NSW GOVERNMENT | Planning & Environment

Mr Garry West
Planning Assessment Commission
GPO Box 3415
Sydney NSW 2001

Dear Mr West

Bengalla Continuation Project (SSD 5170)

During its assessment of the Bengalla Continuation Project, the Department identified a number of matters that warranted further consideration.

On 25 November 2014, the Department wrote to the Bengalla Mining Company (BMC) requesting:

- sufficient information on the predictions for project-alone 24-hour particulate matter (PM_{10}) concentrations for vacant land to allow the Department to determine the properties that may be entitled to acquisition in accordance with the NSW Government's *Voluntary Land Acquisition and Mitigation Policy*; and
- reasonable and feasible options for minimising the size of the final void, including details about the economic, operational and environmental cost and benefits of the options considered.

BMC provided a response to the Department's request on 9 December 2014. On 19 December 2014, the *Voluntary Land Acquisition and Mitigation Policy* was published in the NSW Government Gazette. On 20 January 2015, BMC provided additional information to address the final gazetted policy.

The Department has considered BMC's responses and the outcomes of its assessment of these matters are provided in the attached addendum report.

It would be appreciated if you would arrange for this information to be considered during the Planning Assessment Commission's review of the project.

If you have any further queries about this matter, please contact Mr Kane Winwood on 9228 6298.

Yours sincerely

Michael J 23.1.15

Mike Young
Manager
Mining Projects

ADDENDUM TO THE ASSESSMENT REPORT
BENGALLA CONTINUATION PROJECT

1. Air Quality

Introduction

The Department's assessment of the Bengalla Continuation Project (November 2014) identified potential exceedances of the 24-hour PM_{10} air quality criterion at 16 receivers around the mine, and an additional 7 receivers where the project would contribute to dust emissions greater than the annual average PM_{10} criteria (i.e. 23 in total).

When it prepared the assessment report, the Department was unable to determine whether these properties should be granted voluntary acquisition or mitigation rights under the *Voluntary Land Acquisition and Mitigation Policy*, and sought additional information from BMC to help clarify the likely impacts of the project on this land.

BMC engaged Todoroski Air Sciences to revise its modelling of predicted 'project-alone' 24-hour PM_{10} impacts at key receivers around the mine, including consideration of vacant land. This assessment includes consideration of the predicted impacts with and without a real-time reactive dust mitigation strategy for the mine (see Appendix A).

A further assessment was undertaken by Todoroski Air Sciences to assess the number of predicted exceedances of the 24-hour PM_{10} criteria at two vacant lots (Receivers 215 and 216) (see Appendix B).

For reference, the applicable air quality criteria under the *Voluntary Land Acquisition and Mitigation Policy* are reproduced below.

Table 1: *Particulate Matter Mitigation Criteria – Voluntary Land Acquisition and Mitigation Policy*

POLLUTANT	AVERAGING PERIOD	MITIGATION CRITERION		IMPACT TYPE
PM_{10}	Annual	30 µg/m^3*		Human health
PM_{10}	24 hour	50 µg/m^3**		Human health
Total suspended particulates (TSP)	Annual	90 µg/m^3*		Amenity
Deposited dust	Annual	2 g/m^2/month**	4 g/m^2/month*	Amenity

* Cumulative impact (i.e. increase in concentrations due to the development plus background concentrations due to all other sources).

** Incremental impact (i.e. increase in concentrations due to the development alone), with zero allowable exceedances of the criteria over the life of the development.

Table 2: *Particulate Matter Acquisition Criteria – Voluntary Land Acquisition and Mitigation Policy*

POLLUTANT	AVERAGING PERIOD	ACQUISITION CRITERION		IMPACT TYPE
PM_{10}	Annual	30 µg/m^3*		Human health
PM_{10}	24 hour	50 µg/m^3**		Human health
Total suspended particulates (TSP)	Annual	90 µg/m^3*		Amenity
Deposited dust	Annual	2 g/m^2/month**	4 g/m^2/month*	Amenity

* Cumulative impact (i.e. increase in concentrations due to the development plus background concentrations due to all other sources).

** Incremental impact (i.e. increase in concentrations due to the development alone), with up to 5 allowable exceedances of the criteria over the life of the development.

Incremental 24-Hour PM_{10} Impacts (Project-Alone)

With the reactive dust management measures in place, the revised modelling predicts that the project-alone 24-hour PM_{10} concentrations would exceed the criteria at 9 residences, of which all but one (Property 167) is already entitled to acquisition under either the Mt Pleasant or Mt Arthur development consents (see Table 3 and Figure 1).

Table 3: *Combined Predicted Exceedances of PM_{10} (24 hr) (50µg/m^3) Project Alone at Receivers*

ID	Prediction (days) Year 1	Prediction (days) Year 4	Prediction (days) Year 8	Prediction (days) Year 15	Prediction (days) Year 24	Project cumulative AQ ZOA	Project Noise ZOA
114	-	-	-	-	58 (1)	-	Y
118	-	-	-	62 (4)	67 (8)	Y	Y
119	-	-	-	-	51 (3)	Y	Y
155	-	-	-	-	59 (6)		Y
166	-	-	2 (1)	52 (1)	92 (44)	Y	-
167	-	-	-	-	54 (4)	-	-
168	-	56 (13)	90 (46)	83 (55)	211 (166)	Y	Y
169	-	-	-	52 (1)	88 (57)	Y	-
171	-	-	60 (10)	54 (3)	109 (83)	Y	-

The revised modelling also predicts that the 24-hour PM_{10} criteria would be exceeded as a result of the project over 25% of 4 parcels of land comprising contiguous lots of land under single ownership (see Table 4 and Figure 1).

Table 4: *Revised Modelling Predicted PM_{10} (24 hr) over 25% of Contiguous land in a single ownership*

ID	Name	Exceed Criterion (days) (50 µg/m3)
29	Jabetin Pty Limited	Year 4 (1) & Year 8 (1)
225-233	GC Sparre	Year 24 (1)
159-165, 186-187, 190-191	RB & SA Parkinson	Year 24 (1)
215 & 216	JH & CM Almond	Year 24 (1)

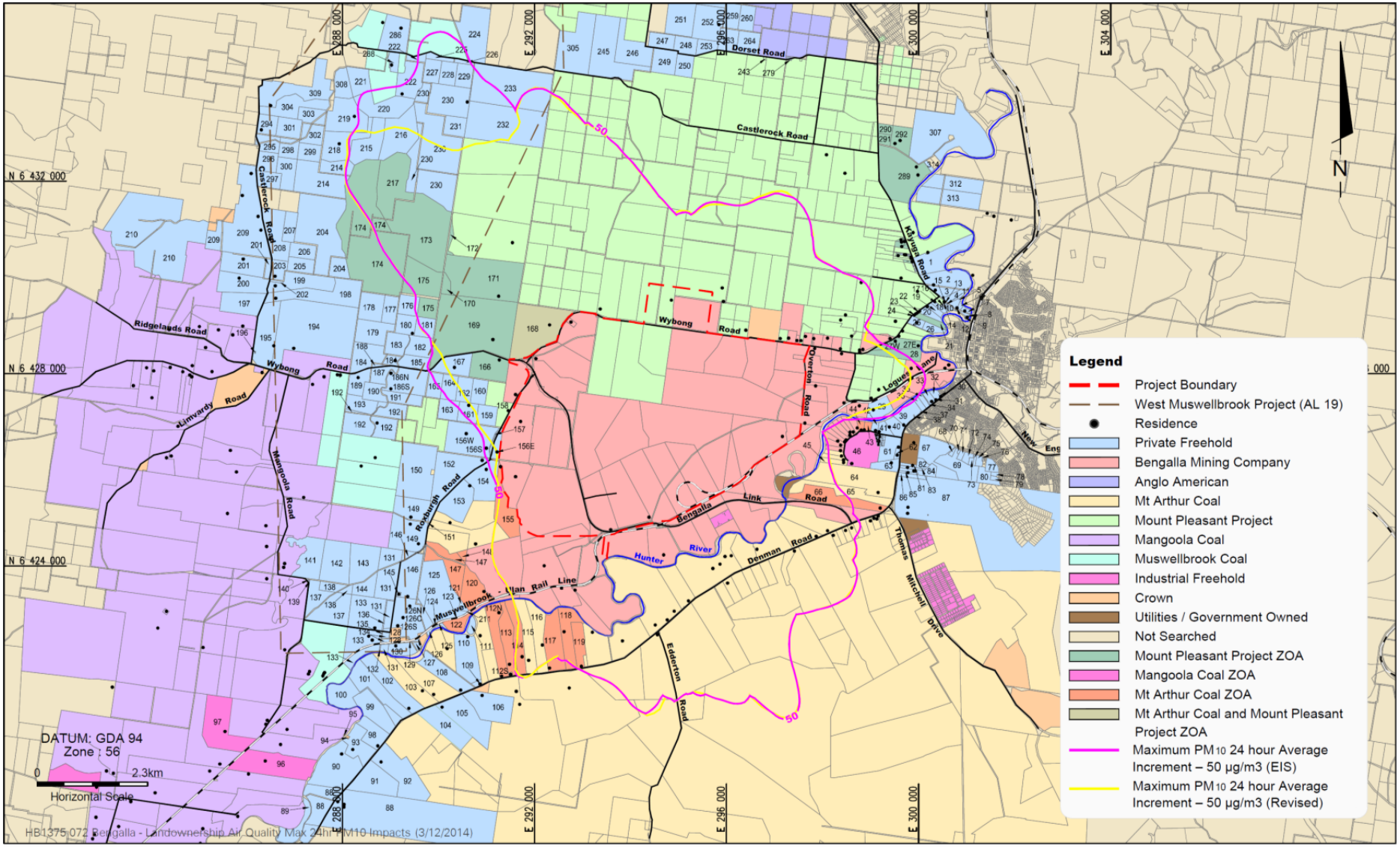


Figure 1: *Maximum 24-hour PM_{10} Impacts*

The *Voluntary Land Acquisition and Mitigation Policy* allows up to 5 exceedances of the project-alone short term 24-hour PM_{10} in regard to acquisition, but zero exceedances in regard to additional mitigation measures.

