership
Central Coast – PO Box 6110 Long Jetty NSW 2261
Hunter Region – PO Box 277 Charlestown NSW 2290
T 02 4324 8554
E info@thedesignpartnership.com.au
W www.thedesignpartnership.com.au

Contents

List of Figures

List of Tables

1.0 Introduction

This is an Addendum to the Visual Impact Assessment (VIA) prepared for the Wallarah 2 Coal Project (the Project), dated 27 February 2013. The VIA assessed the potential visual impacts of the infrastructure proposed for the Tooheys Road Site, Buttonderry Site and Western Ventilation Shaft Site.

This Addendum address the changes proposed to the design of the Tooheys Road Site. The proposed changes are detailed in Section 2, which has been prepared by Hansen Bailey.

2.0 Project Overview

The Wyong Areas Coal Joint Venture (WACJV) is seeking development consent under Division 4.1 of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the Wallarah 2 Coal Project (the Project). The key features of the Project include:

- A deep underground longwall mine extracting up to 5 million tonnes per annum (Mtpa) of export quality thermal coal;
- The Tooheys Road Site between the M1 Motorway and the Motorway Link Road, which includes a portal, coal handling facilities and stockpiles, water and gas management facilities, small office buildings, workshop, rail spur, train load out bin and connections to the municipal water and sewerage systems;
- The Buttonderry Site near the intersection of Hue Hue Road and Sparks Road, which includes administration offices, bathhouse, personnel access to the mine, ventilation shafts and water management structures;
- The Western Shaft Site in the Wyong State Forest, which includes a downcast ventilation shaft and water management structures;
- An inclined tunnel (or "drift") from the surface at the Tooheys Road Site to the coal seam beneath the Buttonderry Site;
- Transportation of product coal to the Port of Newcastle by rail; and
- An operational workforce of approximately 300 full time employees.

The Project has been subject to the assessment process under Division 4.1 of Part 4 of the EP&A Act, including a review by the Planning Assessment Commission (PAC). In June 2014, the PAC concluded that *'if the recommendations concerning improved strategies to avoid, mitigate or manage the predicted impacts of the project are adopted, then there is merit in allowing the project to proceed*'.

Following the review by the PAC, the Tooheys Road Site was re-designed to avoid land use conflicts with third parties. The changes to the Project include:

- Removal of the previously proposed rail loop;
- Re-location of the previously proposed rail spur to the eastern side of the Main Northern Rail Line;
- Re-location of the train load out facility to the eastern side of the Main Northern Rail Line;
- A conveyor system to deliver product coal from the stockpile to the new train load out facility; and
- Realignment of the sewer connection.

These proposed changes are referred to as the 'Amendment'. All other aspects of the Project remain identical to the original proposal.

To give effect to the proposed changes to the Project, WACJV is seeking an amendment to the Development Application (DA) under clause 55 of the *Environmental Planning and Assessment Regulation 2000.* This report forms part of the "*Amendment to Development Application SSD-4974"* (Amendment Document) being prepared by Hansen Bailey to support the application to amend the DA.

This report assesses the environmental impacts of the Amendment and where necessary, recommends additional management and mitigation measures to ameliorate these impacts. Aspects of the Project that are unchanged have not been reconsidered. The impacts associated with these aspects of the Project will remain as assessed in the *Wallarah 2 Coal Project Environmental Impact Statement* (Hansen Bailey, 2013).

