



# Mt Arthur Coal Mine - Open Cut Modification Project

Visual Impacts Management Report

Prepared for Hunter Valley Energy Coal  
July 2015

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PREPARED FOR HUNTER VALLEY ENERGY COAL

PROJECT NO. ND1093

JULY 2015



# 01 Introduction

## PROJECT DESCRIPTION

Hunter Valley Energy Coal Pty Ltd owns and operates the Mt Arthur Coal Open Cut and Underground Mines (Mt Arthur Coal Mine) and has approval for a Modification to their approved operations (the Mt Arthur Coal Open Cut Modification Project [the Modification Project]) under the New South Wales (NSW) Environmental Planning and Assessment Act, 1979.

The Mt Arthur Coal Mine is located approximately 5 kilometres (km) south-west of the township of Muswellbrook in the Upper Hunter Valley of NSW (Figure 1).

The Modification includes the following:

- a four year continuation of the open cut mine life from 2022 to 2026 at the currently approved maximum rate of 32 million tonnes per annum (Mtpa);
- an increase in open cut disturbance areas;
- use of the conveyor corridor for overburden emplacement;
- duplication of the existing rail loop;
- an increase in the maximum number of train movements per day from 24 to 38;
- the relocation of the load point for the overland conveyor which delivers coal to Macquarie Generation's Bayswater Power Station;
- the relocation and upgrade of the explosives storage, magazine and associated facilities; and
- the construction of additional offices and a control room and a small extension to the run-of-mine (ROM) coal stockpile footprint.

## KEY VISUAL COMPONENTS

The key visual component of the Modification is an increase in the extent of the overburden emplacement areas (OEAs).

The existing Mt Arthur Northern Open Cut OEA will be retained to an average height of 360m AHD (maximum height of 375m AHD comprised of two additional crests incorporated on the overburden emplacement area for visual amenity).

The OEA located within the former 'conveyor corridor', will be integrated with the Drayton sub-lease OEA to a height of 360m AHD.

The rehabilitation of OEAs would be undertaken on a progressive basis in order to improve integration of the Modification landforms with the surrounding environment and mitigate potential visual impacts.

Mine overburden emplacements would, over time, vary in appearance from freshly placed rock and soil material to rehabilitated landforms. As such, the level of visual modification created by these landforms would change, reducing as vegetation becomes established and matures. The landforms would continue to be managed in accordance with the methods currently in place at the Mt Arthur Coal Mine under the Environmental Management System (refer to Figure 2).

Less visually apparent, the existing open cut will be increased by the Modification, extending to the west by approximately 400m in the area adjacent to Denman Road and up to approximately 1km in the vicinity of Mount Arthur.

## PURPOSE OF THIS REPORT

The purpose of this report is to address Schedule 3, Condition 49 of Project Approval 09 \_ 0062 Modification 1 which states:

Mining Operations Additional Impact Mitigation

49. By the end of December 2014, the Proponent shall revise the Visual Impacts Management Report prepared by



AECOM in May 2011, to the satisfaction of the Secretary. The revised report must:

- (a) identify the privately-owned land that is likely to experience significant visual impact during the project; and
- (b) describe (in general terms) the additional mitigation measures that could be implemented to reduce the visibility of the mine from these properties.

Notes:

- The additional visual impact mitigation measures should be aimed at reducing the visibility of the mine from significantly affected receivers or areas on privately-owned land subject to tourist and/or general public access or areas on the Woodlands thoroughbred horse stud with views of the project, and do not necessarily require measures to reduce visibility of the mine from other locations on affected properties. The additional visual impact mitigation measures do not necessarily have to include measures on the affected property itself (i.e. the additional measures may consist of measures outside the affected property boundary that provide an effective reduction in visual impacts).
- Except in exceptional circumstances, the Secretary will not require additional visual impact mitigation to be undertaken for receivers that are more than 5 kilometres from the mining operations.

A visual impacts assessment and plan for the Darley Woodland's Stud is currently being prepared in consultation with Darley Australia in accordance with the requirements of Statement of Commitments 19 and 20 in Appendix 3 of the Mt Arthur Coal Consolidation Project Approval 2010 and Condition 49 of the Mt Arthur Coal Modification Project Approval 2014.

This report will be regularly reviewed, and if necessary revised, in accordance with the requirements of Schedule 5, Condition 4 of Project Approval 09 \_ 0062 Modification 1 to ensure any recommended measures are incorporated to improve visual impacts management outcomes. Any change to the approved final rehabilitation plan or final landform will require this report to be updated.

In accordance with the requirements Schedule 5, Conditions 50 & 51 of Project Approval 09 \_ 0062 Modification 1 the following will be implemented following DP&E approval of this report:

- Owners of significantly affected residences or significantly affected areas on privately-owned land subject to tourist and/or general public access (as identified in this report) will be notified of their entitlement to additional mitigation measures to reduce the visibility of the mine from their properties.
- Upon request from significantly affected owners a property specific visual mitigation plan will be prepared in consultation with the owner outlining reasonable and feasible mitigation measures to be implemented.



Figure 2

Previous rehabilitation and mitigation work associated with Mt Arthur Mine

# 02 Methodology

## Background from Modification VIA

As described in Chapter 1 of the Modification VIA, visual impact is determined by considering both the visual modification level of a project, and the visual sensitivity of those viewing the project.

Visual modification is a measure of the level of visual contrast and integration of the Project with the existing landscape. A project is said to be integrated with the existing landscape based on issues of scale, position in the landscape and contrast. High visual integration is achieved if a development maintains the line, form, colours, bulk etc. of the existing landscape. Although the project may constitute a new element within the landscape, it can represent a low visual modification level if it maintains visual elements already existing in the landscape, such as similar textures, colours, scale, line, and form. In determining the visual modification level, the Modification VIA considered the following factors:

- Contrast and integration of the project with the existing landscape.
- Visual prominence – proportion of the view that includes the project.

Visual receivers are those individuals or groups with views toward the Project. Viewer response varies depending on viewer’s sensitivity to changes in the landscape and the degree of exposure to those changes – including the number of viewers exposed to the resource change; type of viewer activity; duration of the view, speed at which the viewer moves, and position of the viewer. For the purposes of this report, residential receivers are considered to be of the highest sensitivity and therefore the report focuses on these viewpoints.

Visual sensitivity refers to the nature and duration of views as experienced by the receiver. Locations from which a view would potentially be seen for a longer duration, where there are higher numbers of potential viewers and where visual amenity is important to viewers can be regarded as having a higher visual sensitivity. The Modification VIA considered the following factors in determining visual sensitivity.

- Screening effects of topography, vegetation, and other structures which could obstruct direct views.
- Distance from the project site – greater the distance, lower the sensitivity.
- Orientation of views (whether direct or oblique to the project).

This resulted in a matrix of sensitivity (Table 3 in the Modification VIA), as well as a map indicating the Zone of Visual Influence (Figure 5 in the Modification VIA).

Having determined the visual modification level and visual sensitivity of the project, the visual impact matrix (Figure 3) combines the results of the visual modification level and visual sensitivity analysis to determine visual impact.