The Department has applied the policy to the revised modelling results for all air quality criteria. This has resulted in no additional properties in the air quality acquisition zone for the project apart from those that already have acquisition rights under either the Mt Arthur or Mt Pleasant approvals (see Table 5).

Table 5: *Land subject to acquisition upon request – Air Quality*

Receiver No	***Mine Acquisition Zone***
117, 118, 119, 155	Mt Arthur
166, 168, 169, 171	Mt Pleasant

In regard to mitigation, all properties with acquisition rights would also be entitled to additional air quality mitigation measures at the residence. In addition, under the *Voluntary Land Acquisition and Mitigation Policy*, properties 167 and 114 would also be entitled to additional air quality mitigation measures as these properties are predicted to exceed the short term 24-hour PM_{10} criteria on up to 4 days and 1 day respectively, over the life of the project.

As described in its Assessment Report, the Department recommends that BMC should only be liable for acquisition and/or mitigation where these rights are no longer available under the Mt Arthur and Mt Pleasant development consents.

Annual Average PM_{10} Impacts

The Department has also reviewed the cumulative air quality assessment commissioned by the Department for the Mangoola, Mt Arthur and Bengalla mines by Todoroski Air Sciences (January 2014). This assessment predicts annual impact criteria for PM_{10} (i.e. 30 µg/m^3) would be exceeded at 5 receivers (118, 119, 168, 292E and 292W).

The Bengalla project is predicted to contribute significantly to the air quality impacts at Receiver 168 (up to 29 µg/m^3), with a minor contribution at Receivers 118 (up to 7 µg/m^3) and 119 (up to 6 µg/m^3) and negligible contribution at the two residences on Receiver 292 (up to 1 µg/m^3).

However, the cumulative assessment indicates that properties 106 and 110 are not expected to experience exceedances of the cumulative annual average criteria. Consequently, the Department has removed reference to these properties in the acquisition zone in its recommended conditions (although both properties would retain additional noise mitigation rights).

Table 6 provides a summary of the predicted exceedances of the applicable air quality criteria based on the recently revised modelling of project-alone impacts, and the Department's regional cumulative assessment prepared in January 2014.

Table 6: *Revised Air Quality Exceedances*

Location	NO_2	PM_{10}		TSP	DD
	1 hour max	**24-hour Average (Increment)**	**Annual Average**	**Annual Average**	**Annual Average**
	246 µg/m^3	**50 µg/m^3**	**30 µg/m^3**	**90 µg/m^3**	**4 g/m^2/mth**
	Year (Impact)	**Year (# of days above criteria)**	**Year of Impact (Contribution/Impact)**		
114	-	Year 24 (1)	-	-	-
117	-	-	-	Year 24 (94)	
118	-	Year 15 (4) Year 24 (8)	Year 8 (5/32) Year 15 (7/36)	Year 24 (92)	-
119	-	Year 24 (3)	Year 15 (6/33)	Year 24 (92)	-
155	-	Year 24 (6)	-	-	-
166	-	Year 8 (1) Year 15 (1) Year 24 (44)	-	-	-
167	-	Year 24 (4)	-	-	-
168	Year 24 (277)	Year 4 (13) Year 8 (46) Year 15 (55) Year 24 (166)	Year 4 (17/32) Year 8 (20/43) Year 15 (29/42)	Year 24 (147)	Year 24 (5.5)
169	-	Year 15 (1) Year 24 (57)	-	-	-
171	-	Year 8 (10) Year 15 (3) Year 24 (83)	-	-	-
292	-	-	Year 24 (1/39)	-	-

Notes to Table:

1. *Receivers currently subject to acquisition rights under the Mt Arthur project approval are shaded blue.*
2. *Receivers currently subject to acquisition rights under the Mt Pleasant development consent are shaded green.*
3. *Receiver 168 is currently subject to acquisition under both Mt Arthur and Mt Pleasant planning approvals.*
4. *Receivers subject to acquisition upon request for noise impacts due to the Bengalla Continuation Project are shown **bold**.*

Noise

During BMC's review of the air quality impacts on surrounding receivers, it identified that a newly constructed residence on Property 167, and that the EIS had not assessed the potential noise impacts of the project at this residence.

The assessment of noise impacts at this receiver are based on the modelling in the EIS. This modelling indicates that noise levels are likely to exceed the project specific noise level by more than 3 dB (i.e. 38.3 dBA) during the day and evening periods, but would comply with the noise criteria at night.

The *Voluntary Land Acquisition and Mitigation Policy* provides that where the project specific noise levels are predicted to be exceeded by between 3 and 5 dBA and the development would contribute more than 1 dB to the total industrial noise level then the impacts are considered to be 'moderate' and the receiver should be entitled to a range of additional noise mitigation treatments.

Accordingly, the Department has recommended that Property 167 be afforded the right to request both additional noise and air quality mitigation at the residence to minimise the amenity impacts of the project. The Department has also recommended conditions requiring BMC to comply with applicable noise limits at this receiver.

Final Void

BMC examined a number of options for the final landform and final void at the mine in the EIS for the project (see Appendix A):

- Option 1 – 'Blast and Doze' the void to provide a stable final landform (i.e. the project);
- Option 2 – Backfill the void to the original surface level; and
- Option 3 – Backfill to re-establish natural drainage.

After considering the economic costs and environmental constraints of each option, the EIS concluded that option 1 is the only viable option.

Following the Department's request for further information to support this position, BMC also considered a fourth option, to reduce the amount mined in the last six strips to raise the floor of the final void.

For each of the 4 options, BMC compared the amount of additional material to be transported to complete the design landform, and the relative cost. A summary of this analysis is provided in Table 7.

Table 7: *Final void options analyis*

Final Void Option	Waste Volume (Mlcm)	Total Waste Cost ($M)
Option 1 – Blast & Doze	27	44
Option 2 – Backfill to Original Surface	339	1,017
Option 3 – Minimum Backfill	292	876
Option 4 – Raise Pit Floor	122	488

Mlcm = Million loose cubic metres

BMC's analysis indicates that the key issue for the three alternatives to the preferred option is the significant additional volume of earth that would need to be moved and shaped to achieve the final landforms, and the associated economic cost. Option 4 is also estimated to reduce the amount of coal that could be extracted by approximately 25 million tonnes. The Department also notes that the movement of significant amounts of additional material would have associated noise and air quality impacts.

Based on this further analysis, the Department accepts BMC's conclusion that the option proposed in the EIS (i.e. to retain a stabilised final void) remains the most economically and operationally viable option for the project.

However, the Department notes that it has recommended a range of conditions to manage the rehabilitation of the mine, including:

- specific rehabilitation objectives for incorporating micro-relief into the final landform and minimising the size and depth of the final void to the greatest extent practicable; and
- a detailed rehabilitation management plan that must be prepared in consultation with relevant government agencies and Muswellbrook Shire Council, and which incorporates the detailed measures that would be implemented to ensure compliance with the rehabilitation objectives, including the final landform, final void, and the potential final land uses for the site.

APPENDIX A – ADDITIONAL INFORMATION FROM BMC (9 DECEMBER 2014)

9 December 2014

Manager Mining Projects
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Mike Young

Dear Mike,

BENGALLA CONTINUATION PROJECT (SSD 5170)
ADDITIONAL INFORMATION REQUEST

1 INTRODUCTION

We refer to the Department of Planning & Environment's (DP&E) letter dated 25 November 2014 which requests additional information on two issues in relation to the Bengalla Continuation Project (the Project). That is:

1. *"Sufficient information on the predictions for project-alone 24 hour PM_{10} concentrations for vacant land to allow the Department to determine the properties that may be entitled to acquisition in accordance with the NSW Government's 'Voluntary Land Acquisition and Mitigation Policy'"* undated but available on 18 November 2014 (referred to as the '**Draft Policy**'); and
2. *"Reasonable and feasible options for minimising the size of the final void, including details about the economic, operational and cost and benefits of the options considered*."

DP&E's letter is reproduced in **Appendix A**. A response to each issue is provided below in **Section 2** and **Section 3**.

Suggested amendments to the draft Development Consent conditions (draft conditions) as appended to the 'Secretary's Environmental Assessment Report' (EA Report) dated 12 November 2014 as they relate to this letter are also discussed in **Section 4**.

2 AIR QUALITY – PM10 (24 HR)

2.1 CRITERION

2.1.1 Precedent Criterion

The 'Continuation of Bengalla Mine Environmental Impact Statement' (Bengalla EIS) (Hansen Bailey, 2013) included a comprehensive assessment of air quality impacts including PM_{10} (24 hour) project alone.

The Bengalla EIS applied the following PM_{10} (24 hr) project alone acquisition criterion to the Project, which was consistent with DP&E practices in the Upper Hunter and applies to adjacent Mt Arthur Operations and Mangoola Mine which have each been granted project approval modifications consistent with this existing acquisition 'precedent criterion' during 2014:

- PM_{10} (24 hr) criterion of 50 µg/m^3 applied incrementally (i.e. project alone) at a residence at the 98.6th percentile (i.e. exceeded on greater than 5 occasions in any year).

2.1.2 Draft Policy

Table 1 of the Draft Policy for PM_{10} (24 hr) acquisition criterion includes:

- PM_{10} (24 hr) criterion of 50 µg/m^3 applied incrementally (i.e. project alone) at a residence; and at over 25% of land (where a residence is able to be constructed under a valid planning control).

The Draft Policy was placed on public exhibition for 2 weeks to 2 December 2014. It should be noted that that the Draft Policy could be amended in response to public consultation comments.

However, this Report considers the Draft Policy which was placed on public exhibition.

2.2 EIS RESULTS FOR PROJECT ALONE PM10 (24 HR)

2.2.1 Receivers

Predictions

The dispersion modelling predictions presented in the EIS Appendix G Air Quality and Greenhouse Gas Impact Assessment (AQIA) (Todoroski Air Sciences, 2013) indicated the potential for elevated dust levels to occur at nearby sensitive receptor locations for only a few brief periods during the assessed years.