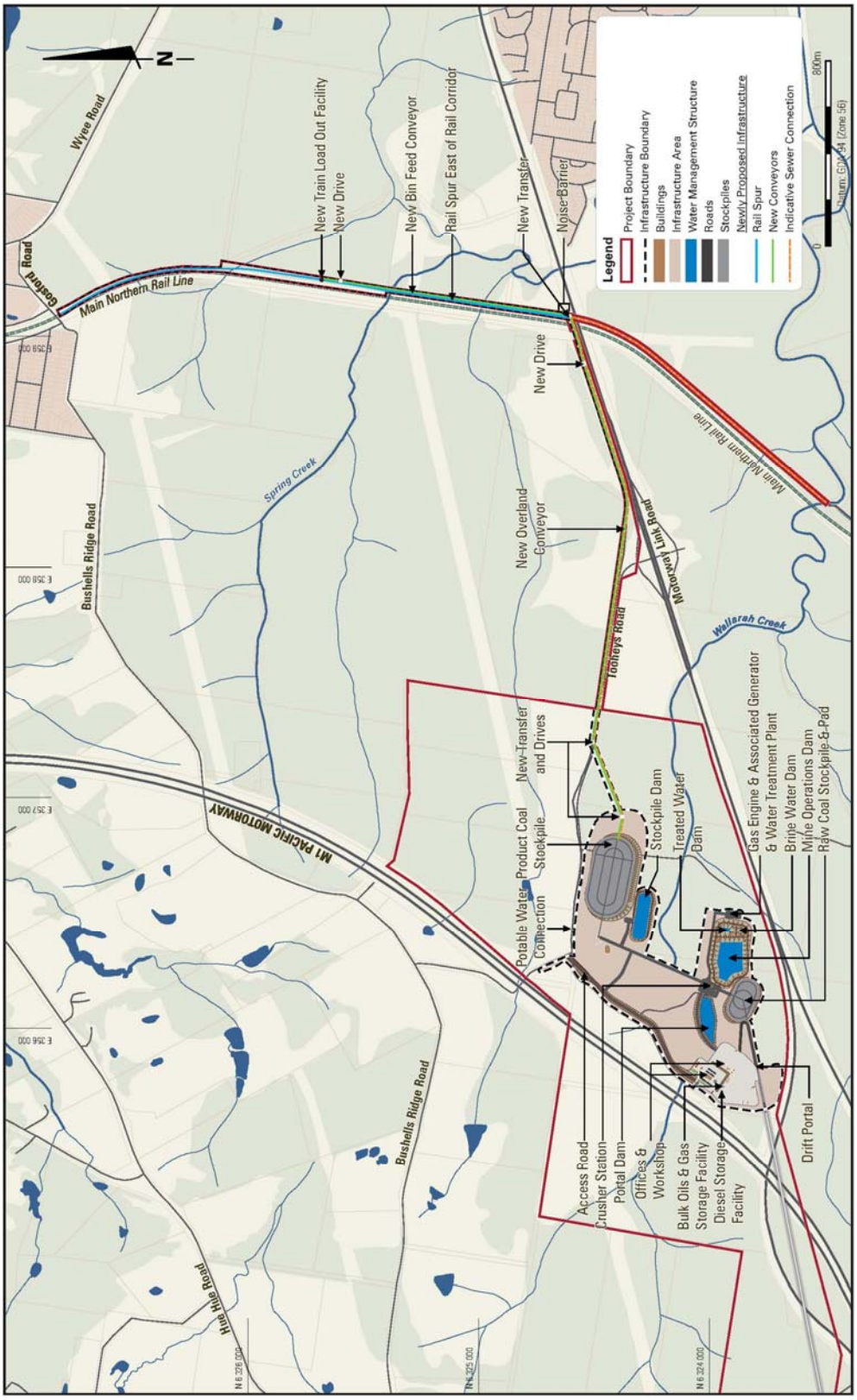

Figure 1: Conceptual Tooheys Road Site Layout (Source: Hansen Bailey)