## Methodology

For the purpose of this report, each receiver needed to be evaluated to determine whether further visual mitigation may be warranted. This was completed through a combination of desktop study and field visits. Initial desktop studies included analysis of the Modification VIA, in particular the results of the seen area modelling to determine those locations from which the project would be visible. Additional desktop assessment of the potential screening effects of vegetation surrounding residential viewpoints was undertaken to assist with the determination of potential visibility and visual impact.

Field visits during the assessment verified these results and allowed an on-ground assessment

of the magnitude of potential impact for those receivers that would have views of the Project. A field inspection was undertaken on 18th and 19th March 2015 to confirm current status of viewpoints used in the Modification VIA and updated photographs have been included within this report as required.

Due to the large number of receivers involved, receivers were clustered based on typical views and similar receiver types – for example, rather than examine the view from each window of every house along Roxburgh Road, a number of stops were made to identify typical views and gain an appreciation for the range of views possible, given the natural screening already afforded by topography and vegetation.

Private receivers that would be most visually impacted by the Mt Arthur Coal Mine - Open Cut Modification Project were identified and rated according to the degree to which offsite visual screening would attenuate the visual impacts that were identified in the Mt Arthur Coal EA VIA (2009). A number of factors underlie this evaluation, including intervening topography, the presence and density of vegetation between the receiver and the Project, the distance of the receiver from the Project, the elevation of the receiver relative to the Project, as well as whether the receiver would have long-duration views of the active OEA face, short to medium term views that would soon be rehabilitated, or views into the active mining areas.

## Significance Criteria

The levels of significance of visual impact can be inferred from Figure 3 below, which shows the visual impact as a combination of visual sensitivity and visual modification level.

Using this information, and building on the methodology of the Modification VIA, a significant impact would occur if a high degree of visual sensitivity and high visual modification level existed. All of the sensitive receivers considered here are residential or privately-owned land subject to tourist and/or general public access, and consequently, it is only the particular circumstances of their relative situation – screening, distance and orientation – which cause some to have a higher degree of sensitivity than others.

Figure 4 illustrates the visual impact levels that different receivers would experience. Note that any receivers experiencing no visual impact are not shown.

For the purpose of this report, mitigation should be considered where the visual impact is HIGH. Further consultation with residents subject to a high visual impact will need to be undertaken.

For MODERATE visual impacts, mitigation could be considered, however for these receivers, some screening is already in place, or distance or orientation of structures obscures direct views of the project. Consequently, stakeholders may determine that mitigation could lessen the quality of the overall visual experience, particularly where it would limit expansive views across valleys, a key asset to the local scenic environment.

In the case of LOW visual impacts, direct views of the project are likely to result in a relatively insignificant visual impact. In these cases, some mitigation can be considered, however it is unlikely that extensive offsite mitigation would be effective in dramatically reducing the visual impacts of the project.

| Level of Visual Impact<br>VL = Very Low, L = Low,<br>M = Moderate, H = High |    | Viewer Sensitivity |    |    |
|---|----|--------------------|----|----|
|   |    | H                  | M  | L  |
| Level of Visual Modification  | H  | H                  | H  | M  |
|   | M  | H                  | M  | L  |
|   | L  | M                  | L  | L  |
|   | VL | L                  | VL | VL |

Figure 3 Visual Impact Matrix, showing visual impact as a composite of visual sensitivity of receivers and the visual modification level of the project

# 03 Mitigation Options

Three approaches to mitigation are identified below:

- Overburden treatment
- Offsite screening
- No mitigation

Overburden treatments and offsite screening are effective techniques depending on the distance from the Project. For more distant views, in excess of 2.5km from the Project, overburden treatments will provide effective amelioration as over this distance the effects of atmospheric “blurring” and the reduced field of view occupied by the components of the Project will reduce the apparent visual impact. Additionally, foreground screening may block views out to the surrounding and fore, or middle, ground landscape between the viewpoint and the Project which may be appreciated by the viewer.

Offsite screening will be particularly effective for views closer than 2.5km, particularly when planted as close as possible to the viewpoint. In this situation fast growing vegetation will provide screening once it reaches approximately 3m in height.

## OVERBURDEN TREATMENT

### Topographic Treatments

By varying the height and width of the overburden mound, a more naturalistic landform can be achieved (compare Figures 4 and 5). This also lends itself to the creation of a variety of natural ecological niches than can be readily populated by a range of vegetation associations, providing increased habitat opportunities for a variety of local fauna.

This option was discussed in the EA VIA as a means of assisting the OEA to integrate within its landscape setting, and is being undertaken as part of the current rehabilitation efforts. It is most effective in ameliorating visual effects where sensitive receivers already have views of an existing OEA that is regular and relatively geometric in shape, since this measure would ensure the OEA more closely mimics natural patterns of topology and drainage.

Topographic treatments can be applied across all future OEAs to facilitate their integration with the local landscape. Existing rehabilitated slopes could also be re-contoured, where feasible. This measure assists with the long-term effects of the OEA in locations including Roxburgh Road, Racecourse Road, and Ironbark Estate.

### Front Edge Construction

Typically, overburden is stockpiled from closest to the mine site and moves outward, toward sensitive receivers. Front edge overburden reverses this sequence by placing the overburden at its terminus point furthest from the mine, and working back toward the mine (Figure 6).

Once stabilised and rehabilitated, the degree to which the OEA integrates with its immediate landscape is more dependent on the topology and vegetation than upon the direction in which overburden has been dumped and the mound rehabilitated. By first establishing and rehabilitating the front edge of the OEA, the amount of time that sensitive receivers are exposed to the active face could be substantially reduced.

This technique has been used successfully at Mt Arthur Coal for approximately a decade. Under this mitigation strategy, the back edge of the OEA becomes the active face, which is retreating back toward the mine site (Figures 7 and 8). Receivers facing the back edge would therefore experience greater visual impacts.

### Ecological Niches

By varying vegetation treatments across the overburden, a more natural arrangement can be achieved that includes plant communities such as woodland, wetland and grassland, in similar arrangements and proportions to that seen within the upper Hunter Valley. Current rehabilitation efforts are already working to provide a biologically rich landscape through creation of ecological niches. Likewise, future work should continue to ensure that ecologies represented across the overburden mounds enhance fauna habitat opportunities and ecological linkages within the region, and emphasise the use of native species, preferably locally indigenous and locally sourced vegetation.

This option could be applied across all future OEAs to facilitate integration with the local landscape and provision of a biologically rich landscape. This measure assists with the long term effects of the OEA at any location from which the OEA would be visible.

### Progressive Rehabilitation

Rather than undertaking a massive rehabilitation effort at the conclusion of the planned mining activities, progressive rehabilitation encourages the staged rehabilitation of disturbed areas and OEAs throughout the life of the mine. Once dumps reach their designated heights and are appropriately contoured, topsoil is added, allowing for immediate seeding and planting. At any given time, different segments of the OEA will therefore be at different stages of rehabilitation.