Predictive / reactive mitigation strategies that would reduce these short term elevated dust levels were proposed in the AQIA and BMC has committed to implementing these strategies. The potential effects of the proposed strategies in reducing the predicted dust levels were not explicitly assessed in the AQIA EIS modelling which is consistent with contemporary practice.

Table 31 of the Bengalla EIS (Hansen Bailey, 2013) lists (amongst other air quality predictions) all properties which are predicted to exceed PM_{10} 24 hour 'project alone' 50 µg/m^3 and also indicates the number of days anticipated to be exceeded under that particular modelled scenario.

Table 1 applies the Draft Policy criterion. It indicates privately-owned receivers (i.e. residences) where the criterion is predicted to be exceeded over 1 day per year (for each of the five scenarios modelled) and includes results from the EIS AQIA (Todoroski Air Sciences, 2013). Blank cells indicate no exceedance is predicted.

An asterisk (*) denotes a property which currently has acquisition rights upon request from another mining company (i.e. other mining operations have predicted exceedances of criterion from that project). Receivers which BMC has previously indicated are predicted to exceed noise and cumulative air quality criteria in the EIS modelling are also indicated in the last 2 columns – ZOA (Zone of Affectation properties).

Table 1
EIS Predicted Exceedances of PM_{10} (24 hr) (50µg/m^3) Project Alone at Receivers

ID	Name	Prediction (days) Year 1	Prediction (days) Year 4	Prediction (days) Year 8	Prediction (days) Year 15	Prediction (days) Year 24	Project cumulative AQ ZOA	Project Noise ZOA
29	Jabetin Pty Ltd		53 (1)	57 (1 d)				
114*	JM Wild					58 (1 d)		Y
118*	E & WJ Rankin				62 (4)	67 (8)	Y	Y
119*	E & WJ Rankin					51 (3)	Y	Y
155*	PG & CM Lane					59 (6)		Y
156S	NJ & RH Ellis					60 (9)		Y
156E	NJ & RY Ellis					52 (2)		Y
161	RB & SA Parkinson					63 (2)		
166*	BA & TE Strachan			52 (1)	52 (1)	92 (44)	Y	
168*	JB Moore		56 (13)	90 (46)	83 (55)	211 (166)	Y	Y
169*	JB Moore				52 (1)	88 (57)	Y	
171*	BL & ML Bates			60 (10)	54 (3)	109 (83)	Y	
222	JD Vandenberg					55 (1)		
230	GC Sparre					80 (3)		
286	IJ & CM Richards					55 (1)		

Discussion

When private properties with rights to acquisition by another mining company (Receivers 114, 118, 119, 155, 166, 168, 169 and 171) or with predictions of exceedance of noise or cumulative air quality acquisition criteria (Receiver 156S, 156E) are excluded, **five** additional privately-owned residences are predicted to exceed the PM_{10} (24 hr) 50 µg/m^3 criterion of the Revised Policy (coloured grey).

As shown in **Table 1**, four of these (Receivers 161, 222, 230 and 286) are predicted to exceed PM_{10} (24 hr) 50 µg/m^3 in one modelled scenario only (Year 24):

- Receivers 222 and 286 are predicted to exceed the criterion by 5 µg/m^3 on 1 day;
- Receiver 161 is predicted to exceed the criterion by 13 µg/m^3 on 2 days; and
- Property 230 is predicted to exceed the criterion by 30 µg/m^3 on 1 day.

The fifth, Receiver 29 is predicted to experience exceedances between Years 4 and 8 on only one day per year and within 3-7 µg/m^3 of the criterion.

2.2.2 Land

No predictions for the assessment of PM_{10} (24 hr) 50 µg/m^3 over 25% of land were presented in the Bengalla EIS (Hansen Bailey, 2013) as it was not consistent with precedent criterion.

Table 2 provides a summary of where the PM_{10} (24 hr) 50 µg/m^3 project alone contour from the conservative Bengalla EIS modelling (i.e. combined all modelling scenarios for 24 years of operations without the proposed predictive and real-time system controls incorporated) is predicted to exceed the criterion on greater than 1 day over 25% of any contiguous land in a single ownership (excluding private properties in another mining company's ZOA or the Project ZOA listed in **Table 1**). This has been extrapolated from Figure 31 of the EIS.

Table 2
EIS Predicted Exceedances of PM_{10} (24 hr) (50 µg/m^3) Project Alone over 25% of a Contiguous land ownership

ID	Name	Comment **
215 & 216*	JH & CM Almond	No residence on either block.
220*	AJ & LL Martin	No residence on block 220.

** Located in West Muswellbrook AL19.*

*** Excludes residences in **Table 1**.*

In its EIS, BMC has committed to enhancing the existing real time environmental monitoring system for air quality and noise and the implementation of a best practice predictive and real-time system. Consistent with the existing operation, this will enable BMC, through the implementation of best practice, to avoid exceedances of PM_{10} 50 µg/m^3 (24 hr) incremental criterion by utilising the system's predictive capabilities to plan forward and/or modify operations under particular meteorological conditions where a potential to impact private receivers above the criterion is predicted.

2.3 REVISED RESULTS FOR PROJECT ALONE PM10 (24 HR)

A revised Air Quality Assessment been undertaken by Todoroski Air Sciences to model the predicted air quality impacts for PM_{10} (24 hr) inclusive of the use of the revised predictive and reactive real time air quality management system (see **Appendix B**). All other dust mitigation measures included in the model remain consistent with that included in the AQIA.

2.3.1 Receivers

An analysis of the AQIA meteorological conditions utilised for the predictions for PM_{10} (24 hr) found that potentially elevated dust levels occurred infrequently for a few hours at a time under poor air dispersion conditions when the wind was blowing from Bengalla towards sensitive receivers in the north west (for further discussion see **Appendix B**).

A comparison of the predicted 24-hour average PM_{10} levels with and without the implementation of a reactive dust mitigation strategy was completed for Year 4, 8 and 24 respectively at residences (see **Table 3**). **Bold** values denote a predicted exceedance of the criterion.

Results demonstrate that with the use of the predictive/ reactive mitigation strategy, air quality impacts would not exceed the 24-hour average PM_{10} criterion of 50 µg/m³ at any receiver (residence) location (except the new receiver 167 which is predicted to exceed the criterion in Year 24 only).

Table 3
Revised Modelling Predicted PM_{10} (24 hr) at Selected Sensitive Receivers (µg/m³)

Receptor ID	Year 4		Year 8		Year 24	
	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
29	**53**	34	**57**	38	-	-
156S	-	-	-	-	**60**	48
156E	-	-	-	-	**52**	40
161	-	-	-	-	**63**	47
167*	-	-	-	-	**56**	**54**
222	-	-	-	-	**55**	35
230	-	-	-	-	**80**	39
286	-	-	-	-	**55**	27

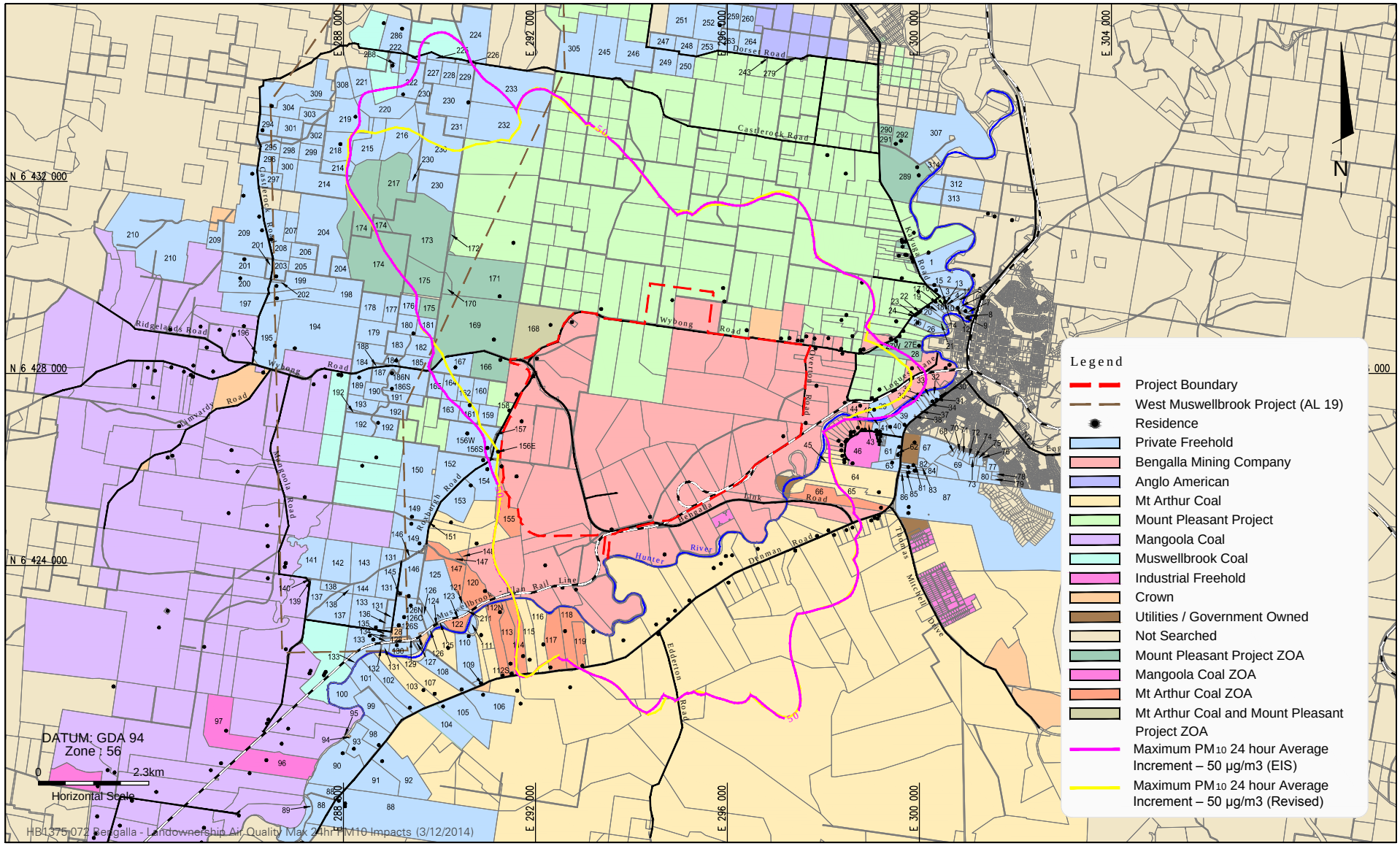
** Receiver 167 has a residence (constructed during the EIS process).*

2.3.2 Land

Table 4 provides a summary of where the revised modelling indicates the PM_{10} (24 hr) 50 µg/m³ project alone contour indicates an exceedance of the criterion on greater than 1 day over 25% of contiguous land in a single land ownership (excluding private properties in another mining company's ZOA or the Project ZOA). The revised contour and EIS Figure 31 PM_{10} (24 hr) 50 µg/m³ contour is shown on **Figure 1**.