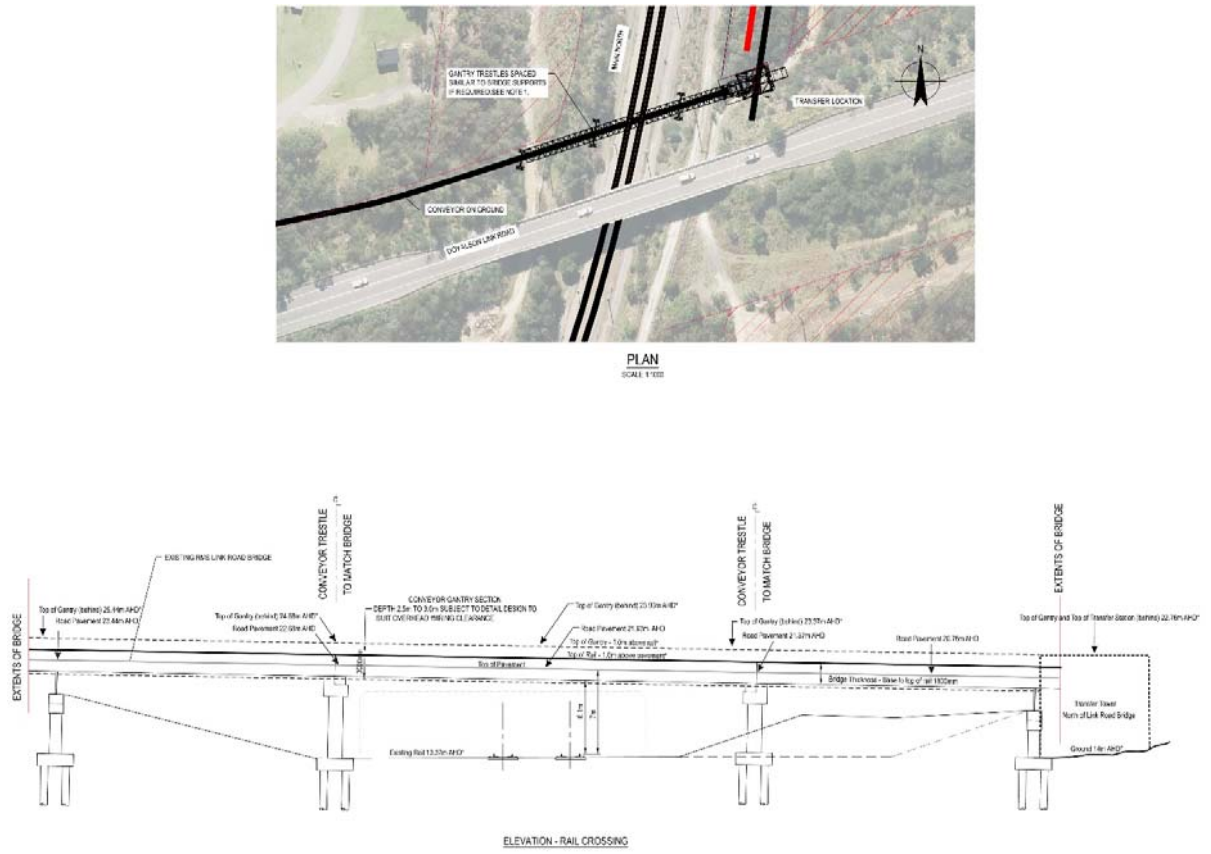

Figure 2: Conveyor Gantry and Transfer Station (Source: GHD)

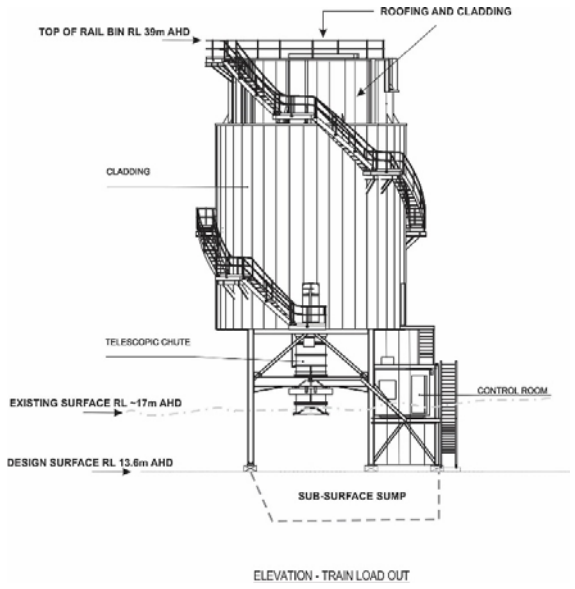

Figure 3: Train Load Out Bin (Source: GHD)

3.0 Methodology

The assessment methodology relied upon in the Wallarah 2 Coal Project Visual Impact Assessment has been used in this Addendum. This new assessment will be limited to the proposed changes to the Conveyor system (particularly the conveyor gantry sections over the Motorway Link Road and Tooheys Road), the proposed Transfer Station north of the Motorway Link Road bridge and the new Train Load Out facility as described above in Section 2.0.

This Addendum addresses the following:

1. Visual Landscape Character Assessment
2. Impact on Views
3. Visibility
4. Visual Absorption Capacity
5. Visual Impact Rating
6. Recommended Mitigation Measures