This technique - already employed successfully at Mt Arthur Coal - has a number of advantages, including minimising the extent of exposed soil and thus minimising the opportunity for erosion, dust formation and water contamination. In visual terms, progressive rehabilitation minimises the duration for which exposed slopes and establishing rehabilitation efforts are viewed.

Temporary stabilisation activities include the aerial seeding of long-term overburden emplacement areas for dust-suppression purposes. Emplacement surfaces targeted as part of the aerial seeding program are those not available for final rehabilitation in the short to medium term and are most susceptible to prevailing winds and/or visible from off-site viewpoints. A pasture seed and fertiliser mix, selected by a consulting agronomist, is aurally applied to the targeted emplacement surfaces. Post-application monitoring of pasture cover development is also undertaken.

Detailed plans for progressive rehabilitation on a year-by-year staged basis are provided in the Mt Arthur Coal Mining Operations Plan lodged with the NSW Trade and Investment - Division of Resources and Energy under requirements of the *Mining Act 1992*. The Mining Operations Plan provides information on duration of exposure of active overburden faces, vegetation type and layout for overburden treatment, as well as the detailed performance criteria used to assess rehabilitation success. This detailed information would be taken into account in the preparation of property specific visual mitigation plans discussed in Section 1.



Figure 4

Existing 'artificial' overburden treatment: Existing overburden treatment is regularly formed and obviously artificial within the surrounding landscape



Figure 5

Future 'naturalised' overburden treatment: Illustrating sculpting of overburden and vegetation variation providing higher synthesis with surrounding landscape

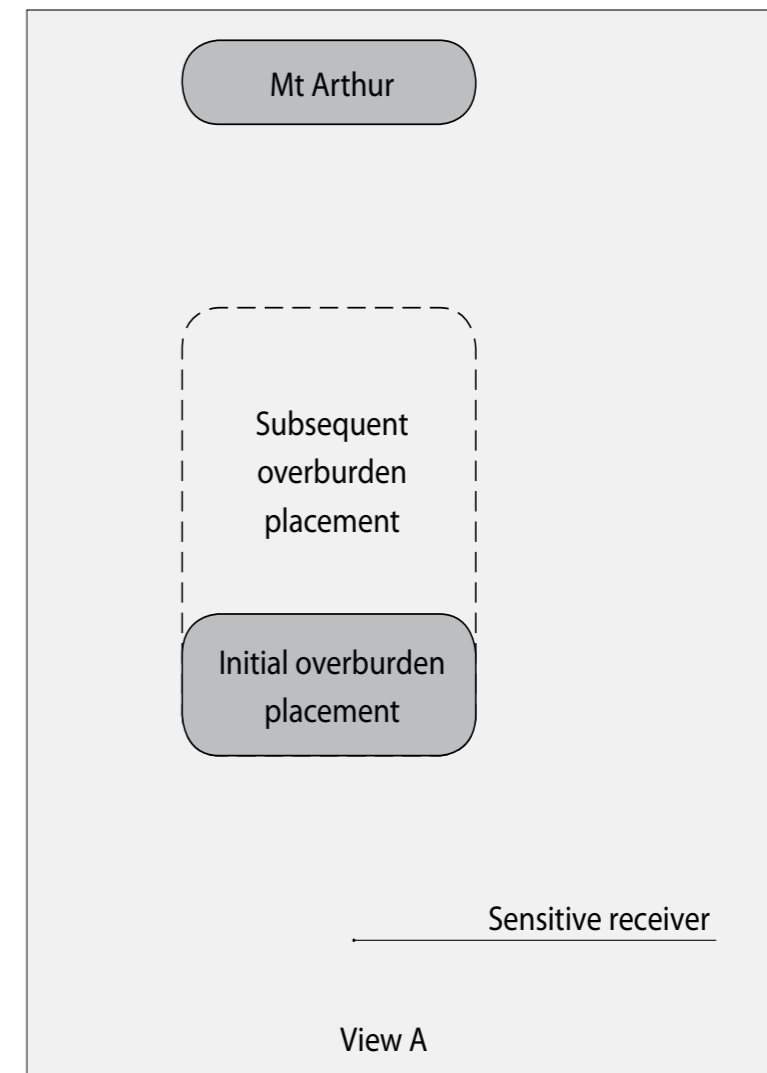


Figure 6

Indicative plan diagram of View A and Section BB', Overburden treatment near sensitive receiver, Type 1





Figure 7

Section BB' through initial overburden placement



Figure 8

Section BB' through future overburden placement

## OFFSITE SCREENING

### Full Cover Planting Screen

Throughout the 2009 VIA, a number of references are made to the provision of onsite and offsite screening. Screening has been successfully employed at several locations around Mt Arthur Coal, most notably along Thomas Mitchell Drive and Edderton Road, where a thick vegetated band comprising of canopy, understory and grasses effectively blocks out most views of the site. A vegetation scheme that includes a sufficient width and depth of vegetation consisting of a range of canopy heights, understory shrubs and grasses placed close to or within affected property boundaries, could provide a substantial visual screen to views of the project from affected land holders (Figure 9). Screen plantings could achieve a naturalized look by incorporating locally occurring or indigenous species, or in some instances, a cultural planting may be more visually in keeping with the local context. In order to quickly establish a visual barrier, fast-growing species should be selected.

Placing taller trees immediately adjacent to the sensitive receiver blocks distant but only higher views, permitting lower elevation views of the project site. For this reason, it is necessary to plant a range of fast-growing understory plants that can fill in visual gaps and screen the receiver from view. An idea of how this could look is shown in Figure 10, which shows the planting arrangement for a sensitive receiver on a ridge or close to the top of a slope. This planting arrangement also works for flatter slopes.

In considering such a planting arrangement, it is necessary to accommodate pertinent fire risks and locate potential bushfire prone plantings at appropriate distances from the sensitive receiver, particularly where that receiver is a residence.

This option can be employed relatively easily in any location where a sensitive receiver wishes to screen views of the OEA, but would be particularly successful where views toward the OEA cannot otherwise be mitigated (i.e. where the view incorporates OEA that are not rehabilitated for the life of the project) (Figures 11 and 12). It can also be employed adjacent to roads. For this reason, it can be considered along Roxburgh Road, Racecourse Road, at Ironbark Ridge Estate and along Denman Road, particularly on the south-eastern side of the road.

### Partial Cover Planting Screen

In certain locations, planting trees could eliminate impressive views of importance to the land holder. This may occur at the Racecourse and along Golden Highway. In these locations, a densely vegetated screen would simply eliminate important views. Where screening is deemed necessary, a more permeable planting consisting of canopy, shrub and groundlayer species may be more appropriate, similar to what is currently visible at the intersection of Edderton Road and Golden Highway (see Figure 14). A permeable planting screen visually acknowledges the OEA within the landscape, while providing close detail of attractive planting combinations that draw the eye of the viewer, e.g. flowering trees and shrubs, ornamental foliage, seasonal change in colour, etc.