Table 4
Revised Modelling Predicted PM_{10} (24 hr) over 25% of Contiguous land in a single landownership

ID	Name	Exceed Criterion (50 µg/m³)	Notes
29	Jabetin Pty Limited	Year 4 & Year 8	Not impacted above criterion at residence.
225-233	GC Sparre	Year 24	Residence on block 230 not impacted.
159-165, 186-187, 190-191	RB & SA Parkinson	Year 24	Residence on block 161 not impacted.
215 & 216	JH & CM Almond	Year 24	No residence on land.



BENGALLA MINE

Maximum 24hr PM_{10} Impacts

BENGALLA

Hansen Bailey
ENVIRONMENTAL CONSULTANTS

2.3.3 Conclusion

The Bengalla EIS anticipated that during operation potential short-term dust impacts would be unlikely, however any potential short term effects would be effectively managed through the proposed predictive/reactive dust mitigation system. The proposed predictive/ reactive dust mitigation system will utilise a combination of predictive dust forecasting tools with real-time ambient dust monitoring to identify in advance when elevated short term impacts are likely to occur and thus allow BMC to take actions to reduce dust levels at these times. The actions applied may include the relocation of mobile equipment or temporary cessation of mining activities during periods of potential impact.

Real-time dust monitors with an appropriate trigger alarm feature will be commissioned to inform operations when actions to reduce dust may be needed.

Residences

Table 5 shows the combined Residences predicted to receive impacts above the criterion combined from **Table 1** & **Table 3**.

The revised modelling indicates that BMC will be able to manage mining operations and potential impacts on a daily basis to ensure it meets the Draft Policy's PM_{10} (24 hr) 50 µg/m^3 project alone criterion at all residences (with the exception in Year 24 at Receptor 167).

Table 5
Combined Predicted Exceedances of PM_{10} (24 hr) (50µg/m^3)
Project Alone at Receivers

ID	Name	Prediction (days) Year 1	Prediction (days) Year 4	Prediction (days) Year 8	Prediction (days) Year 15	Prediction (days) Year 24	Project cumulative AQ ZOA	Project Noise ZOA
114*	JM Wild					58 (1 d)		Y
118*	E & WJ Rankin				62 (4)	67 (8)	Y	Y
119*	E & WJ Rankin					51 (3)	Y	Y
155*	PG & CM Lane					59 (6)		Y
156S	NJ & RH Ellis					60 (9)		Y
156E	NJ & RY Ellis					52 (2)		Y
166*	BA & TE Strachan			52 (1)	52 (1)	92 (44)	Y	
168*	JB Moore		56 (13)	90 (46)	83 (55)	211 (166)	Y	Y
169*	JB Moore				52 (1)	88 (57)	Y	
171*	BL & ML Bates			60 (10)	54 (3)	109 (83)	Y	
167	RJ & SA Lane					54 (x)		

** In another mine's existing ZOA.*
X – not calculated.

Contiguous Land with Residence & Vacant Land

Table 6 indicates the combined contiguous land with residences and vacant land predicted to receive impacts above the criterion combined from **Table 2** & **Table 4**.

Table 6
Combined Predicted Exceedances of PM_{10} (24 hr) (50 µg/m^3) Project Alone over 25% of a Contiguous land ownership

ID	Name	Impacted Year	Comment **
29	Jabetin Pty Limited	Year 4 & Year 8	Not impacted above criterion at residence.
117	E Rankin	Not Modelled	Not modelled under 'mitigation'. Already in BMC AQ ZOA for TSP. In Mt Arthur Coal ZOA also.
225-233	GC Sparre	Year 24	Residence on block 230 not impacted.
159-165, 186-187, 190-191	RB & SA Parkinson	Year 24	Residence on block 161 not impacted.
215 & 216	JH & CM Almond	Year 24	No residence on land.

** Located in West Muswellbrook AL19.*
*** Excludes residences in **Table 1**.*

Contiguous Land with Residence

The revised modelling shows that at Properties Sparre (225-233) and Parkinson (159-165, 186-187 & 190-191) although not predicted to exceed at the existing residence, are predicted to exceed greater than 25% of the contiguous land in at least 1 day in Year 24.

Jabetin (29) although not predicted to exceed at the existing residence, are predicted to exceed greater than 25% of the contiguous land in at least 1 day in Year 4 & 8.

Vacant Land

The revised modelling indicates that should the owners of vacant lots 215 & 216 construct a dwelling on the property in the future (in accordance with a valid planning control), dependant on the location, BMC has a potential to exceed 50 µg/m^3 project alone criterion in Year 24.

2.3.4 Air Modelling Commentary

The revised modelling demonstrates that exceedances of incremental 24-hour PM_{10} 50 µg/m³ are sensitive for a matter of hours in a day (and in most cases not predicted until Year 24). BMC will be able to modify its operations as required, through the implementation of the predictive real time monitoring and alarming system. In addition, the Draft Consent provides for the revision of the Bengalla Mine Air Quality Management Plan which will include the detail of the development and implementation of the predictive system and upgraded air quality monitoring program which adequately supports proactive and reactive approach to air quality management.

The Draft Policy requires modelling of PM_{10} (24 hr) project alone against the criterion of 50 PM_{10} µg/m³. This revised modelling demonstrates the application of management and mitigation strategies employed by the operation in relation to PM_{10} 24 hr impacts which was not undertaken for the EIS. The nature of this modelling is inherently complex and sensitive and is developing. BMC is continuing to refine the modelling approaches to this criterion and anticipate that with this refinement, predictions for properties in **Table 5** and **Table 6** may be subject to change.

3 FINAL VOID JUSTIFICATION

3.1 OVERVIEW

The Bengalla EIS (Hansen Bailey, 2013) presents the following position with regard to the Project conceptual final landform:

> '*an additional coal resource is known to occur west of the Disturbance Boundary however is not proposed to be extracted as part of the Project. It is anticipated that subject to market factors and resource confirmation, BMC will seek the relevant approval for the extraction of these additional resources in the future. However, should a future approval not be sought or approval not be granted, a single final void has been developed for the Project following the completion of mining in Year 24.'*

The single final void described above was presented and assessed in the Bengalla EIS (Hansen Bailey, 2013) as a component of the Conceptual Final Landform (EIS Figure 68) and reproduced on **Figure 2**.

A detailed justification and discussion as to how the final void was derived was also included in the Bengalla EIS (Hansen Bailey, 2013) and subsequent *Continuation of Bengalla Mine Response to Submissions* (RTS) (Hansen Bailey, 2014). This justification included discussion in relation to alternative options also considered prior to the finalisation of the Project mine plan.

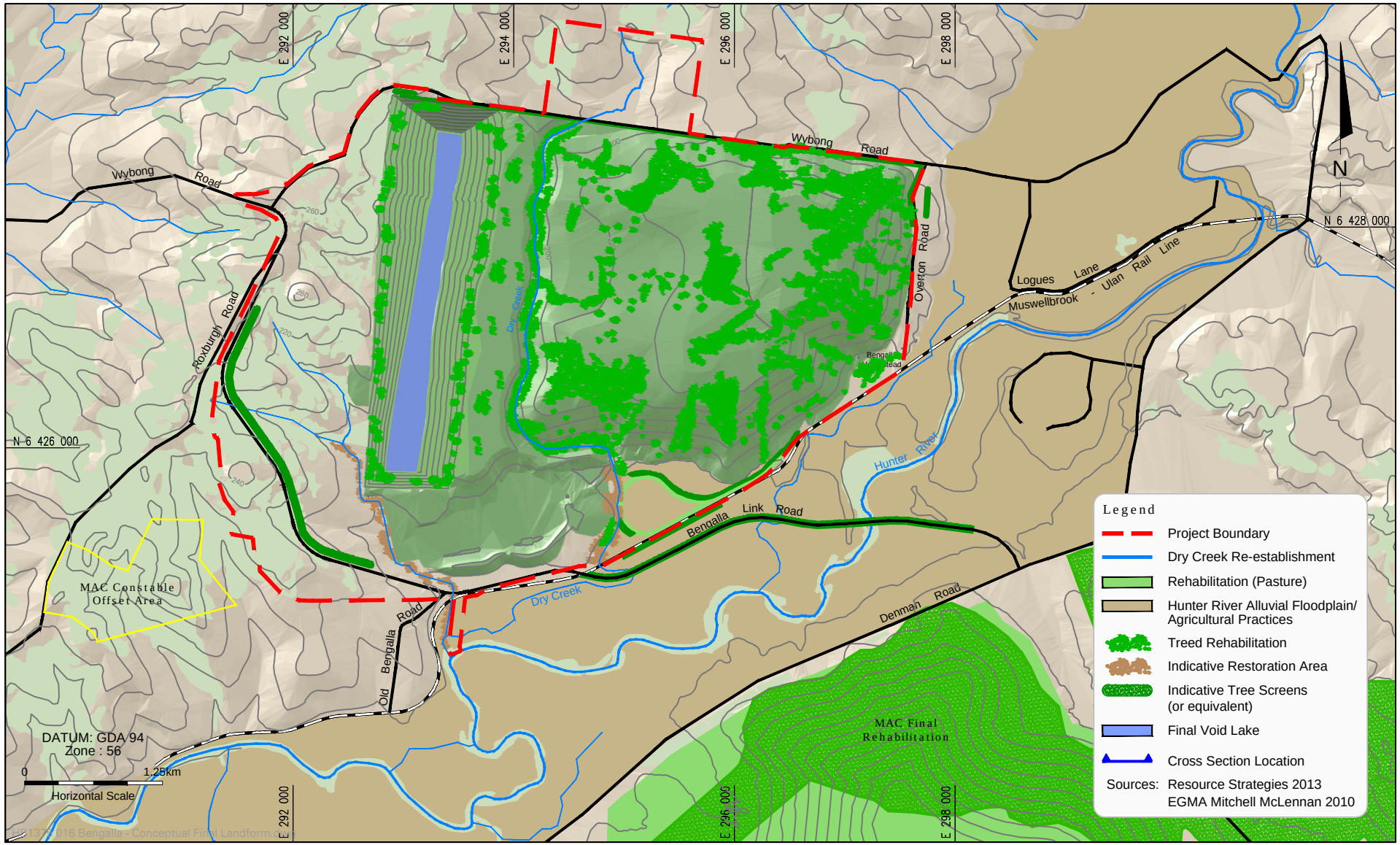
A summary of the potential alternatives considered as part of a detailed Palaris Final Void Rehabilitation Report (Palaris, 2012) is provided. An additional alternative final void option was also considered (which has not previously been presented in the EIS). This is now discussed with further information on other options in order to clearly demonstrate that the proposed final void is the most reasonable and feasible final void option for the Project.

