APPENDIX 1

Visual Assessment Report

VISUAL IMPACT ASSESSMENT

MANGOOLA COAL PROJECT

CHANGES TO THE MAIN INFRASTRUCTURE AREA

Prepared for

MANGOOLA COAL PTY LIMITED

September 2009
REF: 821-Z-04A

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1.1 The Project

The Mangoola Coal Project is located approximately 20 km west of Muswellbrook and 10 km north of Denman in the area surrounding Anvil Hill. The project seeks to extract coal in four pits with associated overburden emplacement over a period of 21 years. The project incorporates a coal preparation plant, stockpiles, rail loop infrastructure and tailings dam.

1.2 Objectives

The objectives of this Visual Impact Assessment report are:

- To assess the visual impact of the relocation and amendments to the main infrastructure facilities, including using information collected during an on site vegetation assessment of the potential for vegetation screening south east of the proposed main infrastructure area (MIA)

1.3 Methodology

This visual impact assessment has been divided into three sections:
1 Introduction
2 Relevant Aspects Of The Proposed Development
3 Visual Impact Assessment

On the 4th August 2009 a site inspection was carried out in conjunction with Greg Newton, the Mangoola Coal Environment and Community Officer and the surveyor James Purdie. The purpose of the assessment was to determine the potential screening of the vegetation that would remain after clearing of the MIA benched area and the effect of the screening on the visibility of the MIA, particularly from the east and south east.

Prior to our site visit the eastern and south eastern edges of the MIA, access road No.3 and the sedimentation dam were pegged in outline by survey. During the inspection we surveyed the levels and vegetation canopy heights in four locations adjacent to the proposed sedimentation dam and the intersection of the main north access road with access road No.3. (See attached vegetation assessment documented on Xstrata – Mangoola Coal PBH 550 000 G 002 issue 'C'. Mine Infrastructure Area 'Site Layout Plan'.Amended Vegetation Assessment. O'Hanlon Design August 2009).

Reference is made in this report to the viewpoints used in our original "Visual and Lighting Impact Assessment- Anvil Hill Project " ref. 735-Z-12 June 2006. The viewpoints are noted in that report as being selected as representative of the range of possible locations and selected to highlight the locations from which the impacts will be most prominent. Viewpoints are limited to public roads and accessible public areas as these relate to the highest number of users.

1.4 Referenced Documents

The following documents are referenced in the report or were considered in forming the assessments provided.

- 'Visual and Lighting Impact Assessment Anvil Hill Project' O'Hanlon Design Pty Ltd June 2006 ref: 735-Z-12
- Figure 5.26 "Visual assessment Locations" extract from 'Visual and Lighting Impact Assessment Anvil Hill Project' O'Hanlon Design Pty Ltd June 2006 ref: 735-Z-12
- Xstrata Andros Australia Drawing AHX-300-L-1020 issue C 'Site Elevations'
- Xstrata Andros Australia Drawing AHX-300-L-1021 issue B 'Product Coal Elevations'

- Xstrata Andros Australia Drawing AHX-300-L-1000 issue A 'Site Layouts'
- Parsons Brinkerhoff drawing 2148081A-CIV-0011 issue A 'Concept Layouts Option B'
- Xstrata – Mangoola Coal PBH 550 000 G 002 issue ‘C’. Mine Infrastructure Area ‘Site Layout Plan’.
- Xstrata – Mangoola Coal PBH 550 000 G 002 issue ‘C’. Mine Infrastructure Area ‘Site Layout Plan’.Amended Vegetation Assessment. O’Hanlon Design August 2009
- Xstrata – Mangoola Coal PBH 550 1000 A 0017 issue ‘F’ Heavy vehicle workshop and store sections
- Xstrata – Mangoola Coal PBH 550 1000 A 0013 issue ‘F’ Heavy vehicle workshop and store Elevations Sheet 1.

2.1 RELEVANT ASPECTS OF THE PROPOSED DEVELOPMENT

This section describes the changes to the original development that could potentially affect the outcome of the visual assessment. The ongoing design of the Mine Infrastructure Area (MIA) has created changes to the layout, height and placement of some of the larger items within the MIA.

2.2 MINE INFRASTRUCTURE AREA CHANGES

The basic infrastructure elements, including the workshop and coal preparation plant areas will be completed within the first year of the project as previously assessed. Also as previously assessed, the Product Stacker/Reclaimer and the Coal Preparation Plant (CPP) are located adjacent to the existing 500kV power line.

The layouts of the MIA and CPP have changed in the amended proposal as have the base levels. Further design has also refined the size, orientation and overall height of some elements.

The following are the infrastructural changes of significance to the visual assessment.

2.3 MINE INFRASTRUCTURE AREA

Mine infrastructure elements including the workshop, bath house, stores, offices, parking areas and the general sealed apron to those areas have been relocated north east of the 500 kV line approximately 1000m north east of the original design location. This location remains within the moderate to high scenic quality zone similarly to the original proposal and it is located on the edge of the plateau facing east towards Mangoola Road. (See Figure 5: Scenic Quality-June 06). The MIA therefore remains closest to Viewpoints VP1, VP2 and VP3. The base level of the main infrastructure elements was originally designed as between RL180 and RL185. The proposed base level has been further revised to be located at approximately RL 195.

The orientation of the workshop remains on the north west/south east axis originally proposed. The office and bath house building has been reoriented and now faces north/south. The workshop building (overall approximately 20m high) will have a finished wall height of approximately RL 212 and height at the ridge ventilator of approximately RL 215. Light towers around the buildings and workshop of the MIA will also have a finished height of approximately RL 212. The workshop roof access tower will have a finished level of approximately RL 217. These levels are approximately 10 metres higher than the original levels.