### Combined Long Term / 'Nurse' Planting Screen

A further option would be the provision of mixed temporary and longer term plantings. In this instance a permanent visually open planting of trees may be undertaken in conjunction with a 'nurse' planting of faster growing tree and shrub species that may have a life span within the range of 5-10 years for instance, after which the slower growing permanent planting could be retained. A visually open, long term planting of this nature would provide attractive long-term enframed views to the project. This approach could be most applicable to those receivers oriented towards the outer face of the OEA (e.g. Muswellbrook and Racecourse Road), with the 'nurse' planting timed for removal, if necessary, upon rehabilitation of the OEA outer face.

This measure assists with both the short-term construction impacts and the long term effects of the OEA.

### Compensatory Landscape

In some situations, e.g. where the view to the active face of the OEA is visually dominant and screening options are not considered suitable, an alternative landscape setting could be considered for landholders. This could take the form of an inward-looking landscape setting within proximity to the receiver but not within the primary view of the OEA, e.g. a quiet and shady arbour which is experienced as an 'internal' space rather than part of the broader landscape. Alternatively, this space could be configured such that it takes advantage of other pleasant elements of the landscape, oriented away from the OEA.

### NO MITIGATION

Attempts to ameliorate the effect of the Mt Arthur overburden must be evaluated within the context of local views across the valley, as well as the mine's juxtaposition to several other mining operations. As stated in the 2009 VIA, "the visual setting surrounding Mt Arthur Coal is also dominated by the existing open cut coal mines at Bengalla Mine and Drayton Mine. These existing mining operations, in conjunction with Mt Arthur Coal, provide a significant component of the landscapes in this locality to the south west and west of Muswellbrook." Screening may not be feasible in some locations since this may only emphasise other mining operations.

Furthermore, while views of the overburden could be minimised, this should not be at the expense of the existing impressive and expansive views across the valley, particularly from higher ground to the north and west of the overburden placement areas.

In summary, the 'no mitigation' option suggests that retaining wide expansive views may be substantially more important to the land owner than screening distant views of the overburden. This generally assumes that the overburden is a small component of the overall view from the affected sensitive receiver location, or that the view is from a distant location and thus the overburden appears as only a small, typically horizontal element within the background view. In these cases, it may be more advantageous to retain views and acknowledge the landscape's evolving nature, rather than screen precious panoramic views from sight.

### Consultation

Options for visual impact mitigation would be undertaken in close consultation with affected land holders, with the aim of reaching a mutually agreeable outcome.

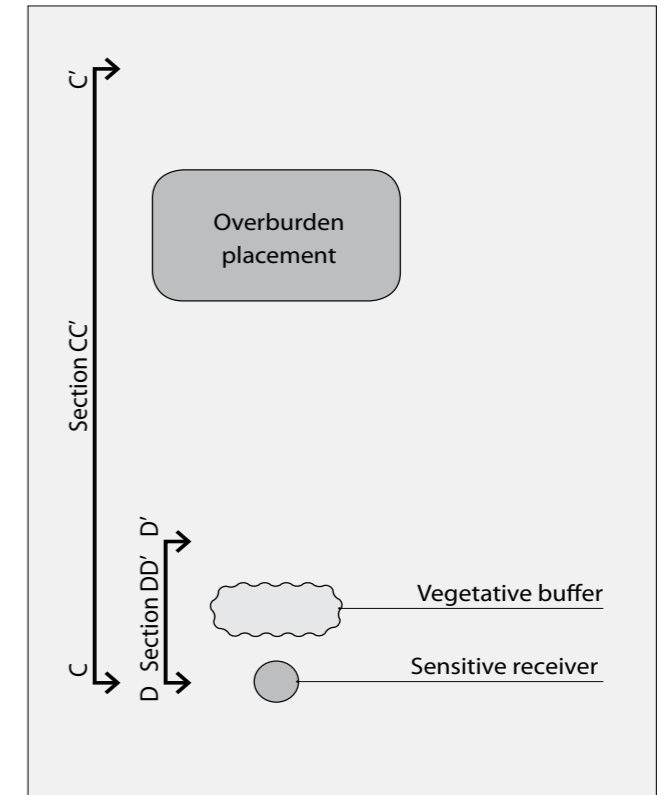


Figure 9

Plan diagram of Section CC', Overburden treatment near sensitive receiver, Type 2