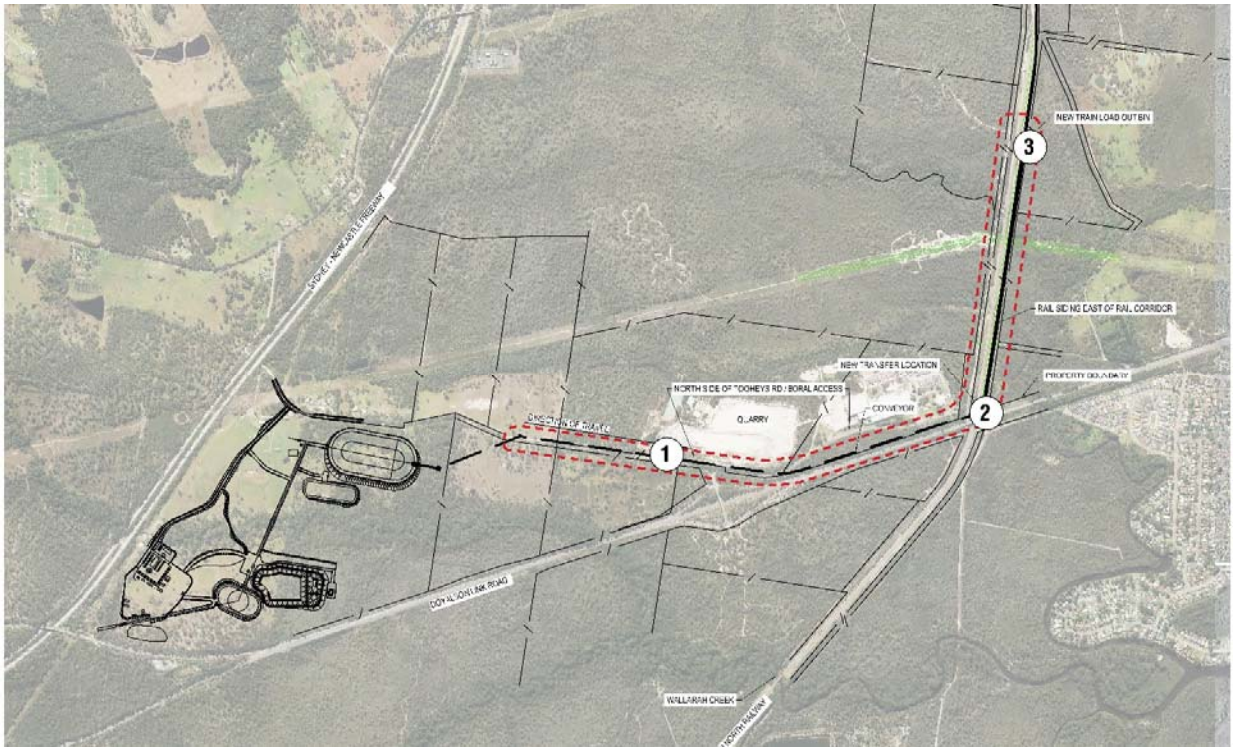

Figure 4: Study Area

4.0 Visual Landscape Character Assessment

The following Landscape Character Assessment is localised to the area under assessment (see Figure 5).

This component of the VIA involves:

- Identifying the Viewshed (or visual limits) of the proposed infrastructure areas – including identifying the locations where viewers are likely to be affected by visual changes brought about by the development of the site
- Identifying key Viewpoints which most clearly convey or reveal the visual effects of the Project and the viewer groups potentially affected and
- Identifying Visual Character as determined from key sites and from local viewer responses. Character is then rated by the following categories:

  - Highest Quality Landscape
  - Very attractive Landscape
  - Good Quality Landscape
  - Ordinary Quality Landscape; or
  - Poor Quality Landscape.

4.1 Determination of View Shed and Private Receptor Viewing Locations

In order to ascertain the potential impacts of the Project, the following approach was undertaken:

- A desktop review to identify potential viewing sites, surrounding land uses and key road linkages, as well as a review of contours and site topography
- A site visit to assess the site
- Photographs were taken from viewing locations, where practical. Many viewing locations were difficult to document as they are located on roads and bridges where traffic is moving at high speeds and there is no public pedestrian access
- GPS locations of the photographs were recorded (where a GPS signal could be obtained)
- From locations where the Project could be viewed, locations and heights were noted, in order to assess potential impacts
- From locations where the Project could not be viewed, as a result of the topography, vegetation or safety issues, an indicative location for the works was marked on the photos to illustrate the potential level of impact.

4.2 Identifying Visual Access

(1) The visual access to the majority enclosed, mainly ground-mounted **Conveyor** and the fully enclosed **Conveyor Gantry** sections (1) is defined by the following factors:

a. When travelling eastbound on the Motorway Link Road, the Conveyor would be visible from the road, approximately 100 metres west of the rail overpass bridge because in this location it becomes an elevated gantry structure as it approaches the Conveyor Gantry, which bridges across the rail corridor. Before this point, the Conveyor is below road level and is concealed behind existing vegetation.
b. When travelling westbound on the Motorway Link Road, the elevated Conveyor Gantry, which bridges the railway corridor, is first visible from the road when the vehicle has reached the bridge abutments. The road gradient (and the vehicle angle) rise as it approaches the bridge which will delay view of the Conveyor Gantry. The Conveyor Gantry will initially also be partly obscured by the Transfer Station (2).
c. When travelling by train north or south on the Northern Rail line, the Conveyor Gantry (which here is a structure bridging across the rail corridor just north of the road bridge)

will be difficult to sight unless the passenger is looking up or obliquely from the train window at the right moment. This is due to the elevation of the Conveyor Gantry approximately 6 metres above the rail line.

d. When travelling on Tooheys Road, the Conveyor will be mainly close to ground level and will follow the boundary along the northern side of the road. The Conveyor will be lightly screened by existing vegetation. The Conveyor crosses the road inside an elevated gantry structure. This gantry is located within the private leasehold property of the Boral Tile Factory.
e. There are no pedestrian views of the Conveyor Gantry from public land, within the view catchment.

(2) The visual access to the **Transfer Station** (2) and noise wall is defined by the following factors:

a. When travelling eastbound on the Motorway Link Road, the Transfer Location may be first visible immediately before the rail overpass bridge. Before this point, the Transfer Station is concealed by road side vegetation, the angle of the road/bridge and the bridge itself.
b. When travelling westbound on the Motorway Link Road, it is estimated that the Transfer Station is first visible when the vehicle has reached the bridge abutments. The Transfer Station links to the elevated Conveyor Gantry that bridges over the rail corridor.
c. When travelling by train north or south on the Northern Rail line, the Transfer Station will be visible from the train when directly adjacent the structure or looking obliquely out of the window.
d. The noise wall will be partially obscured by the Transfer Station structure.
e. There are no pedestrian views of the Transfer Station within the view catchment.

(3) The visual access to the **Train Load Out Bin** (3) is defined by the following factors:

a. When travelling eastbound on the Motorway Link Road, the Train Load Out Bin may be visible by a vehicular passenger while on the bridge, however this view will be fleeting. N.B. The Train Load Out Bin is approximately 1.1km north of the bridge.
b. When travelling westbound on the Motorway Link Road, the Train Load Out Bin may be visible by a vehicular passenger while on the bridge. However, the passenger will be required to look backwards toward the rail line. Any such view will be fleeting.
c. When travelling by train north or south on the Northern Rail line, the Train Load Out Bin will be visible from the train when directly adjacent the structure or looking obliquely out the window.
d. There are no pedestrian views of the Train Load Out Bin within the view catchment.