The workshop building is located approximately 270 metres north west of the edge of the sedimentation dam. Samples of the colours of the proposed cladding for the buildings have been provided by Mangoola Coal. The colours have been chosen from the standard grey-green colorbond range to blend with the surrounding vegetation.

2.4 COAL HANDLING AND PREPARATION PLANT

The coal handling and preparation plant (CHPP) remain in a similar location to the original design. The main elements in the CHPP area are the rejects bin, ROM pad, the surge bin and the CPP building.
These items are all set at varying levels based around RL190 and have varying heights. The original base assessment level was RL180 - RL185. The original assessment assumed an overall development height of RL210 to RL215. However specific details of the rejects bin height and its location were not assessed. The amended design data indicates the following approximate levels.

Item	Base (RL)	Height (m)	Top (RL)
Surge bin	179	34	213
CPP building	180	30	210
Rejects bin	197	34	218

The CHPP area and the elements originally assessed within the area are therefore within the parameters used for the original assessment. The proposed rejects bin exceeds the original assessment parameters by approximately 3-5m.

2.5 VEGETATION ASSESSMENT

As part of the review of visual impact and the associated site inspection, the heights and relative levels of vegetation along the south east edge of the MIA were assessed. For locations of the assessment see the document "Xstrata – Mangoola Coal PBH 550 000 G 002 issue 'C'. Mine Infrastructure Area 'Site Layout Plan' Amended Vegetation Assessment. O'Hanlon Design August 2009. The height and density of vegetation along the disturbed edge of the MIA determines the potential visibility of the structures within the MIA. The critical area for vegetation removal is the area south of the sedimentation dam and moving east around the intersection of access road 3 and the northern access road. Here the topography falls gently to the south and south east. The fall accentuates the visible height of structures to the north when viewed from the south, south east and east.

Vegetation south of the sedimentation dam is relatively dense Casuarina forest with a height of approximately 8 metres. Vegetation south east to east of the dam is predominantly closed Eucalypt forest with a height of approximately 14m. Vegetation from east to north east is a mixture of less dense Eucalypt and Casuarina growth with a representative screening height of approximately 8 metres.

Survey levels taken at four locations around the edges of the sedimentation dam and access road identify the base levels of the vegetation to be between 186.5 and 189 AHD, with the resultant top of tree canopies screening between 194.5 and 203 AHD. See the attached vegetation assessment.

	Ground RL	Surveyed Vegetation Height in the order of	Screening RL
Area A	186.5	8m	194.5
Area B	187.5	14m	202.0
Area C	188.5	14m	202.5
Area D	189.0	8m	197.0

3.1 VISUAL IMPACT ASSESSMENT

The visual impact of the proposed changes can be referenced to the base data and descriptions of the landscape components provided in Section 5 'Visual Impact Assessment' of the original report dated June 2006 Ref: 735-Z-12. The impacts created by changes to the MIA have been assessed at the viewing points noted in the original report. Differences in the visual impacts due to location or height are set out below for each viewpoint against the corresponding location in the original report. For assessment locations refer Figure 5.26 “Visual assessment Locations” extract from 'Visual and Lighting Impact Assessment Anvil Hill Project' O'Hanlon Design Pty Ltd June 2006 ref: 735-Z-12 attached.

3.2 VP1 Roxburgh Road

Relocation of the MIA to the northern side of the 500kV power line brings the elements closer to viewers along Roxburgh Road. Viewers at the northern end of the road are now viewing at a distance of approx. 7km from a superior location with a viewing level around RL260. The move of the MIA to the north will create slightly greater exposure to the north of the spur on Roxburgh Road that previously provided minor screening.

Views of the offices and parking areas will not be possible however a view of approximately half the height of the workshop and associated access tower will be possible. Some light spill will occur from within the upper levels of the building when the workshop doors are open at night.

The MIA elements are in the background and will be visible as relatively small objects in suitable light and atmospheric conditions. The proposed grey green colours will work to camouflage the buildings during the day. The minimal (3 metres) additional height of the rejects bin will be visible as part of a small silhouette adjacent to the south end of the limb of Addy Hill when viewed by the residents at the north end of Roxburgh Road. The difference in height will be imperceptible from the original assessed height.

3.3 VP2, VP3 and VP4 MANGOOLA ROAD

In the original proposal the MIA was screened from viewers along Mangoola Road by the north/south interviewing ridge. Relocation of the MIA has placed it on the eastern edge of the ridge facing towards Brays Hill. Views of the top of the access tower and workshop will be possible from Mangoola Road at an RL of 145-150 at VP2 just north of Milang Gully at a distance of approx. 2.5 km.

Views of the MIA will be more obvious on the short east west section of Roxburgh Road at RL138 at a distance of 2 km. The views are partially mitigated by remnant vegetation east of the MIA. An end elevation of the workshop approximately 20 metres wide and between 6 and 8 metres high will be visible from sections of road at Milang Gully. These objects are in the close middle ground and from the inferior viewing locations on Mangoola Road the top sections will be silhouetted just above Anvil Hill.

At VP3 located on the public road intersection of Mangoola Road and Roxburgh Road the viewer is located at approx. RL175. When viewed from VP3 the relocated MIA will be visible at a distance of approximately 2.7 km. Again remnant vegetation will provide screening of the lower sections of the MIA from VP3. Views of the eastern end and part of the north east side of the workshop will be possible from VP3.