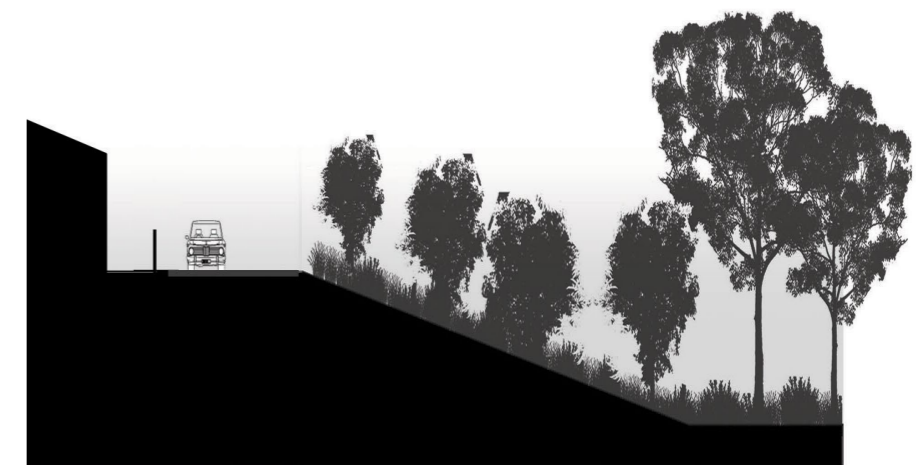


Figure 10

Section DD' - Vegetative buffer adjacent to sensitive receiver

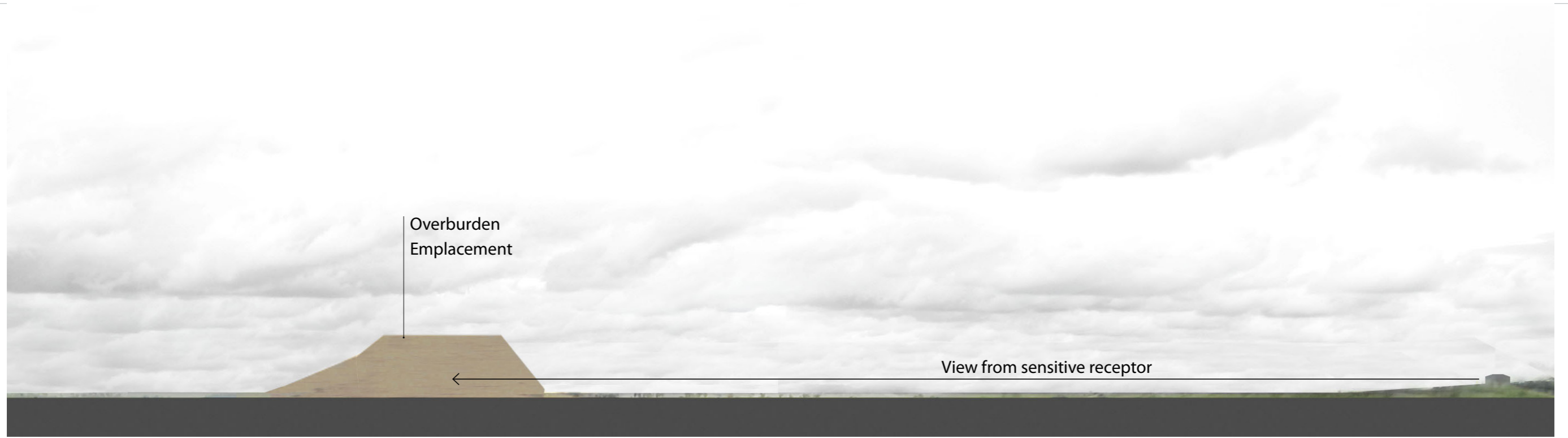


Figure 11

Section CC' - Future view from sensitive receiver of overburden



Figure 12

Section CC' - Future view with vegetative buffer from sensitive receiver

# 04 Sensitive Receivers

## - Impacts and Mitigation

The Modification VIA shows the Primary Visual Catchment for the Project, in comparison with the Consolidation Project, highlighting the fact that views from three directions are especially important when considering the effect of the mine consolidation project. These are the:

- North-east Quadrant: looking south from Muswellbrook and South Muswellbrook, including the Skellatar Stock Route, Ironbark Ridge Estate and Racecourse Road.
- North-west Quadrant: looking southeast from Roxburgh Road, including receivers along Denman Road.
- South-west Quadrant: looking northeast from Golden Highway and receivers at Katona Estate (on Golden Highway).

The Modification VIA contains photomontage simulations (based on a computer generated three dimensional model) that represent a variety of viewpoint locations with differing viewing aspects. Visual simulations were prepared using the Modification landforms during year 2026 of operations, when the landforms would be at their maximum heights and the open cut pit at its greatest extent, representing the greatest potential for visual impact.

Figure 13A depicts the private receivers that may experience significant visual impacts from the Mt Arthur Open Cut Modification Project and the presence of any existing vegetation that may provide screening of views, and therefore reduce the potential visual impact.

Figure 13B shows the potential visual impact based on the reduction of residential visual sensitivity with distance, and the screening effect, and reduction in impact, resulting from vegetation.

| <b>Level of Visual Impact</b><br>VL = Very Low, L = Low,<br>M = Moderate, H = High |                | <b>Residential Viewer Sensitivity</b><br>(based on distance) |         |      |
|--|----------------|--|---------|------|
|  |                | 0-2.5km  | 2.5-5km | >5km |
| <b>Existing Vegetation Screening at Viewpoint</b>                                  | <b>Minimal</b> | H  | M       | L    |
|  | <b>Partial</b> | M  | L       | VL   |
|  | <b>Fully</b>   | L  | VL      | VL   |

Potential Visual Impact Matrix - Based on Reduction of Sensitivity with Distance and Screening Vegetation

A key visual issue with regard to the location of these privately owned receivers is that those within the above described north-east quadrant (Muswellbrook and South Muswellbrook area) look into the outer edge of the OEA, which is being progressively rehabilitated. This is illustrated in Figure 4 which shows indicative 'active mining / emplacement' and 'rehabilitated' profile of the Project.

Those privately owned receivers and developments within the above described north-west and south-west quadrants view onto the active emplacement face of the works. As described in the Environmental Assessment, this face is dynamic and unable to be subject to rehabilitation until end of mine life. In addition to viewing the active emplacement face, elevated sections of Roxburgh Road also have views into the active mining face.

The potential for mitigating offsite screening to be offered to receivers is based on the following:

- High Impact: An offer of mitigation is to be made.
- Moderate Impact: An offer of mitigation may be may following further on-site review.
- Low Impact: Mitigation is not required.

Sensitive receivers have been divided into localities, as described below.

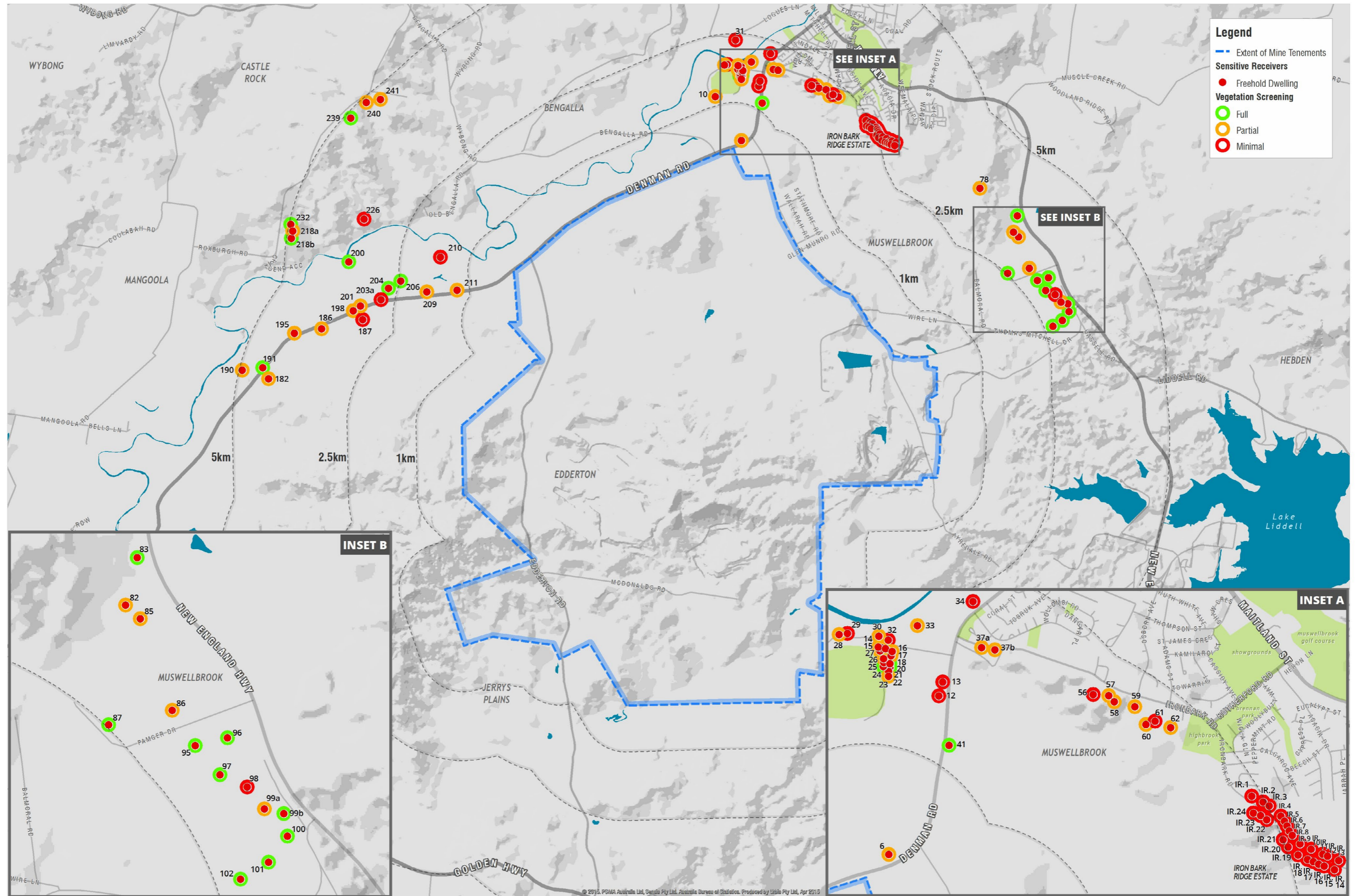


Figure 13A

Distribution of sensitive receivers and proximate vegetation screening - within 5km and within the zone of visual influence (ZVI) catchment