3.2 ALTERNATIVES CONSIDERED

A number of options for final void development and rehabilitation were considered during the development of the Project mine plan. An assessment of each option considered the economic costs and environmental constraints associated with each, including overburden volumes, overburden rehandle requirements and the potential coal resource sterilisation.

The options considered the following alternatives for the development of a final void (this first three of which are presented in the EIS):

1. Option 1 – 'Blast and Doze' to a stable final landform (the Project);
2. Option 2 – Backfill the void to the original surface level;
3. Option 3 – Backfill to re-establish natural drainage; and
4. Option 4 – Raise the pit floor in last six strips.



BENGALLA MINE

Revised Conceptual Final Landform

3.2.1 Option 1 – Blast & Doze to Stable Landform (Preferred Option)

Option 1 considered utilising the 'Blast and Doze' method in combination with backfilling to shape the final void. Approximately 4 million loose cubic metres (Mlcm) of waste will be required to backfill the upper surfaces of the final highwall as in some areas the upper bench is above the level required for a consistent slope. A total of 9 Million bank cubic metres (Mbcm) of waste in the highwall and endwalls will be required to be drilled and blasted to achieve a consistent angle. Approximately 14 Mlcm of waste will be required to be dozed in the highwall, endwall and low walls to ensure a consistent slope angle within the final void.

The base of the dozed final void would be approximately 20 m above the base of the original void with depths ranging from RL 180 m to 240 m. An estimated cost to complete this option has been calculated using an excavator and trucks for rehandle of the upper benches, drill and blast to achieve the slopes below the final highwall and endwall and dozers for total reshaping. This option using the 'Blast and Doze' method was nominated for the development of the final void in consideration of economic cost and environmental constraints associated with each, including overburden volumes, overburden rehandle requirements and the potential coal resource sterilisation. This option is reflected in the conceptual final landform shown on **Figure 3**.

Section 8.21.7 of the EIS Option 1 is the preferred option for the Project should no further approvals to continue mining be sought or granted beyond Year 24. The final void will be stabilised in the following manner (following consultation with relevant regulators):

- The low wall will be battered back from the angle of repose to ensure the long term geotechnical stability of the face, with the determination of geotechnical stability and recommendations as to the final slope undertaken by a qualified geotechnical engineer;
- The final void will have the majority of the highwall blasted back to improve the safety and stability to an angle of repose of between 23 and 25 degrees;
- The endwalls proposed for the final void will be blasted back to improve the safety and stability to an angle of repose of approximately 33 degrees;
- Surface water drainage on and over the low wall will be minimised through the construction of drainage control structures which diverts the catchment where possible away from the final void and back into the surface water drainage system; and
- Erosion of the low wall will be controlled by limiting the length of slope through the use of contour drains and by the establishment of suitable vegetation.

The above features are highlighted in **Figure 3** which also shows the final dozed profile of the final void. The base of the dozed final void is approximately 20 m above the base of the original Year 24 Mine Plan with depths ranging from 180 m to 240 m.

A cost of $44 Million (M) (all costs in this response are at 2012 $AU) has been estimated to complete this option using an excavator and trucks for rehandle of the upper benches, drill and blast to achieve the slopes below the final highwall and endwall and dozers for total reshaping.

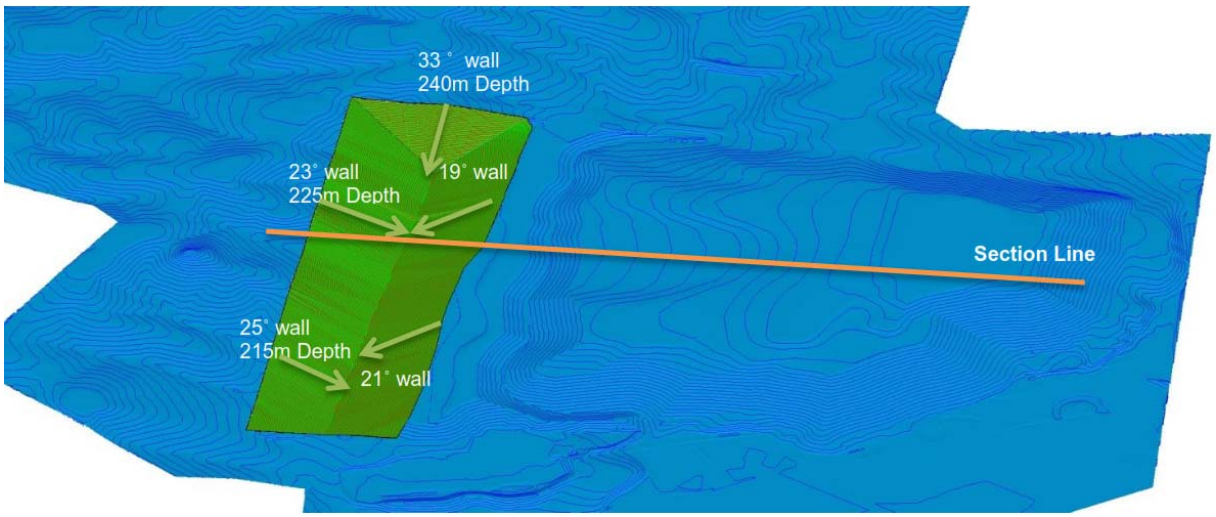


Figure 3
Project Final Void (Option 1)

3.2.2 Option 2 – Backfill the void to the Original Surface Level

Option 2 analysed backfilling the void to original surface level and is the most unreasonable and costly option considered. This option would require the rehandle of overburden material from the OEA after coal extraction has been completed. The required volume to backfill the void to original surface level has been calculated to be 339 Mlcm. This material would be required to be sourced from the already rehabilitated and shaped OEAs and would require the rehandle of 785 ha of shaped material (see yellow area on **Figure 4**).

This option was rejected as it was deemed not economically feasible. It would also result in the disturbance of future rehabilitation.

An estimated cost of $1,017 M to complete this option has been calculated using an excavator and trucks to move the waste back into the void.

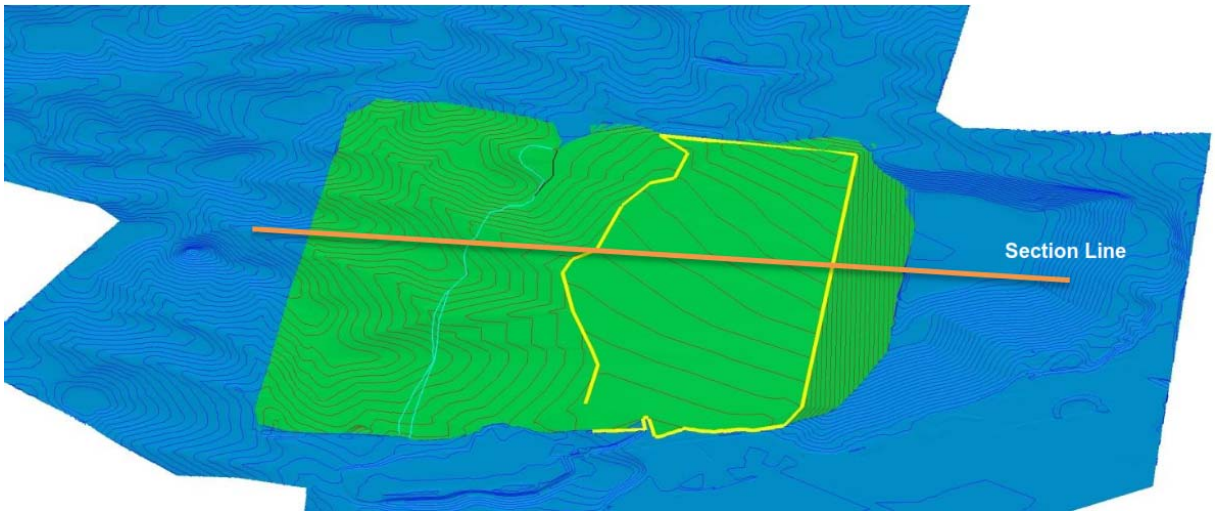


Figure 4
Back Fill to Original Surface (Option 2)

3.2.3 Option 3 - Backfill to re-establish Natural Drainage

Option 3 considered the minimum backfill required to fill the void and maintain drainage so that the final surface does not hold water. This option requires 292 Mlcm of backfill. No dozer push is required for this option as the 10 degree slopes can be formed as part of the dumping operation, rather than pushing down from the highwall (see **Figure 5**).