When viewed from VP3 the remaining vegetation will screen up to approximately RL 207 leaving 5-6 metres of the end of the workshop and 10 metres of the top of the access tower visible. Silhouetting is less likely to occur from VP3 due to the more elevated viewer location.

The top one or two metres of the rejects bin will just be visible from VP3 however silhouetting is not possible against the backdrop of the limb of Addy Hill.

At VP4 on Mangoola Road the top one or two metres of the rejects bin will be just visible as a small silhouetted item above the intervening ridge at a distance of approx. 3.2 km in the close middleground.

3.4. VP5 Denman Road

The elevated viewing locations at VP5 adjacent to the Piercefield Homestead on Denman Road will be impacted by the height of the rejects bin. The rejects bin will be visible as an element to the north of Anvill Hill however the background viewing distances of around 6km significantly reduce the degree of impact. The increase of 3 metres in height will not create any perceptible difference to the original assessment at VP5. The rejects bin at its new height will not be viewed as a silhouette as it will be below the level of the Wybong beyond to the north-west.

Relocation of the MIA to the north will slightly reduce the impacts on VP5 of the MIA elements. Due to the fall of the topography and the reduced height of the Casaurinas in Area A south of the sediment dam, most of the workshop and the upper sections of the Store and Administration building will be visible from VP5. At night light spill will be obvious against the dark background highlighting the impact. During the day the impacts will be diminished due to the blending of the grey –green colours of the buildings into the background ridges beyond the mine area.

Views from VP5 of the product stockpiles and CHPP will be as previously assessed.

3.5. VP6 WYBONG ROAD

From VP6 the top of the rejects bin will be visible as a silhouetted element at a distance of approx 6km. This will be most prominent in the late afternoon. The reduction in assessed height results in a similar impact to the original assessment.

Limited views of the top 2 to3 metres of the access tower to the workshop within the MIA will still be possible despite the relocation to the north. Similarly to the original assessment the distances are significant and the extent of the intrusion will reduce the degree of impact.

3.6 VP7 Anvill Hill R.O.W.

The revised assessment from the Anvill Hill ROW is consistent with the original assessment. Mangoola Coal has purchased all the properties along the Anvil Hill ROW and the ROW is no longer a public road. VP7 is therefore no longer viable as allocation for public access and assessment.

3.7 VP8 and VP9 Wybong Road

Views of the MIA areas and the product stockpiles were assessed as not possible from these locations and the proposed amendments would not change this assessment.

3.8 VP10 Wybong Post Office Road

Limited and intermittent views of the top of the access tower and the workshop within MIA, the CHPP and stockpiles will remain possible along a short section of Wybong Post Office Road. The relocation of the MIA and height of the rejects bin will be insignificant due to the viewing distance of approximately 6km. These impacts occur only after Year 5 of the development when mining removes intervening screening vegetation.

3.9 VP11 Ridgelands Road

Consistent with the previous assessment views of the relocated MIA will not be possible from Ridgelands Road due to the ridge adjacent to the haul road at RL220 between the Northern Pit and the Tailings Pit.

This ridge will also screen the rejects bin from view.

3.10 VP12 Golden Highway

Consistent with the previous assessment views of the relocated MIA and the rejects bin will not be possible from the Golden Highway adjacent to VP12**.**

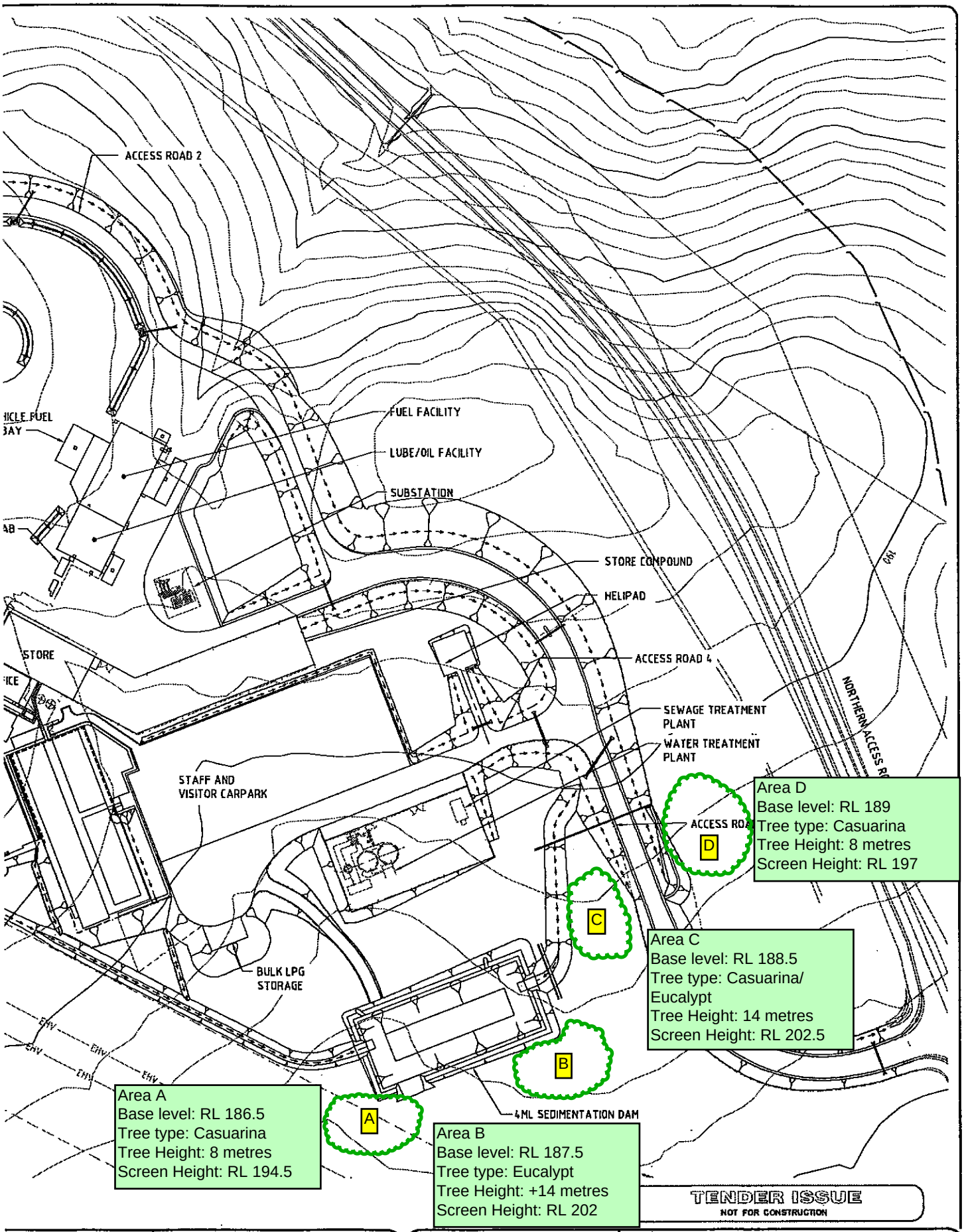
3.11 Overall Impact Levels.