\*Receiver numbers correspond to those defined in Section 1 of the Mt Arthur Coal Open Cut Modification Environmental Assessment which can be accessed from the Mt Arthur Coal website

<http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx>

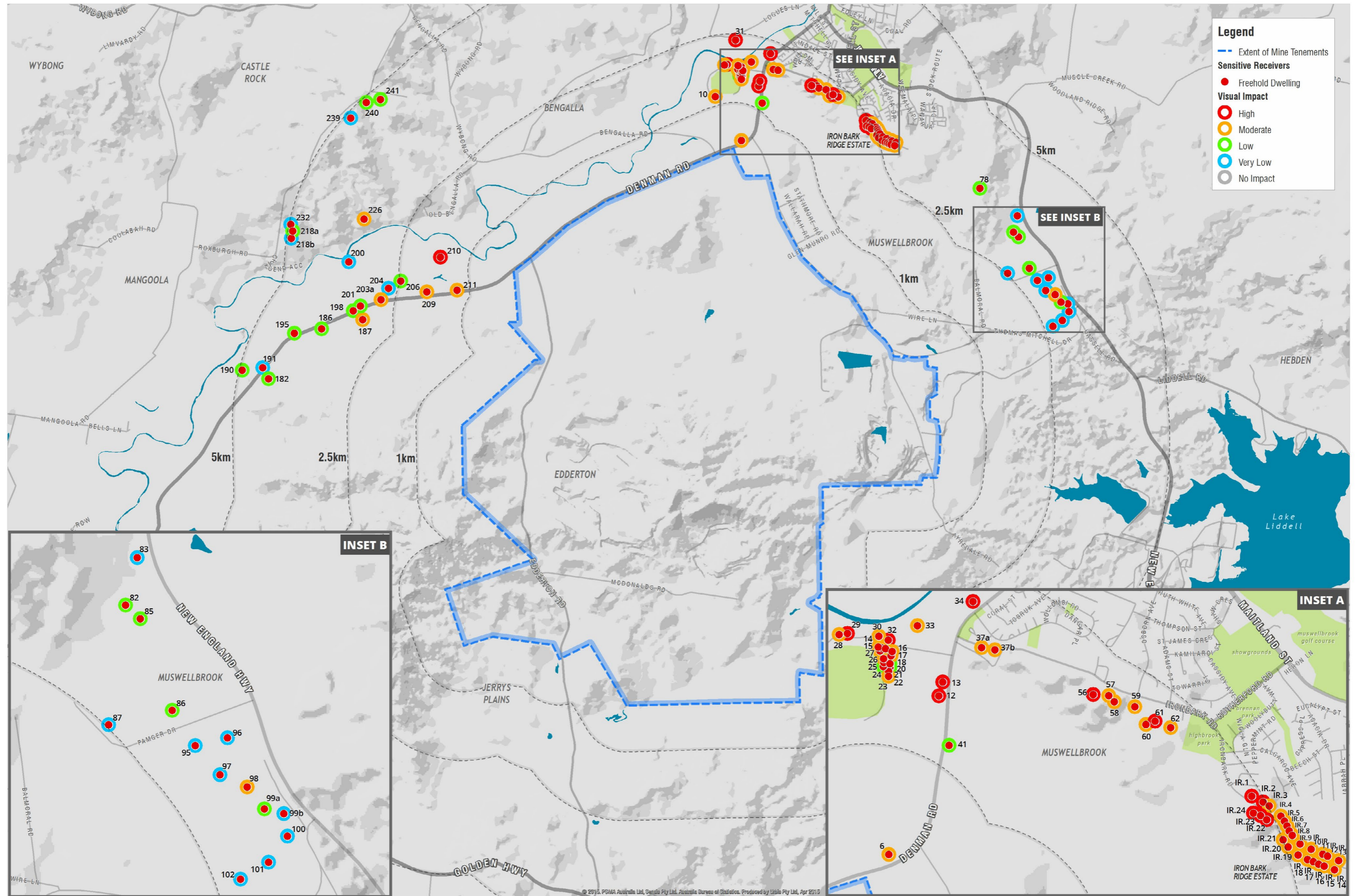


Figure 13B

Potential Visual Impact based on Reduction & Sensitivity with Distance & screening vegetation - within 5km and within the zone of visual influence (ZVI) catchment

\*Receiver numbers correspond to those defined in Section 1 of the Mt Arthur Coal Open Cut Modification Environmental Assessment which can be accessed from the Mt Arthur Coal website

<http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx>



Figure 14  
View near intersection Mangoola Road and Roxburgh Road looking east

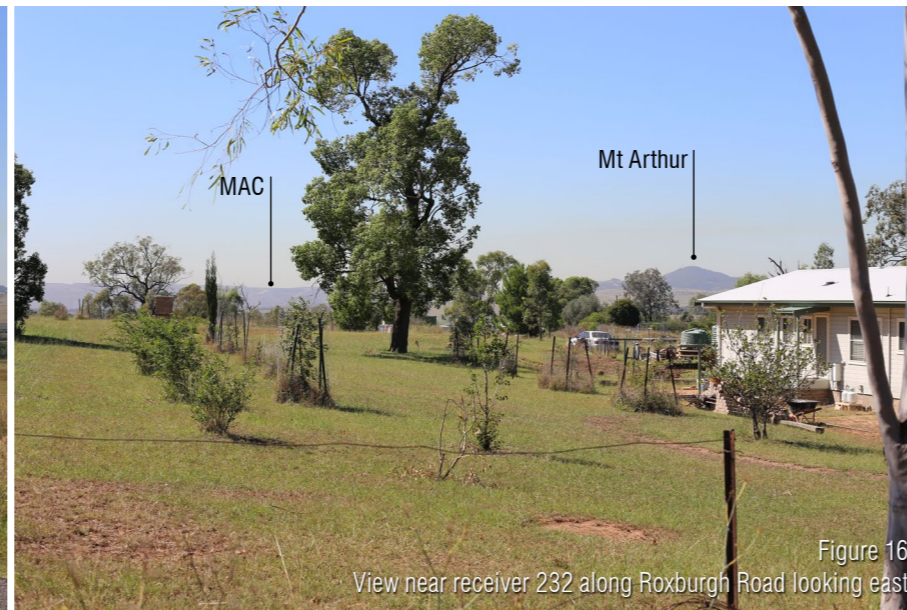


Figure 16  
View near receiver 232 along Roxburgh Road looking east



Figure 17  
View near receiver 30, along Racecourse Road looking south



Figure 15  
View near receiver 213a along Roxburgh Road looking east

#### Roxburgh Road (Figures 14, 15, and 16)

*Receiver type:* Residential (low density).