However, this option was rejected as it was deemed not economically feasible and, as with Option 2, would also result in disturbance of future rehabilitation.

An estimated cost to complete this option has been calculated at $876 M using an excavator and trucks to move the waste back into the void.

Figure 5
Minimum Back Fill (Option 3)

3.2.4 Option 4 - Raise the Pit Floor in Last Six Strips

Another option considered was to adjust the mine plan to raise the pit floor during the last six strips in order to reduce the size of the final void and hence reduce the amount of rehandle required to backfill the final void. This option would reduce the open pit void at the end of mining by 217 Mlcm (to 122 Mlcm). **Figure 6** presents a reduced final void with the pit floor raised to the Vaux seam (VA1C2 ply).

The available waste in the area from the open void to the Dry Creek alignment using the 'free draining' surface as a floor is 28.5 Mlcm. This indicates that the spoil room generated by lifting the floor cannot be effectively utilised, as the bulk of the waste that has been emplaced above the "free draining surface" occurred early in the mine life.

This method to reduce the size of the final void also sterilises coal. Raising the floor to the Vaux seam would sterilise over 4 Mt of ROM coal per strip (total of 24.89 Mt of ROM coal), which had an average excellent strip ratio of 2.3:1 bcm/t.

The cost of moving the overburden material back into the void would be higher, due to the increased haul distances involved and has been calculated at approximately $488 M.

This option would result in the loss of the maximum recovery of a valuable coal resource in an area that has long been set aside for mining by the NSW government on land acquired by BMC for the specific purpose of the continuation of coal mining.

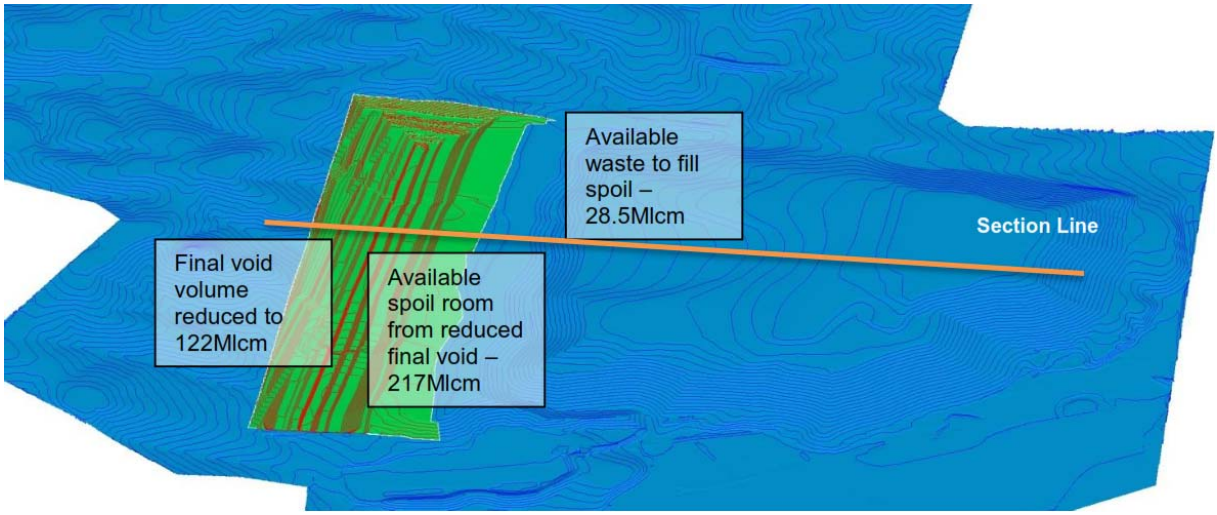


Figure 6
Raise Pit Floor (Option 4)

3.3 FINAL VOID CONCLUSION

An additional coal resource is known to occur generally to the west of the Disturbance Boundary that, subject to market factors and resource confirmation, BMC will seek the relevant approval for the extraction of these additional resources in the future. However, should a future approval not be sought or approval not be granted, a single final void has been developed for the Project following the completion of mining in Year 24 (Option 1).

The detailed final void options analysis undertaken indicated that the Project Conceptual Final Landform (Option 1) will require significant financial contribution (estimated at $44 M) to complete the necessary earthworks.

Table 7 presents a comparison of the costs estimates associated with Option 1 with comparison to each of the alternative final void options discussed in this letter.

Table 7 identifies that the alternative options considered for the final void would result in a significant increase in the cost of completion of the works. Not only would there be significant additional financial costs associated with these alternative options, the following implications would also be realised:

- Options 2 - 4 would result in the backfilling of the void either entirely or partially which would impede any future approvals (should it be sought);
- Options 2 - 4 would result in significant rehandle of emplaced overburden and disturbance of established rehabilitation when compared to Option 1. Associated with additional rehandle of overburden would be additional environmental implications and costs primarily associated with amenity impacts; and
- Option 4 would result in the reduction in the scheduled Project ROM coal extraction levels by approximately 25 Mt.

With consideration of economic cost and environmental constraints associated with each, including overburden volumes, overburden rehandle requirements and the potential coal resource sterilisation, Option 1 associated with the developed of a single stable final void provides the best overall outcome for the environment and community.

As committed to in the Bengalla EIS and RTS, should a future approval not be sought and/or granted, BMC will develop in consultation with relevant regulators, a Rehabilitation Management Plan within 7 years of mine closure. When complete, the Rehabilitation Management Plan will detail specific management actions associated with the development of the Option 1 final landform.

Table 7
Final Void Options – Cost Comparison

Final Void Option	Waste Volume (Mlcm)	Total Waste Cost ($M)
Blast & Doze (Option 1)	27	44
Backfill to Original Surface (Option 2)	339	1,017
Minimum Backfill (Option 3)	292	876
Raise Pit Floor (Option 4)	122	488

** All costs in this response are at 2012 $AU)*

4 DEVELOPMENT CONSENT AMENDMENTS

This section of the response details suggested amendments to the draft development consent relevant to air quality for DP&E's consideration.

4.1 SCHEDULE 3 TABLES 1 – 3

Table 1 of the draft development consent conditions should be amended as follows:

- Since the publication of the EIS and RTS, it is noted that Receptor ID 110S should be positioned south of the location shown in the EIS on Block ID 109. Property (109) (with a residence) would be subject to acquisition (upon request) due to the impacts equivalent to that depicted for 110S in relation to slight exceedances of cumulative PM_{10} 30 µg/m^3 in Year 24 as identified in the EIS.
- Property 164 is currently listed in Table 1 as predicted to exceed relevant noise criteria. The EIS does not predict any exceedances of noise criteria for this receiver. As such, this property should be removed from Table 1.

Tables 1 to 3 of the draft development consent conditions and their notes will be required to be updated

4.2 SCHEDULE 3, CONDITION 17

Table 9 of the draft development consent conditions and its notes will be required to be updated.

4.3 SUMMARY

When the Final Policy is formally issued (following consideration and incorporation of consultation from the public exhibition which closed on 2 December 2014), the modelling in this report may be updated and various draft development consent conditions will require review. Further, as discussed in **Section 2.3.4**, this may also require further refinement of the model.

5 CONCLUSION

We trust this letter adequately responds to DP&E's issues. Should you have any queries in relation to this letter, please do not hesitate to contact us on 02 6575 2000.

Yours faithfully
HANSEN BAILEY

Jason Martin
Senior Environmental Scientist

Dianne Munro
Principal

Appendix A

Letter from DP&E dated
25 November 2014

NSW GOVERNMENT | Planning & Environment

Resource Assessments
Contact: Kane Winwood
Phone: (02) 9228 6298
Fax: (02) 9228 6466
Email: kane.winwood@planning.nsw.gov.au

Mr Craig White
Bengalla Mining Company Pty Limited
Locked Mail Bag 5
MUSWELLBROOK NSW 2333

Dear Mr White

Bengalla Continuation Project (SSD 5170)
Additional Information Request

As you would be aware, the Department of Planning and Environment has completed its preliminary assessment of the merits of the Bengalla Continuation Project, and has forwarded its assessment to the Planning Assessment Commission (PAC) for review.

While the Department has recommended approval of the project, subject to strict conditions, the Department's preliminary assessment has also identified a number of issues that warrant further consideration.

In this regard, it would be appreciated if you would provide the following additional information to the Department as soon as practicable:

- sufficient information on the predictions for project-alone 24-hour PM_{10} concentrations for vacant land to allow the Department to determine the properties that may be entitled to acquisition in accordance with the NSW Government's *Voluntary Land Acquisition and Mitigation Policy* (see attached); and
- reasonable and feasible options for minimising the size of the final void, including details about the economic, operational and environmental cost and benefits of the options considered.

The Department's assessment also identified that the project is predicted to result in significant exceedances of the noise and/or dust criteria at a number of nearby private residences. In accordance with the *Voluntary Land Acquisition and Mitigation Policy*, BMC is encouraged to use its best endeavours to negotiate with these potentially affected landowners to either acquire the land and/or enter into a negotiated agreement with the landowners. This process should commence immediately, and be resolved to the greatest extent practicable, prior to the determination of the development application.

In the meantime, I recommend that you contact the Department to clarify what information should be provided, the likely timing for providing this information, and how this information would be integrated into the assessment process for the project.

I have arranged for Mr Kane Winwood to assist you in this regard.