Table 4.4 in the June 06 report illustrated the visual impacts at selected years of the project life on a scale between low and severe. With the exception of VP3 our assessments of the changes will remain consistent with the original assessments. In each case the incremental increase or decrease is not significant enough to warrant a change in rating.

At VP3 on the corner of Mangoola and Roxburgh Road however the relocation of the MIA will potentially increase the impact from moderate to moderate/high. This is due to a combination of the more prominent close middleground location of the MIA on the north east facing edge of the ridge and the prominent location of the viewing point at the junction of these secondary travel routes. The site vegetation assessment has revealed that insufficient screening will remain on the southern and eastern slope below the MIA to completely screen the building from viewers at VP2, VP3 and VP4.

I am advised by Greg Newton of Mangoola Coal that Mangoola Coal proposes the creation of a planting screen along the western edge of Mangoola Road from VP4 south of the MIA as far north as VP3. A quick growing screen adjacent to the western edge of the road, containing low branching Acacia species in the foreground of the viewer and screening between 1 metre and 3 metres above the level of the carriageway would on maturity, screen all the potential visual impacts to viewers from VP4 north to VP3. Mangoola Coal proposes to plant the screen within this calendar year. If the plantings are successful the screen could provide a reasonable screen within 2-3 years.

Edward O'Hanlon RAIA
Director
O'Hanlon Design Pty Ltd



TENDER ISSUE
NOT FOR CONSTRUCTION

A1 ORIGINAL

PARSONS BRINCKERHOFF

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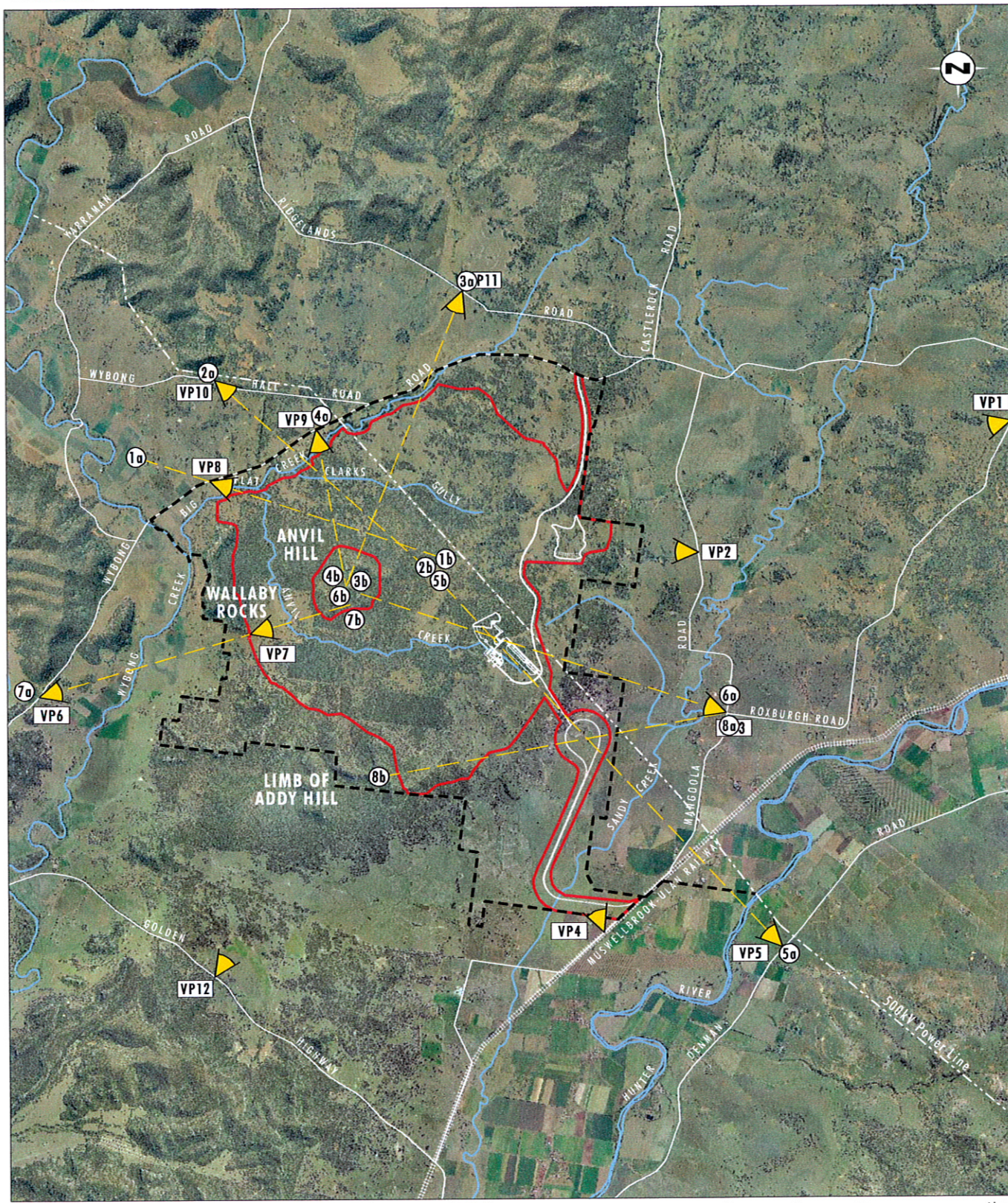
CLIENT: xstrata coal — Mangoola Coal