*Views:* Elevated views along and perpendicular to Roxburgh Road toward existing active mine area and active OEA face, as well as Bengalla Mine.

*Visual Prominence:* Varies, with some receivers, well shielded by existing vegetation (Figure 6). For some locations, views of the project are blocked by intervening ridge lines while other locations experience relatively unobstructed views (Figures 5 and 7).

*Modification Level of the Project:* From the local road, and away from the screening vegetation of the receivers, the existing and approved operations will be potentially noticeable. The modified open cut will not be located any closer to the viewpoint than the existing open cut. The proposed activities will appear as a slight westward extension of the approved open cut and be consistent with its appearance in terms of colour and pattern. Views to the conveyor corridor overburden emplacement will be obscured by the Mt Arthur North overburden emplacement. As a result, the visual modification level is considered to be low to moderate. Active face cannot be rehabilitated until end of mine life.

*According to the Modification VIA :* "The low visual sensitivity, due to distance from the Modification, combined with a low to moderate visual modification level, will result in a low visual impact. This will reduce from low, to very low, as landform rehabilitation measures are established."

*Effective Mitigation Measures:* Topographic treatments, Ecological niches, Full cover planting screen.

#### Racecourse Road (Figure 17)

*Receiver type:* Primarily residential and also recreational users of the racecourse

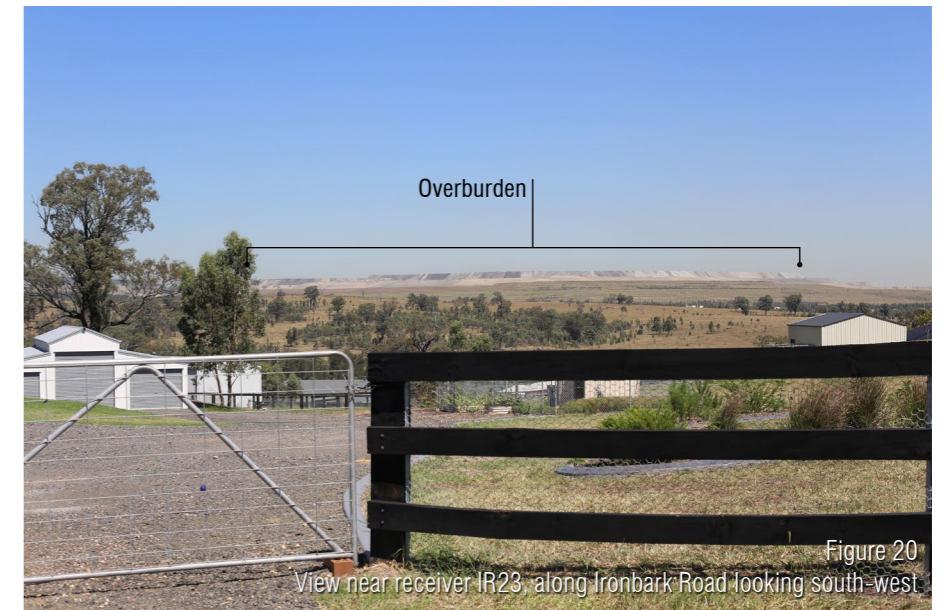
*Views:* Existing northern and eastern OEA faces.

*Visual Prominence:* Direct views of unrehabilitated face at approx. 2.5 kilometres distance.

*Modification Level of the Project:* This area is located on the low-lying flood plain adjacent to the Hunter River. Views to the site are depressed and existing vegetation located between the Modification area and the viewpoint screen views to the lower portion of the Mt Arthur North overburden emplacement and the area of the proposed open pit extension. The upper portion of the existing Mt Arthur North overburden emplacement is visible above the band of existing vegetation and views to the open cut are obscured by the band of vegetation. The visible component of the Modification, the conveyor corridor overburden emplacement, will be located an additional 4.6 km away from the viewpoint than the closet point of the approved Mt Arthur North overburden emplacement. It will appear as a slight eastward extension of the approved Mt Arthur North overburden emplacement and be consistent with its appearance in terms of colour and pattern. Therefore, the visual modification level is considered to be low.

*According to the Modification VIA:* "The low visual sensitivity, due to distance from the Modification, combined with a low visual modification level, will result in a low visual impact, reducing to very low as landform rehabilitation measures are established."

*Effective Mitigation Measures:* Topographic treatments, Ecological niches, Full cover planting screen, Partial cover planting screen, Long term/nurse planting screen, Compensatory landscape.



**South Muswellbrook (Skellatar Stock Route) (Figures 18 and 19)**

*Receiver type:* Primarily residential and park users at Highbrook Park.

*Views:* Elevated views across valley toward Mt Arthur, Macleans Hill and the existing rehabilitated OEA.

*Visual Prominence:* Generally, views are partially obscured by existing vegetation (Figures 9 and 10).

*Modification Level of the Project:* The residential edge of South Muswellbrook is located along a low rise oriented approximately north-south. Views to the Modification area are afforded over an intervening, and less elevated, rolling agricultural landscape of pasture grass with scattered stands of trees. The approved Mt Arthur North overburden emplacement is visible between breaks in the existing vegetation. The visible component of the Modification, the conveyor corridor overburden emplacement, will be located an additional 3 km away from the viewpoint than the closet point of the approved Mt Arthur North overburden emplacement. It will appear as a southerly extension of the approved Mt Arthur North overburden emplacement and be consistent with its appearance in terms of colour and pattern. As a result, the visual modification level is considered to be moderate.

*According to the Modification VIA:* "The low visual sensitivity, due to distance from the Modification, combined with a moderate visual modification level, will result in a low level of visual impact, reducing to very low as landform rehabilitation measures are established."

*Effective Mitigation Measures:* Topographic treatments, Ecological niches, Full cover planting screen, Long term/nurse planting screen, Compensatory landscaping.

**Ironbark Ridge Estate (Figure 20)**

*Receiver type:* Residential

*Impacted Receivers:* Residences along Ironbark Road

*Views:* Elevated views across valley toward existing overburden. Similar views as those from South Muswellbrook but from a higher elevation.

*Visual Prominence:* Partially obstructed by existing vegetation.

*Modification Level of the Project:* Increase in the bulk of the OEA, but improved landform and vegetation means OEA should integrate better within the local landscape. The modification level is considered to be moderate.