N.B. For points a and b, the statements assumes the driver of the vehicle is focused on the road.

Therefore, the people who will be potentially exposed to the proposed structures are:

- Driving or travelling as a passenger on the Motorway Link Road (very short length only)
- Travelling as a train passenger on the Northern Rail Line (very short length only)
- Driving or travelling as a passenger on Tooheys Road (very low usage)
- Driving or travelling as a passenger on Tooheys Road - within the grounds of the Boral Factory (very low usage and limited public visitation)

5.0 Impact on Views

For the purposes of this Visual Impact Assessment Addendum:

- **Viewing Zones** means the distance (or locations) from the site from which it is possible to view the site, whereas
- **Viewshed** refers to the extent of views of a particular type. The extent of the Viewshed is dependent on how far distant the site remains visible and whether particular points, bends in roads or physical structures prevent views of the site.

There are two Viewing Zones. These are:

- Immediate Vicinity (< 1 km)
- Local area (1-3km)

Within the Immediate Vicinity the following Viewsheds apply as shown in Figure 5:

- Viewshed 1: From the Motorway Link Road
- Viewshed 2: From the Motorway Link Road overhead bridge
- Viewshed 3: From the Main Northern Rail Line a. from the Transfer Station and b. from the Train Load Out
- Viewshed 4: From the unsealed Tooheys Road
- Viewshed 5: From the sealed Tooheys Road on private leasehold property

Within the Local Area Zone, the following Viewshed applies as shown in Figure 5:

- Viewshed 6: From the Motorway Link Road

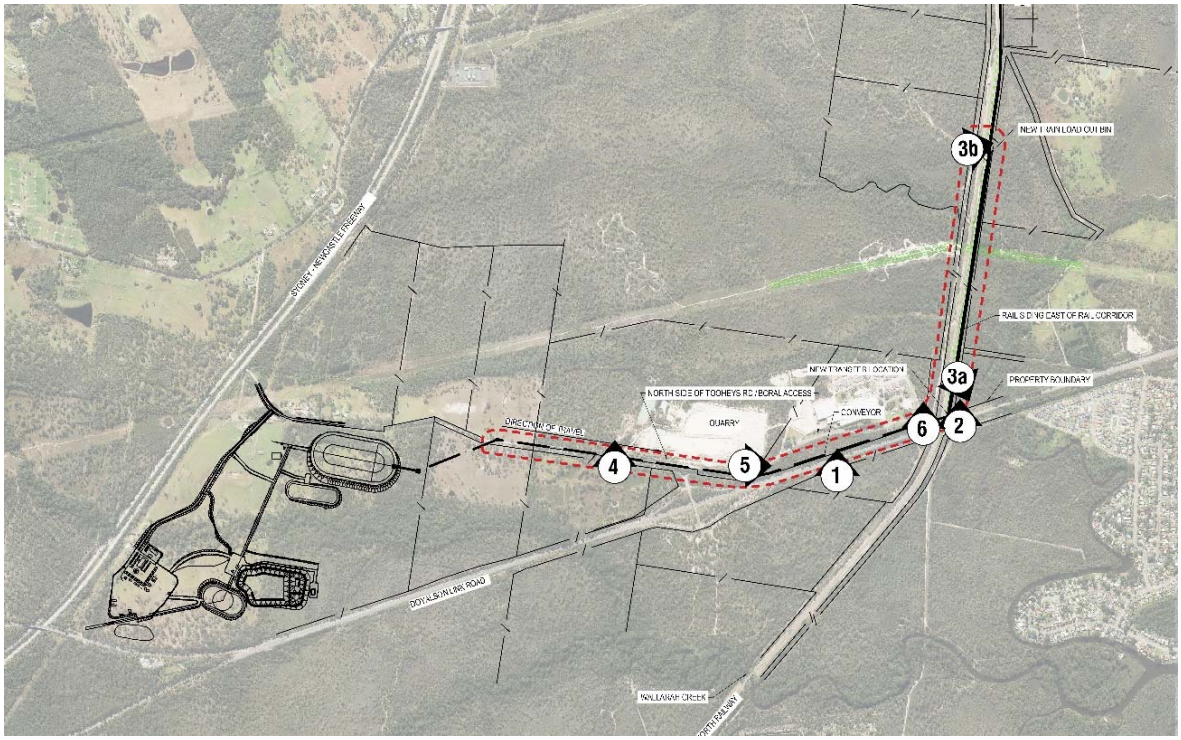

Figure 5: Viewsheds

The tallest component of the new proposed infrastructure will be the Train Load Out Facility located approximately 1.1 km from Viewshed 6. The Train Load Out Facility will be approximately 25.4 metres to 28 metres high (depending on detailed design) and 13.5 metres wide. The Train Load Out Facility will be within a cutting at least 2 metres and up to 3.4 metres deep. This will therefore reduce the final elevation of the top of the structure that will be visible above the ground plane adjacent to the rail lines. It is likely this structure will sit within or just above the existing tree canopy which will form a backdrop (except when fleetingly viewed from an immediately adjacent passing train). This height relativity to surrounding vegetation has been estimated based on limited site accessibility and dense woodland vegetation. Within Viewsheds 2 and 6, there are four visible overhead electricity pylons which currently extend significantly above the tree canopy (see Figure 6 for an example of typical tower). The tower structures are estimated to be 35 metres high, which is taller than the Train Load Out Bin. Due to the distance of the Train Load Out Facility from Viewsheds 2 & 6 and the presence of neighbouring overhead power towers, the proposed infrastructure will not create significant visual impacts.