PROJECT: MANGOOLA COAL
MINE INFRASTRUCTURE AREA
SITE LAYOUT PLAN
Vegetation Assessment Rev A Sept. 09

PB PROJECT No.	DOCUMENT NUMBER	Rev.
2148081A	98 PBH 550 0000 G 0002	C



Source: Mine Consult, Department of Lands, O'Hanlon Design (2006)
Note: For section details, refer to Figures XXXX
Aerial photo: Department of Lands (2003), ortho-rectified by Plateau Images

Legend

- Proposed Disturbance Area
- Project Area
- Viewpoint
- Transect Location

FIGURE 5.26

Visual Assessment Locations

APPENDIX 2

Air Quality Assessment Report

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HSEC Manager
Mangoola Coal
1st Floor, 39-43 Bridge Street
Muswellbrook NSW 2333

2 June 2009 *EN02627_MIA Modification_Air Quality_2.docx*

Dear Jane

Potential air quality impacts of change to mine facilities at Mangoola Mine

This brief report provides an air quality assessment of the difference between two configurations for the mine facilities at the Mangoola Mine, being the approved configuration and a proposed modified configuration. The assessment has been based on a review of the mine facilities and identification of key dust generating sources. Potential changes to dust emissions were examined, in the context of the total dust emissions from the site, and the likely changes to off-site air quality impacts were assessed.

It was concluded from this assessment that there will be no change to the previously predicted off-site air quality impacts as a result of the proposed revisions to the mine facilities layout at the Mangoola Mine, compared with the approved mine facilities layout. Details of the assessment are provided below.

1. Background

Mangoola Mine (formerly Anvil Hill Mine) is an open-cut coal mine located approximately 20 kilometres (km) to the west of Muswellbrook in the upper Hunter Valley. The mining operations were approved in 2007.

No construction or mining activities have commenced. Construction of the mine is expected to start in 2009, following the final mine planning and completion of the Early Works program.

Xstrata Mangoola is seeking to streamline operations via various modifications to the original mine plan. One of the proposed modifications includes a change to the previously approved mine infrastructure area (MIA) and facilities. An assessment of the effect that the proposed change to the MIA will have on air quality, compared to the approved mine, is required, prior to construction.

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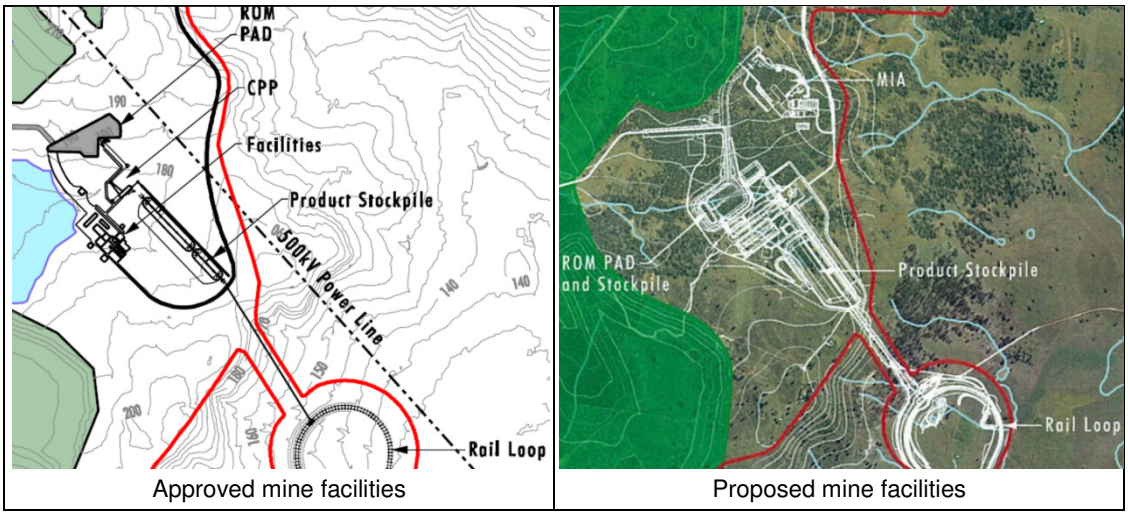
Offices across Australia, New Zealand, UK, South East Asia, Middle East, the Pacific and Americas

2. Approved and Modified Facilities

Figure 1 shows the layout of the approved and proposed mine facilities. The location of the MIA is the main difference under the proposed layout. There will also be adjustments to the run-of-mine (ROM) pad, ROM stockpile and product stockpiles.