Yours sincerely

Michael

Mike Young 25.11.14
Manager
Mining Projects

Appendix B

Bengalla Continuation – Dust Mitigation Strategy for Short-term Dust Impacts

TODOROSKI AIR SCIENCES
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5 December 2014

Dianne Munro
Principal
Hansen Bailey
Via email: dmunro@hansenbailey.com.au

RE: Bengalla Continuation – Dust mitigation strategy for short-term dust impacts

Dear Dianne,
Todoroski Air Sciences has quantitatively assessed the effectiveness of the predictive/reactive dust mitigation strategies proposed by the Bengalla Mine to minimise potential short-term dust levels at receptors due to the mine. This letter provides an update to the previous modelling results which did not quantify the dust levels that would arise from the use of predictive/ reactive dust management strategies.

Background
The dispersion modelling predictions presented in the *Air Quality Impact and Greenhouse Gas Assessment Continuation of Bengalla Mine* **(Todoroski Air Sciences, 2013)**, (AQIA) indicated the potential for elevated dust levels to occur at nearby sensitive receptor locations for only a few brief periods during the assessed years. Predictive/ reactive mitigation strategies that would reduce these short term elevated dust levels were proposed in the AQIA, and the mine committed to implementing the strategies. The potential effects of the proposed strategies in reducing the predicted short-term (24-hour) dust levels were not explicitly assessed in the AQIA as the predicted elevated 24-hour average levels at all but two receptors (156s and 161) were in compliance with the then applicable criteria for project approval.

However, in November 2014, the NSW Government changed its policy, making the air quality criteria for mining projects more stringent. Per the current draft of the new revised policy (assuming the version current as at 24 November 2014), (Integrated Mining Policy) there is now potential scope that the predicted elevated levels in the AQIA may exceed the new criteria at a significant number of receptors. This is because the new criteria does not permit any 24-hour average PM_{10} level above 50µg/m^3 due to the mine in isolation.

The new policy also outlines the potential need to acquire vacant land that is partially affected by a mining project. It is noted that the current draft of the new IMP policy sets up a situation that may conflict with other pertinent policy, such as the EPA Approved Methods guidelines.

Thus it is considered prudent to quantify whether the new criteria would be met by the proposed Project when the originally proposed strategies are considered in the modelling results. These strategies have thus been considered at the receptors that the new policy indicated may be affected.

Original Assessment

The AQIA **(Todoroski Air Sciences, 2013)** outlined that at some receptors, elevated short term dust levels due to the mine occurred in the predicted results largely due to a combination of the conservative estimates of dust emissions, the alignment of the fixed positions of the modelled mining activities (the sources were in alignment in a row such that a south east wind would exaggerate the impact affecting receptors to the north west) and the inherent conservative nature of the regulatory model used. All of these factors meant that the predicted results would tend to over-estimate the likely actual emissions which may occur in the real-world.

It was anticipated that during the actual operation of the mine, potential short-term dust impacts would be unlikely, however any potential short term effects would be effectively managed through a predictive/ reactive dust mitigation strategy.

The proposed predictive/ reactive dust mitigation strategy would utilise a combination of predictive dust forecasting tools with real-time ambient dust monitoring to identify in advance when elevated short term impacts are likely to occur and thus allow the mine to take actions reduce dust levels at these times. The actions applied may include the relocation of some equipment or the temporary cessation of mining activities during periods of potential impacts.

Such strategies have been developed by TAS for a number of mines. The strategies have operated at coal mines in the Hunter Valley for several years, and have proven success in mitigating potential short term impacts.

Assessment

The receptor locations with potential to exceed the new short-term PM_{10} criteria were examined to evaluate the effectiveness of the proposed predictive/ reactive dust mitigation strategy for the proposed Project, (see **Figure 1**). These included Receptor 29 to the east of the mine in Year 4 and Year 8 and at Receptors 156S, 156E, 161, 167, 222, 230 and 286 in areas to the west and northwest of the mine in Year 24.

An assessment of vacant land was also conducted per the current draft of the IMP, however given the short time available between the announcement of the new IMP and the scheduled PAC hearing it has not been possible to conduct ta suitable modelling assessment that would correctly present the actual impact reductions that the already proposed mitigation strategy would achieve on vacant land.

The original AQIA air dispersion modelling results, without predictive/ reactive mitigation strategies in place, were initially examined. An analysis of the meteorological conditions found that potentially elevated dust levels occurred infrequently for a few hours at a time under poor air dispersion conditions when the wind was blowing from the mine to the receptors (see **Figure 2**).

It is important to note that it is inappropriate to limit mine operations on the basis of a specified range of wind speed and wind direction values. The reason for this is that wind speed and wind direction are only indicators of air dispersion, and there may only be poor air dispersion (and potentially elevated dust as a result) for a small fraction of the time that the wind is in the specified wind speed and wind direction range, and in any case this would be constantly changing as the position of mining activity moves over time relative to a receptor. Because wind speed and wind direction conditions are generally poor indicators of air dispersion conditions and hence potential air impacts, more reliable predictive air dispersion modelling and reactive real-time monitoring systems have been developed in order to manage potential impacts.

The predicted potential short term effects occurring at Receptor 29 during Year 4 and Year 8 were found to occur on the one modelling day with effects lasting approximately six and seven hours respectively.

For Project Year 24 the predicted effects at the selected sensitive receptors tended to occur between four and 14 hours at a time depending on the location and in total would occur for less than 1% of the time annually. These periods of potentially elevated dust all tended to occur during the early morning and late evening and night periods when air dispersion conditions are poor.

Predictive/ reactive dust mitigation strategies can be used to manage these short-term potential elevated dust levels at receptors. Such systems can predict the expected conditions on any given day and identify where and when over the coming day(s) that potentially elevated levels of dust may occur. This information means that the day's mining activities can be adjusted to minimise potential dust impacts by positioning fleet and restricting activities at certain times and/or within certain locations.

Real-time air quality monitoring systems are also used to implement reactive dust management measures in response to changing operations, air dispersion and other factors that may lead to elevated dust levels. Real-time dust monitoring is used to activate dust mitigation strategies in real-time when pre-set dust trigger levels are recorded. These systems are used in conjunction with a predictive strategy.

The predictive system provides forewarning to the mine of a potential issue, and allows the mine to take pre-emptive actions to prevent dust emissions occurring in the first instance. The reactive system acts as a fail-safe, such that if a real-time response trigger level is exceeded, the Project would be required to relocate or shutdown fleet until monitoring indicates that dust levels have fallen below the real-time response trigger.

To assess the effectiveness of these dust mitigation measures in mitigating the predicted worst case elevated dust levels, air dispersion modelling was conducted identically to that used in the air quality assessment (**Todoroski Air Sciences, 2013**), except that the operation of a predictive/ reactive strategy was applied in the model.

This was coded conservatively in the modelling, generally per a likely reactive strategy, whereby mining activities were temporarily ceased after an elevated one-hour average or rolling 24-hourt average level arose. It is important to note that:

- the modelling and analysis does not "erase" dust already in the air and allows this airborne dust to continue to travel towards receptors well after any mitigation actions are taken;
- the modelling is conservative, in that full operations continue for one hour after an elevated trigger level is reached. This is done to reflect the potential for delays in reacting to a trigger. (Note that a predictive strategy would have mitigation action in place before the elevated level occurs, resulting in even lower levels than those presented in the analysis);
- the modelling does not simply remove high dust values from the predicted results, rather it considers the diurnally varying dust emissions correctly, adjusting only the mine sources that can be controlled by the mine; and
- dust emissions due to wind erosion from the active areas and all activities associated with the CHPP were assumed to continue to operate at all times.

This modelling and analysis serves to demonstrate the proposed reactive dust mitigation measures that include cessation of activities associated with mining operations, whereas in reality Bengalla would investigate and cease and/or relocate specific fleet as pro-actively and/or reactively required to minimise potential adverse dust impacts based on the predicted levels and/or real-time dust measures.

A comparison of the predicted 24-hour average PM_{10} levels with and without the implementation of a reactive dust mitigation strategy is presented in **Figures 3** to **5** for Year 4, 8 and 24 respectively. For each of these figures, the predicted 24-hour average PM_{10} isopleth from the AQIA (without mitigation effects considered in the modelling) is overlaid with the revised isopleth (with consideration of mitigation effects) in order to clearly show the effects of implementing the proposed dust mitigation strategy.

Table 1 presents a summary of the predicted 24-hour average PM_{10} levels with and without consideration of the dust mitigation strategy at the key sensitive receptor locations. The 'without mitigation' values reflect the levels presented in the AQIA. The results show that with the short-term elevated PM_{10} levels can be maintained within the new more stringent criteria with the application of the proposed dust mitigation strategy.

Table 1: Summary of predicted 24-hour PM_{10} levels at selected sensitive receptors (µg/m^3)

Receptor ID	Year 4		Year 8		Year 24	
	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
29	**53**	34	**57**	38	-	-
156S	-	-	-	-	**60**	48
156E	-	-	-	-	**52**	40
161	-	-	-	-	**63**	47
167*					**56**	**54**
222	-	-	-	-	**55**	35
230	-	-	-	-	**80**	39
286	-	-	-	-	**55**	27

* Note that at the time of the AQIA Receptor 161 was a shed, but now appears to be a dwelling. The results at this location are estimated on the basis of the modelled isopleths.

The modelling results demonstrate that with the use of a predictive/ reactive mitigation strategy the dust levels would not exceed the 24-hour average PM_{10} criteria of 50µg/m^3 at any of the key receptor locations with potential for such impacts to arise. As impacts at all other receptors would be lower, it is therefore reasonable to conclude that the Project can minimise and prevent the potential for adverse dust levels occurring at all of the sensitive receptor locations.

New Receptor 167 is an exception to the comments above. Results for all years are shown for the new Receptor 167 in **Table 2**. The results show that there may be effects in Year 24 per the new policy. Analysis shows that Receptor 167 is predicted to experience four days of dust levels above 50µg/m^3 in Year 24 without mitigation. There has been insufficient time available to conduct the analysis required to determine how many less days of dust above 50µg/m3 would be experienced as a result of consideration of the proposed mitigation.