This Train Load Out Bin structure will be visible from Viewshed 3b within the Immediate Vicinity Viewing Zone. This view will be from a passenger train travelling north and south along the Main Northern Rail Line. This view will be limited as the passenger train will be moving at high speeds as it passes the Train Load Out Bin structure. Although the structure will be of a large scale, it will have similar character to other rail infrastructure found along rail lines.

The Transfer Station, sited 15 metres north of the eastern end of the Motorway Link Road bridge, is the next tallest of the proposed structures. Its height is approximately 8 metres. However, it will only be 2 metres higher than the guard rail of the Motorway Link Road bridge, which will limit visibility of the whole structure. The Transfer Station structure will be visible from Viewshed 3a when a passenger train is adjacent. However, this view will be brief due to the speed of the passing train and angle of view.

A noise wall is proposed on the eastern side of the Main Northern Rail Line and to the north of the bridge (Figure 4). The height of the new noise wall is 4.5 metres high and will finish approximately 3.5 metres below the top of the Transfer Station. This structure will be lower than the height of the bridge guard rail. The noise wall is proposed to be constructed from concrete block.

The Transfer Station will partially obscure the noise wall from the view of motorists on the Motorway Link Road bridge.

The third tallest element, the Conveyor Gantry bridging the rail corridor and linked to the Transfer Station on the eastern side of the railway line, is approximately 3 metres wide and 3 metres deep. Where visible from the road (Viewshed 1 and 4 - refer to 4.2(1)) the structure will be concealed by vegetation or partially by the road bridge.

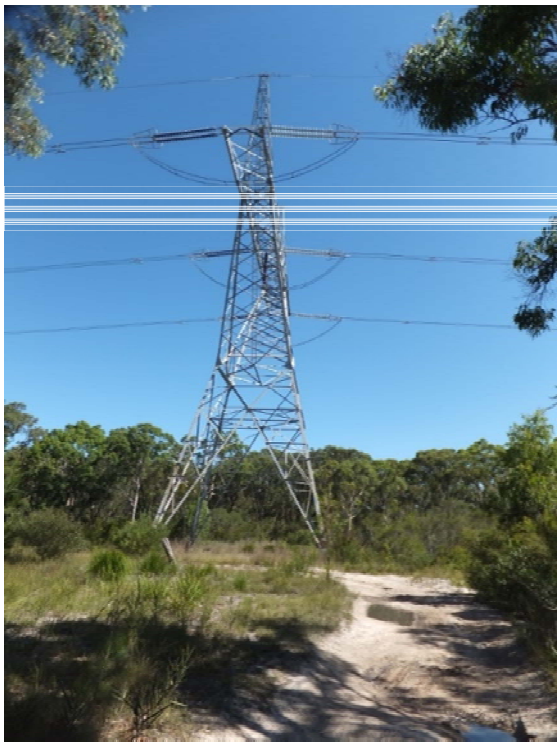

Figure 6: Example of electricity pylon, located nearby

Figure 7: View Shed 1

From the Motorway Link Road eastbound lane (Immediate Vicinity)

Figure 8: View Shed 2

From the Motorway Link Road bridge east bound lane (Immediate Vicinity)

Figure 9: View Shed 4

From the unsealed Tooheys Road (Immediate Vicinity)

Figure 10: View Shed 5

From the sealed section of Tooheys Road, privately leased property (Immediate Vicinity)

Figure 11: View Shed 6

From the Motorway Link Road bridge east bound (Local Area)

Figure 12: View Shed 3

Train Load Out Bin will be located to the left along the fence line.

Note: Figures 7, 8 and 11 were taken from moving vehicles due to safety and accessibility issues

6.0 Visibility

'Visibility' is a measure of the extent to which particular activities/components of a proposal may be visible from surrounding areas, the relative number of viewers, the period of view, viewing distance and context of view. The rationale for the assessment is that if a proposal is not visible the impact is nil; if the number of people who would potentially see the proposal is low, then the visual impact would be lower than if a large number of people have the same view.

For the purposes of this Visual Impact Assessment Addendum, the general categories of visibility have been defined broadly and are as follows:

Table 1: Visibility Categories

High (H)	Where a large number of people would see the proposed development at short distance over a short, moderate or long period of time
Moderate (M)	Where: a. a small number of people would see the proposed development at a short or medium distance over a moderate or long period of time, or b. a moderate number of people would see the proposed new development at a medium distance over a short, moderate or long period of time, or c. a large number of people would see it at a medium or long distance over a short period of time
Low (L)	Where a small number of people would see the proposed development at long distance over a short, moderate or long period of time.