- **Figure 1: Comparison of approved and proposed mine facilities**



Approved mine facilities | Proposed mine facilities

To assess the potential change to dust emissions arising from the proposal, it is important to identify the key activities taking place in each area.

The MIA is proposed to be located approximately 800 metres (m) to the north of the approved MIA locations. The facilities will consist of a number of buildings, workshops and facilities, including:

- An administration building;
- Car parks for mine vehicles and staff and visitors;
- Sewage and water treatment plants;
- Fuel and oil facilities and bays
- Heavy and light vehicle wash down areas;
- A heavy vehicle workshop;
- A tyre storage and service area;
- A bulk LPG storage area;
- A sedimentation dam; and

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- A sub-station.

There will be paved access roads connecting the facilities.

The ROM pad is proposed to be located approximately 100 m to the south of the approved location. For the approved mine, the ROM pad would have covered an area of approximately 4.4 hectares (ha). This will decrease, as calculated from the modified layout plans, to approximately 3.5 ha.

The product stockpile will change slightly in shape under the modified layout, and the area will increase from approximately 4 ha to approximately 5 ha. The proposed changes to the mine facilities will not change the anticipated hours worked by dozers on the ROM pad and product stockpiles.

There will be virtually no change to the location of the coal handling and preparation plant (approximately 50 m difference), as part of the modified layout of facilities. Similarly, the rail load-out point will not change.

3. Change in Dust Emissions and Assessment

Dust emissions will arise from various sources at the mine facilities, the key sources being:

- Wind erosion from the ROM pad and product stockpiles;
- Unloading of coal to stockpiles and trains;
- Pushing ROM and product coal by dozers; and
- Handling ROM coal at the CHPP.

The proposed changes will affect wind erosion from the ROM pad and product stockpile. In addition, the change to the location of the ROM pad will also change the distance for trucks hauling coal from the pits. None of the activities at the MIA, as described above, will be significant sources of dust.

The approach to this assessment has been to quantify the likely change to total dust emissions from the Mangoola Mine, considering the proposed changes to the mine facilities. This was done by updating the dust emission calculations, presented in the Anvil Hill Mine Environmental Assessment (EA) (**Centennial Hunter, 2006**).

The following modifications were made to the Anvil Hill Mine dust emissions inventory:

- Area of ROM pad set to 3.5 ha;

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- Area of product stockpile set to 5 ha; and
- Length of haul route from pits to ROM hopper adjusted by approximately 100 m, where relevant.

The changes were made to demonstrate the change in total dust emissions for each stage of operation. The estimates are shown below in **Table 1**.

- **Table 1: Mangoola Mine dust emissions estimates with the proposed facilities**

	Estimated total dust emissions from all Mangoola Mine activities (TSP, kg/y)				
	Year 2	Year 5	Year 10	Year 15	Year 20
Facilities as per **approved** mine	1,819,535	3,677,713	3,770,360	3,013,405	2,279,720
Assuming **proposed** facilities	1,820,765	3,682,736	3,774,344	3,016,609	2,281,322
Ratio (proposed/approved)	1.001	1.001	1.001	1.001	1.001

TSP = Total suspended Particulates

The calculations show that the total dust emissions will be very similar for both the approved mine and the mine with the proposed modification to facilities. The difference between these two scenarios is less than 0.1%. Typically, the percentage change to dust emissions will translate into approximately the same percentage change to off-site dust concentrations and deposition levels, as predicted by an air dispersion model (ISCST3 in this instance). This level of change, to off-site air quality impacts, will be undetectable.

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4. Conclusions

Proposed modifications to the mine facilities at the Mangoola Mine have been examined for the potential to change off-site air quality impacts, as determined for the approved mine. The key sources of dust subject to change were identified, and total dust emissions were recalculated from the estimates made for the approved mine. The change in total dust emissions was found to be insignificant for all assessment years.

It is concluded that the proposed changes to the mine facilities will have a negligible effect on off-site air quality, compared to the approved mine.

Yours sincerely

Shane Lakmaker
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Fax: 02 4979 2666
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Reference

Centennial Hunter Pty Limited (2006) *Anvil Hill Project Environmental Assessment.* Prepared by Umwelt, August 2006.

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LIMITATION: The sole purpose of this report and the associated services performed by Sinclair Knight Merz Pty Ltd (SKM) is to assess potential air quality impacts of changes to the Mangoola Mine in accordance with the scope of services set out in the contract between SKM and Mangoola Coal. That scope of services, as described in this report, was developed with Mangoola Coal.

In preparing this report, SKM has relied upon, and presumed accurate, certain information (or absence thereof) provided by the Client and other sources. Except as otherwise stated in the report, SKM has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

SKM derived the data in this report from a variety of sources. The sources are identified at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. SKM has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose of the project and by reference to applicable standards, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by SKM for use of any part of this report in any other context.

This report has been prepared on behalf of, and for the exclusive use of Mangoola Coal and is subject to, and issued in connection with, the provisions of the agreement between SKM and Mangoola Coal. SKM accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

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APPENDIX 3

Noise Assessment Report

WILKINSON MURRAY

8 September 2009

WM Project Number: 08190-M
Our Ref: LY080909MIA.doc
Fax/Email: jyelland@xstratacoal.com

Jane Yelland
Xstrata Coal
Level 1 39-43 Bridge Street
MUSWELLBROOK NSW 2333

Dear Jane

Re: Mangoola Coal - Mine Infrastructure Area Noise

Wilkinson Murray has conducted a review of potential noise emissions associated with the infrastructure components of the proposed Mangoola Coal Mine.