*According to the Consolidation Project VIA (2009):* "The visual effect of Mt Arthur Coal from this location is currently moderate to low. The visual effect of the Project will initially be high if significant areas of un-rehabilitated or active mining areas are visible until 2016. This effect will be managed by minimising exposure to active mining areas behind progressively rehabilitated 'lifts' to create moderate visual effects. The long term visual effect is reduced to low when rehabilitation is completed."

*Effective Mitigation Measures:* Topographic treatments, Ecological niches, Full cover planting screen.





Figure 21

View north-east from Golden Highway



Figure 23

View north-east from Golden Highway



Figure 22

View north-east from close to intersection of Edderton Road and Golden Highway

**Golden Highway** (Figures 21, 22 and 23)

*Receiver type:* Residences.

*Views:* Elevated views toward future overburden.

*Visual Prominence:* Direct views onto active face of future overburden from approx. 6+ kilometres (the majority) to 9 kilometres distance.

*Modification Level of the Project:* This depressed viewing location has direct views to the Modification area and Mt Arthur along the Saddlers Creek valley. The currently approved emplacement will result in a partial loss of these views. Notwithstanding, the Modification would not change this impact. The approved out-of-pit south west overburden emplacement, located between the viewpoint and the Modification, will obscure views of the proposed mine extension areas as well as of the conveyor corridor overburden emplacement. Therefore, the visual modification level is considered to be very low to non-apparent in views from this location.

*According to the Modification LVIA:* "The low sensitivity, due to distance from the Modification, combined with a very low to non-apparent visual modification level, will result in a very low or no visual impact".

*Effective Mitigation Measures:* Front edge construction, Partial cover planting screen, Compensatory landscaping.

Note – further detailed assessment will be undertaken as part of the visual impact assessment and plan for the Darley Woodland's Stud (located in this south-west view quadrant) which is currently being prepared.



Figure 24  
View near receiver 190, along Denman Rd looking east



Figure 26  
View near receiver 195, along Denman Rd looking east



Figure 25  
View near receiver 191, along Denman Rd looking east



Figure 27  
View near receiver 204, along Denman Rd looking east

**Denman Road** (Figures 24, 25, 26 and 27)

*Receiver type:* Residences

*Views:* Elevated views across valley toward existing active mine areas and active face of OEA.

*Visual Prominence:* Varies, with some views partly obstructed by thick vegetation, while elsewhere views are quite open and the OEA prominent.

*Modification Level of the Project:* Approaching from the west, Denman Road crests a low rise and elevated views are afforded of the Modification area as well as the Bengalla mine 2.5 km to the north. Rising topography located between the viewpoint and the Modification will obscure views of the proposed mine extension area as well as the conveyor corridor overburden emplacement. Therefore, the visual modification level is considered to be very low to non-apparent for this location.

*According to the Modification VIA:* "The very low sensitivity, due to distance from the Modification, combined with a very low to non-apparent visual modification level, will result in very low or no visual impacts".

*Effective Mitigation Measures:* Topographic treatments, Partial cover planting screen.



Figure 28  
View east from Denman



Figure 29  
View east from Denman

**Denman** (Figures 28 and 29)

*Receiver type:* Residences.

*Impacted Receivers:* Residences of the settlement.

*Views:* Currently no views of OEA or mine operations.

*Visual Prominence:* No views of OEA at present; Denman is approximately 15 kilometres from Mt Arthur Coal Mine.

*Effect of the Project:* Although the OEA will become larger and higher and therefore become visible over a distant spur, the distance and the mine's juxtaposition with Bengalla reduce an otherwise contrasting element in the landscape.

*According to the VIA (2009):* "Mt Arthur Coal currently has a low visual effect from this location. The visual effect of the Project at this location will remain low, primarily reduced by the significant viewing distance of over 15 km."

*Effective Mitigation Measures:* Topographic treatments, Partial cover planting screen.

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## 05 Summary

Based on past successes in rehabilitation at Mt Arthur Coal, Overburden Treatments are the preferred option for treating significant visual impacts. Topographic Treatments would be particularly effective at disguising the presence of OEAs in the long-term by providing a more naturalised looking landscape. This would be particularly helpful in minimising visual impacts from Roxburgh Road, Racecourse Road, and Ironbark Estate.

By first establishing and rehabilitating the front edge of the OEA, the amount of time that sensitive receivers are exposed to the active face could be substantially reduced.

Ecological Niches allow for the creation of specialised ecologies to enhance regionally-significant landscapes and provide vital habitat. In turn, this helps the OEAs to integrate visually into their setting by mimicking the local landscape. This measure assists with the long term effects of the OEA at any location from which the OEA would be visible.

Progressive Rehabilitation sees rehabilitation work occur as quickly as possible, rather than at the conclusion of the mining effort. It would be particularly successful at minimising visual impacts from locations that would otherwise experience long-duration views of the OEAs, including Racecourse Road and Ironbark Estate.

In addition to the Overburden Treatments, a range of offsite treatments are also recommended. Full and Partial Cover Screen Plantings would be particularly effective where relatively close range views of the OEA encompass a large proportion of the view, or where the view looks onto an area that cannot be rehabilitated for a long period of time. Such situations occur at Roxburgh Road and Denman Road.

Partial Cover and Combined Long Term / 'Nurse' screens may be more appropriate where views to the project are looking into the outer face of the OEA, which will be substantially rehabilitated by 2016, and effectively completely rehabilitated by 2022. Such situations occur at Racecourse Road and the western edge of Ironbark Ridge Estate.

Compensatory landscape treatments may be appropriate for landholders where the dominant view is of the active face of the OEA, and screening measures are either impractical or inappropriate. Such situations potentially occur at Roxburgh Road, Denman Road, and land holdings to the south of the project.

All offsite visual impact mitigation projects will be developed in collaboration with affected residents to assure mutually beneficial outcomes.



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Our ref: 09-0062

Michael Gale  
Superintendent Environment Analysis & Improvement  
Mt Arthur Coal  
PMB 8  
MUSWELLBROOK NSW 2333

Dear Mike,

**Mt Arthur Coal Visual Impacts Management Report.**

Thank you for providing the Mt Arthur Coal Visual Impacts Management Report dated July 2015 on the 28<sup>th</sup> July 2015. This is required by Condition 49 Schedule 3 of Approval 09-0062.

I can advise that the Department has reviewed this Report and that the Secretary has approved the Report

This program is a requirement of the Mt Arthur consent and replaces any earlier versions. The July 2015 version of this Report comes into force on the 10<sup>th</sup> August 2015 and remains in force until replaced by any future updated approved Reports.

Could you please place this Report on your website and forward a finalised copy of the above report (preferably in PDF format with a copy of this approval letter appended) for the Department's records by the end of August 2015.

If you require further information or clarification in this matter please contact Scott Brooks on 6575 3401 or by email to [scott.brooks@planning.nsw.gov.au](mailto:scott.brooks@planning.nsw.gov.au).

Yours sincerely

Scott Brooks  
**Investigations (lead) Compliance**  
Singleton  
As the Secretary's Nominee.

7-8-2015