For the purpose of this Visual Impact Assessment Addendum, the general Visual Assessment Criteria has been used in the visibility assessment for the Amendment.

Table 2: Visual Assessment Criteria

Criterion	Definition
Number of Viewers	
High	>1,000 people per day
Moderate	100-1,000 people per day
Low	100 people per day
View Distance	
Long distance	>3km
Medium distance	1.5km – 3km
Short distance	<1.5km
Period of View	
Long Term	>120 minutes
Moderate Term	1-120 minutes
Short Term	<1 minute

The new proposed infrastructure has a high level of exposure on the Motorway Link Road. The movement network and traffic volumes discussed in Section 9.1 of the VIA of the EIS are still relevant to this Addendum. Please refer to that section for more information.

Thus based on the Visual Assessment Criteria:

a. Site viewed from East (Motorway Link Road):
   - HIGH number of potential viewers;
   - SHORT distance of view; and
   - SHORT period of view
b. Site viewed from West (Motorway Link Road):
   - HIGH number of potential viewers;
   - SHORT distance of view; and
   - SHORT period of view
c. Site viewed from Main Northern Rail Line:
   - HIGH number of potential viewers;
   - SHORT distance of view; and
   - SHORT period of view
d. Site viewed from Tooheys Road (unformed road):
   - LOW number of potential viewers;
   - SHORT distance of view; and
   - LONG period of view
e. Site viewed from Tooheys Road (Boral site):
   - LOW number of potential viewers;
   - SHORT distance of view; and
   - LONG period of view

For the above, it is clear that although many motorists pass the site:

- The visibility of the site and new proposed infrastructure is generally quite limited and brief
- For all passing motorists, views of the site are fleeting and restricted by vegetation or presented as narrow view corridors. For instance, the time to cross the overhead rail bridge is approximately 4 seconds. This is a short period of time in which to receive a clear view of the proposed infrastructure.

6.1 Visibility of Lighting

The Transfer Stations and Train Load Out Bin will be completely automated so that personnel movements to these structures are limited to maintenance works. As a result, the need for external lighting in the vicinity of the new infrastructure will be minimal. Recommendations have been provided with regard to the recommended mitigation measures for any new lighting.

In summary, the site of the proposed infrastructure has MODERATE visibility to the public in general. This represents the average of the Visual Assessment Criteria and also considers the high speed at which the new infrastructure will be seen from the Motorway Link Road and the Main Northern Rail Line.

There are a small number of private residences (Figure 4) located to the north east of the rail line and the Motorway Link Road. These residences are surrounded by significant vegetation which inhibits views of all the proposed infrastructure. The closest element that could be viewed is the Train Load Out (from a train). However, it is expected that it will be difficult to view this structure due to screening by a dense area of mature trees.

7.0 Visual Absorption Capacity

Visual Absorption Capacity (VAC) is the estimated capacity of the landscape to absorb development without creating significant visual change which results in a reduction in scenic quality. The capacity to absorb development is primarily dependent on vegetation cover, landform and the presence of other development. VAC increases where the development being assessed has visual forms which complement the existing environment.

Large footprint, large volume, high coloured, sharp-edged structures will have less chance of achieving a high level of visual absorption into an unmodified natural environment, than small, understated smooth-form structures coloured to blend into the existing environment. Table 3 details the criteria for the Visual Absorption Capacity of an area.

Table 3: Visual Absorption Criteria

High	Landscape able to absorb development. Low degree of visual contrast would result
Moderate	Landscape able to absorb some development. Some visual contrast would result
Low	Landscape unable to absorb development. High degree of visual contrast would result

It is important to note that the assessment of VAC is intended to relate to a larger landscape setting rather than just the subject sites.

7.1 Conveyor Gantry

The Conveyor is enclosed by a roof and one side wall for the majority of its length. The Conveyor is fully enclosed where it becomes elevated for crossing Tooheys Road and the rail corridor and is described here as the Conveyor Gantry. As a Conveyor Gantry, it extends a distance of approximately 100 metres alongside the southern boundary of the Boral property and RMS road reserve prior to reaching an 85-metre-long rail overbridging section to the north of the Motorway Link Road bridge where it intersects with the Transfer Station on the eastern side of the rail corridor.

The following articulates the landscape's ability to absorb the proposed development:

Tooheys Road – Along Tooheys Road, the near-ground level Conveyor is visible from the unsealed and sealed sections of the road. A thin screen of vegetation will stand in front of the Conveyor however; the majority of the vegetation is clear-trunked trees. Where the Conveyor crosses Tooheys Road as an elevated crossing (Conveyor Gantry), it will be clearly visible from the road. However, this is within private leasehold property (Boral). Any views of the elevated crossing of Tooheys Road from the Motorway Link Road will be significantly screened by vegetation.