In the Anvil Hill EA assessment the Mine Infrastructure Area (MIA) was in the same area as the coal processing infrastructure area. The MIA includes workshops and administration areas that service the mine and equipment.

The coal infrastructure area consists of coal processing (including washing, crushing, conveyors and stockpiling) on the South Eastern side of the site. Noise from this area combined with noise from pit, rail and haulage rotes will contribute to overall noise levels at residences.

As a result of Xstrata purchasing the Mangoola Mine site the mine plan has changed which is the subject of further assessment. In the case of the MIA, the facilities are proposed to be relocated to a site to the north east of the coal infrastructure area. Therefore we have reviewed the potential for noise impact associated with the new MIA site location.

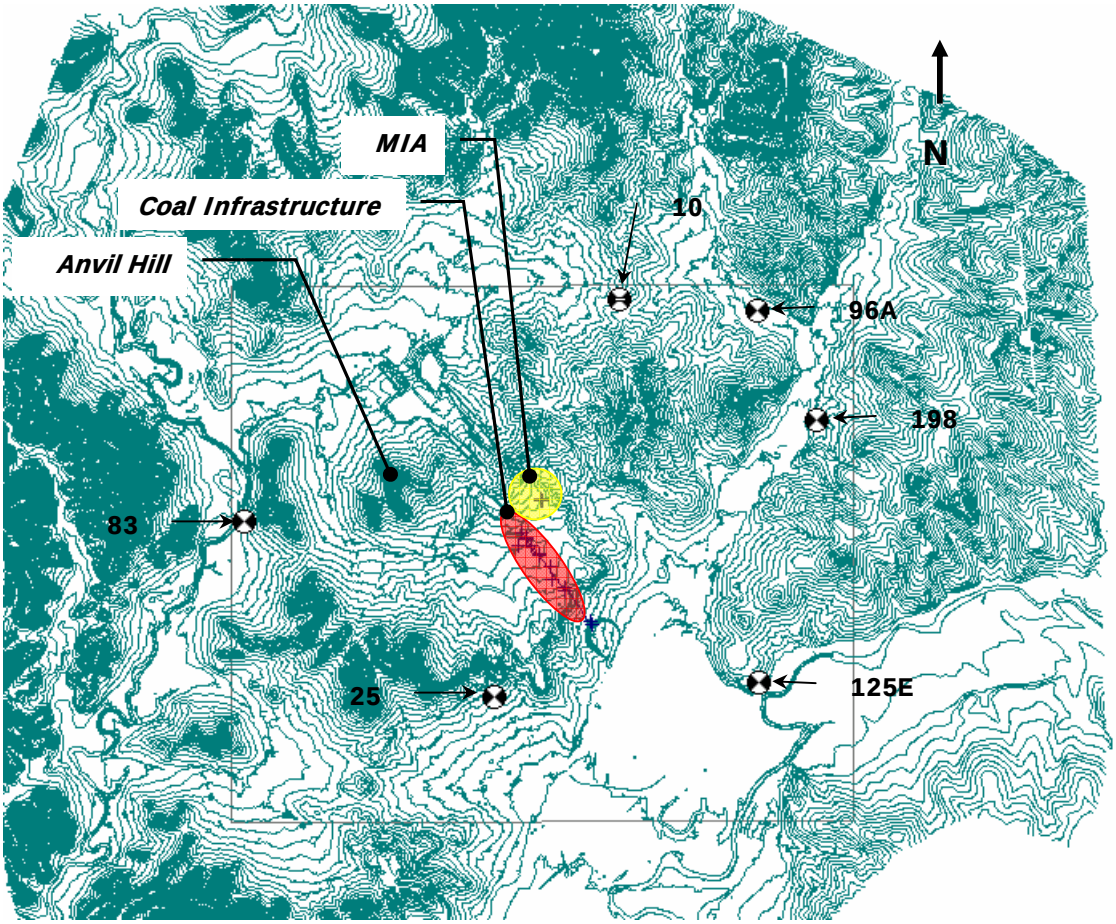
In order to determine the acoustic consequences of this change the site been modelled for the old and new MIA locations along with coal infrastructure at selected residences surrounding the site. A comparison in projected noise levels under still isothermal weather conditions has been conducted to determine the relative noise contributions from these areas.

The following residences were selected to determine noise levels from the infrastructure.

Table 1: Selected Residences Surrounding the Mine Site

Residence Number	Direction from Mine
10	N
83	W
198	NE
25	S
125E	SE
96A	NE

Figure 1 Site Showing Residences and Infrastructure Areas



The noise levels of plant used in the modelling are presented in Table 2.

Table 2: Noise Levels of Equipment and Plant

Item	Sound Power Level -dBA
Loader Stockpile	110
Truck	113
Dump Station	103
Crushing Stn & Drive	101
Xfer Stn & Drive	103.
Drive for P-CV-101 & Stacker	101
Xfer Stn & Sampling & Drive	103
Weigh/Surge Bin	102
D11 Dozer on stockpile	115
CPP Purge Bin	102
Stacker/Reclaimer	93
Conveyer Drive	97

Table 2 (Cont): Noise Levels of Equipment and Plant

Item	Sound Power Level -dBA
Conveyor, per m	79
CPP Feed Surge Bin	103
Pump	78
Rail Loadout	88
Stacker	105
Panel Beating	116
Workshop Reverberant Noise Level	92
CPP 0.6mm steel	117

Note: These noise levels are consistent with the noise levels used in the Anvil Hill Project EA (Umwelt, 2006). These equipment and plant, or similar, will be used.

NOISE MODELING

Noise predictions for the infrastructure areas alone were predicted using the Cadna A noise prediction software. The software takes into account the following:

- Equipment Noise Levels and Location,
- Ground Topography,
- Ground and Air Absorption, and
- Distance attenuation.

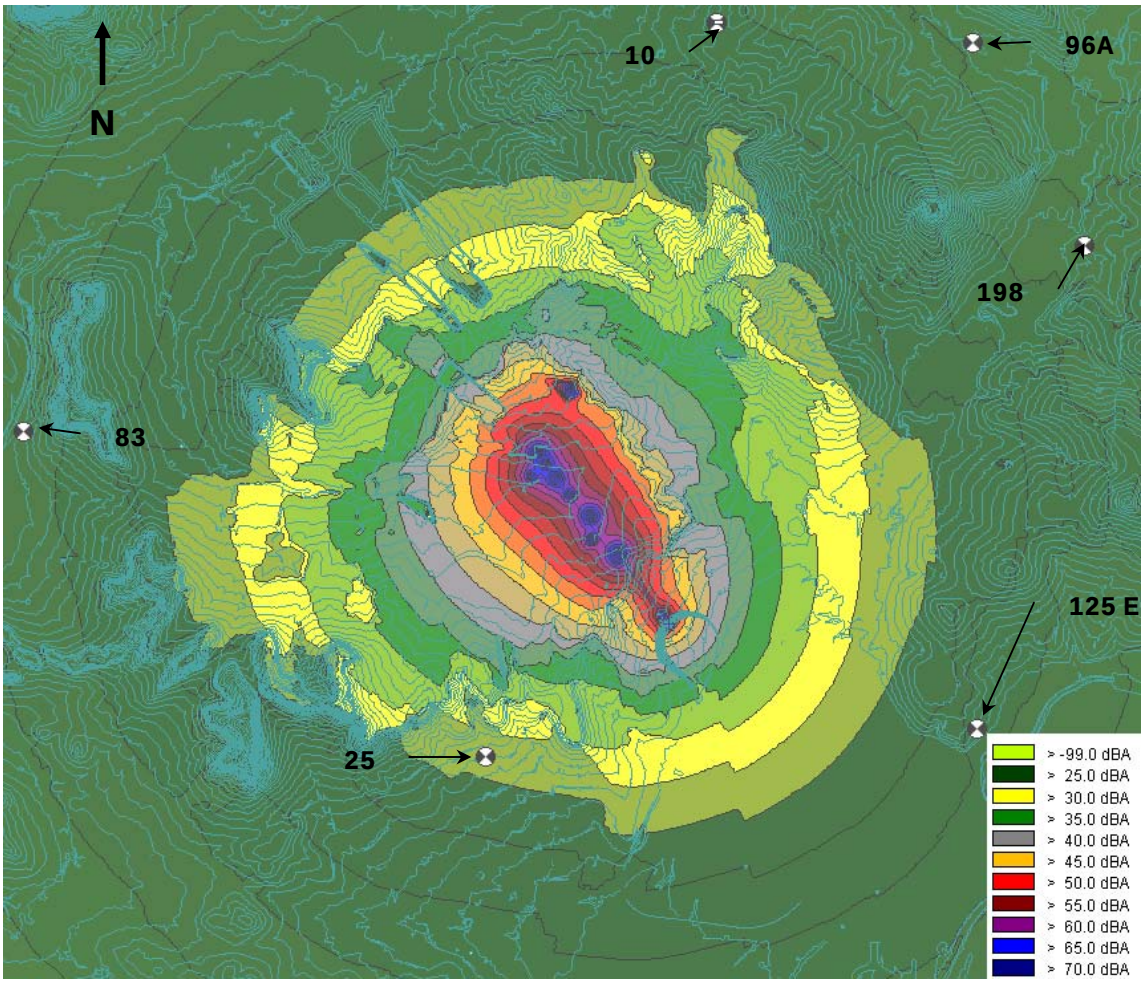
As a result of the modelling the noise contribution of infrastructure has been predicted for still isothermal daytime conditions to determine the relative change of noise contribution to surrounding selected residences. Table 3 presents these results.

Table 3: Predicted Noise Contribution from Infrastructure at Residences - dBA

Residence Number	Noise Level – EA Design	Noise Levels Mangoola Design
10	21.1	20
83	16.8	17.8
198	18.4	17.3
25	28.2	28.1
125E	21.2	20.4
96A	21.4	20.8

Figure 2 illustrates the propogation of sound from infrastructure based on the revised MIA scenario.

Figure 2: Infrastructure Noise Levels with new MIA location



A review of the predicted noise levels indicates that the revised contribution from the change in MIA location varies by up to 1 dBA at some surrounding receivers. This change is considered acoustically insignificant when compared to overall predicted noise levels at residences presented in the EA. Whilst the predicted noise levels at surrounding residences will change with the revised mine design, the change in MIA location is not predicted to have an adverse acoustic impact on surrounding residences.

I trust this information is sufficient. Please contact us if you have any further queries.

WILKINSON MURRAY PTY LIMITED

Brian Clarke
Senior Associate

Reference: Anvill Hill Project – Noise and Vibration Assessment – Wilkinson Murray Report Number 03222 Version E dated August 2006

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