The Visual Absorption Capacity has been determined to be Moderate and Low (where the structure crosses the private road to the Boral quarry and tile manufacturing facility); with an average VAC of Moderate

Motorway Link Road – The Conveyor Gantry will be positioned initially below the elevated road approaching the rail overbridge and will not be visible from the road. In addition, existing mature screening vegetation will further conceal the structure. The Conveyor Gantry will become visible from the Motorway Link Road within 100 metres from the bridge. Existing vegetation screening will conceal the structure.

The Visual Absorption Capacity has been determined to be High (where the structure is below the road level) and Moderate (where the structure is level with the road); with an average VAC of MODERATE.

7.2 Transfer Station

The Transfer Station is located on the northern side of the Motorway Link Road rail bridge, at its eastern extent. The Transfer Location is a 10-metre-long x 7-metre-wide structure standing 8 metres tall. It is

designed to transfer the direction of the conveyed coal that is carried along the east-west Conveyor Gantry over the railway to the south-north conveyor alongside the proposed rail spur. The conveyor and rail spur will be located north of the Motorway Link Road primarily within a Crown Road adjacent to the existing rail corridor.

Located some 15 metres away, the top of the Transfer Station structure will be approximately two metres above the height of the guard rail of the Motorway Link Road rail bridge. There is no screening vegetation between the viewer and the proposed structure. However, the duration of travel on the bridge is brief (approximately 4 seconds). The structure will be most visible when travelling eastbound as it will appear before the viewer for a longer period of time. The structure will be less visible when travelling westbound, appearing for a shorter period of time.

The Visual Absorption Capacity has been determined to be LOW.

7.3 The Train Load Out Facility

The Train Load Out Facility is located approximately 1.1 kilometres north of the Motorway Link Road bridge. It will be located on the eastern side of the Main Northern Rail Line corridor. The structure will have a backdrop of existing vegetation comprising tall trees and mid and low storey vegetation. To the west of the structure is the existing Main Northern Rail Line tracks (north and south bound). The proposed rail spur will turn off the Main Northern Rail Line approximately 1,000 metres north of the Train Load Out Facility and, with the adjacent south-north conveyor, will continue south of this structure almost to the Transfer Station. There is no screening landscape between the structure and rail line. However, the structure is consistent with the character of its immediate location (i.e. other industrial structures.

The structure will be viewed by train passengers and potentially by motorists from the Motorway Link Road Bridge. For train passengers the view will be brief, while for motorists any view will be distant and difficult to discern in such a short time frame.

The Visual Absorption Capacity has been determined to be LOW.

In summary, the site of the proposed infrastructure has MODERATE Visual Absorption Capacity. This considers the average of the VAC for each location, however it also considers the high speed at which the new infrastructure will be seen from the Motorway Link Road and the Main Northern Rail Line.

8.0 Visual Impact Rating

Table 4 provides the means of setting the visibility rating for the site against the VAC, to arrive at a determination for the Visual Impact Rating (VIR). This rating determines whether any mitigation is required to reduce the visual impact to acceptable levels.

The matrix prepared below details how the visibility and the Visual Absorption Rating combine to give the Visual Impact Rating. The Visibility of the site is based on the number of locations and distance it can be seen from, whilst the Visual Absorption Rating is the ability of the landscape and vegetation to shelter and protect from view.

The proposed infrastructure has a MODERATE level of Visibility and a MODERATE VAC – as indicated by the shadings in the matrix. Using the matrix to align these values, the result is therefore a MODERATE VIR.

Table 4: Visual Impact Rating Matrix

	1. VISIBILITY		
	LOW	**MODERATE**	HIGH

2. VISUAL ABSORPTION CAPACITY	**3. VISUAL IMPACT RATING**		
HIGH	LOW	LOW	MODERATE
MODERATE	LOW	**MODERATE**	HIGH
LOW	LOW	MODERATE	HIGH

9.0 Recommended Mitigation Measures

9.1 General Measures

The following mitigation measures are recommended for the areas which have lower VIRs.

- All structures should use a colour palette that enables it to integrate with the surrounding landscape. For instance, "colorbond" type colours such as Woodland Grey are similar to the surrounding vegetation.
- Where vegetation is removed to accommodate the construction of proposed structures, plant new screening vegetation where practicable.

9.2 Noise Wall

The proposed concrete block noise wall should be painted a colour which enables it to integrate with the surrounding landscape.

9.3 Lighting

All new infrastructure associated with the Amendment must be designed to minimise the need for external lighting.

All required external lighting must be designed in accordance with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting.

All new lighting should reduce light spill by directing external lights downwards and employ low lux lamps.

No lighting should be directed towards public roads and any residual nuisance lighting must be shielded to minimum impacts.

10.0 Conclusion

The proposed infrastructure at this site requires landscape and visual impact management assessment due to:

- The scale and form of the proposed infrastructure;
- The location of the proposed structures adjacent to the Motorway Link Road and the Main Northern Rail Line; and
- The number of both distant and close viewpoints.

However, because these viewpoints are both brief and in locations difficult to fully appreciate the view, the potential for visual impacts is generally MODERATE.