Table 2: Predicted 24-hour PM_{10} levels at new Receptor 167 (µg/m^3)

Receptor ID	Year1 Without mitigation	Year4 Without mitigation	Year8 Without mitigation	Year15 Without mitigation	Year24 Without mitigation	Year24 with mitigation
167	15	23	33	39	**56**	**54**

It is noted that Receptor 167 is new since the time of the original assessment and is only affected per the new policy in the final years of the Project which are represented by Year 24.

However, the dust mitigation measures examined in this report are the same as was proposed in the AQIA, and this assessment is provided to quantify that the effect of the proposed predictive/ reactive dust mitigation, and to confirm that the strategy will be able to maintain impacts below the new more stringent criteria (except at Receptor 167).

An assessment of vacant land indicates that two adjacent lots, 215 and 216 owned by Almond, could potentially be impacted on one or more days above a 24-hour average PM_{10} level of 50µg/m^3. Lots 217 and adjacent owned by Bates and lots 174 and adjacent owned by Moore could also be potentially impacted but are part of other mines zone of acquisition.

It is noted that to develop a detailed air dispersion model for a significant new or modified mine generally takes several months of work and requires a team of mine planners and others to make adjustments in the mine design and management strategy as necessary to meet the necessary goals and policies.

Given the time available, it is not possible to conduct more than one iteration of modelling necessary to consider the mitigation strategy, thus only the first pass estimate of the reductions that the strategy would deliver can be presented in this report. In our opinion, with adequate time to permit the more detailed assessment necessary to present the effects of a predictive/ reactive management strategy, it may be that impacts could be managed to within the new IMP criteria.

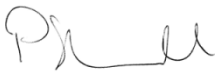
Overall, as stated in the AQIA, the project has proposed to update the existing real time systems and to implement advanced predictive dust management systems to allow mine operators to pre-emptively act to manage potential impacts. Real-time dust monitors with an alarm feature would also be commissioned to inform operations when actions to reduce dust may be needed.

The time available has allowed the Project to demonstrate a reactive strategy would manage mining operations in this manner on a day-by-day basis to meet all of the applicable criteria (except in Year 24 at Receptor 167 and on some vacant land as outlined). It is however likely that with refinement of a predictive strategy impacts could be managed altogether.

Please feel free to contact us if you need to discuss (or require clarification on) any aspect of this report.

Yours faithfully,

Todoroski Air Sciences



Aleks Todoroski

Philip Henschke

References

Todoroski Air Sciences (2013)

Air Quality Impact and Greenhouse Gas Assessment Continuation of Bengalla Mine", prepared for Hansen Bailey by Todoroski Air Sciences, July 2013

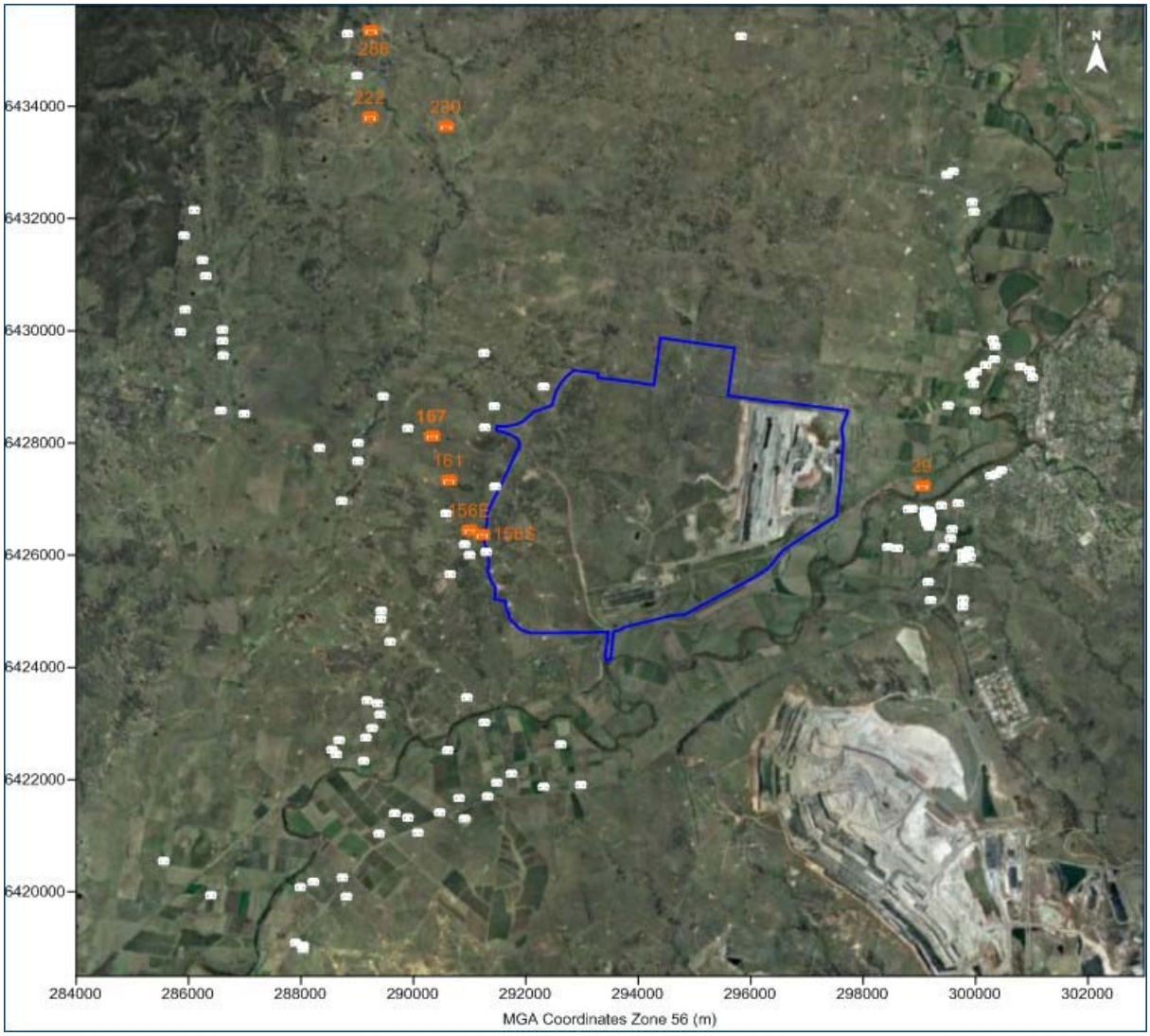


Figure 1: Sensitive receptor locations for investigation of potential short-term dust impacts (shown in Orange with labels)

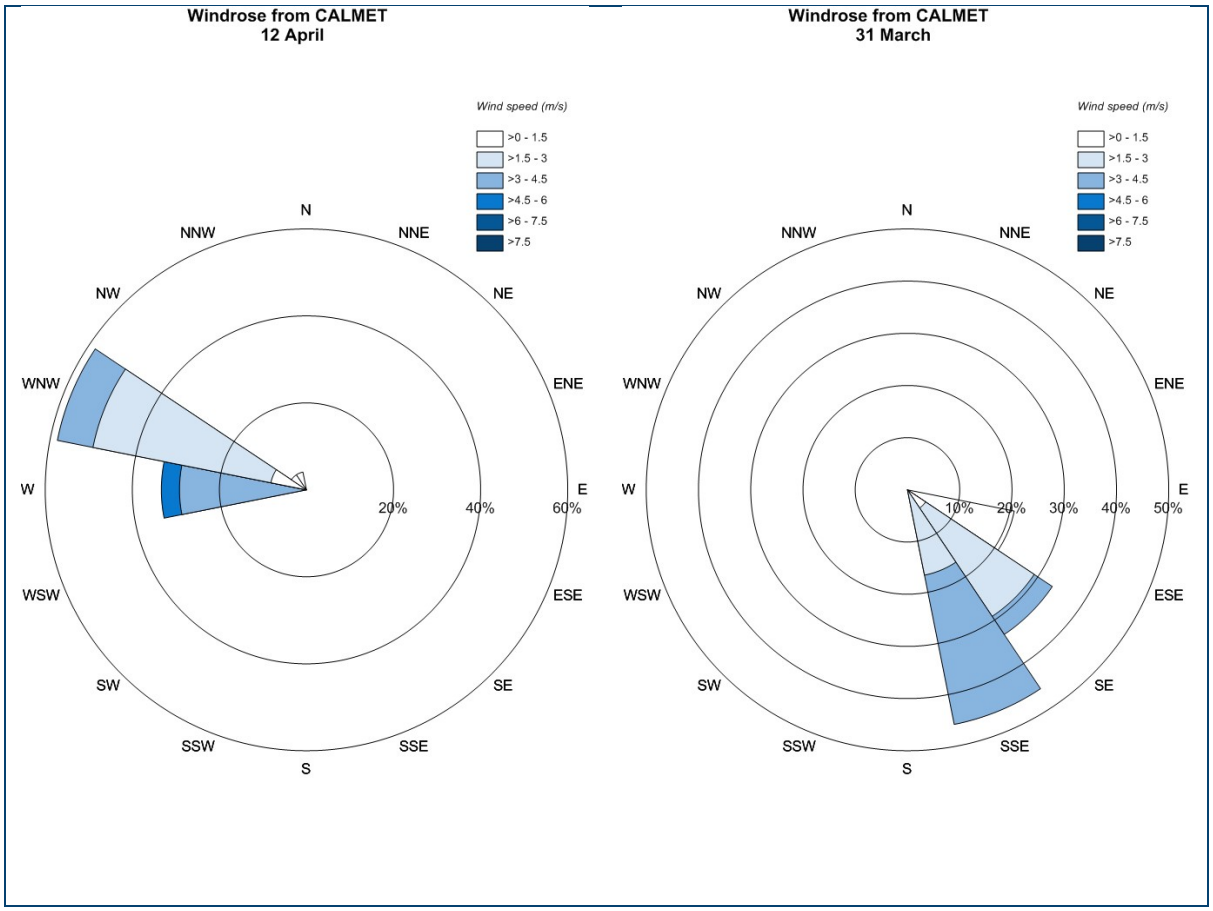


Figure 2: Examples of wind conditions that occurred at the time of elevated dust levels

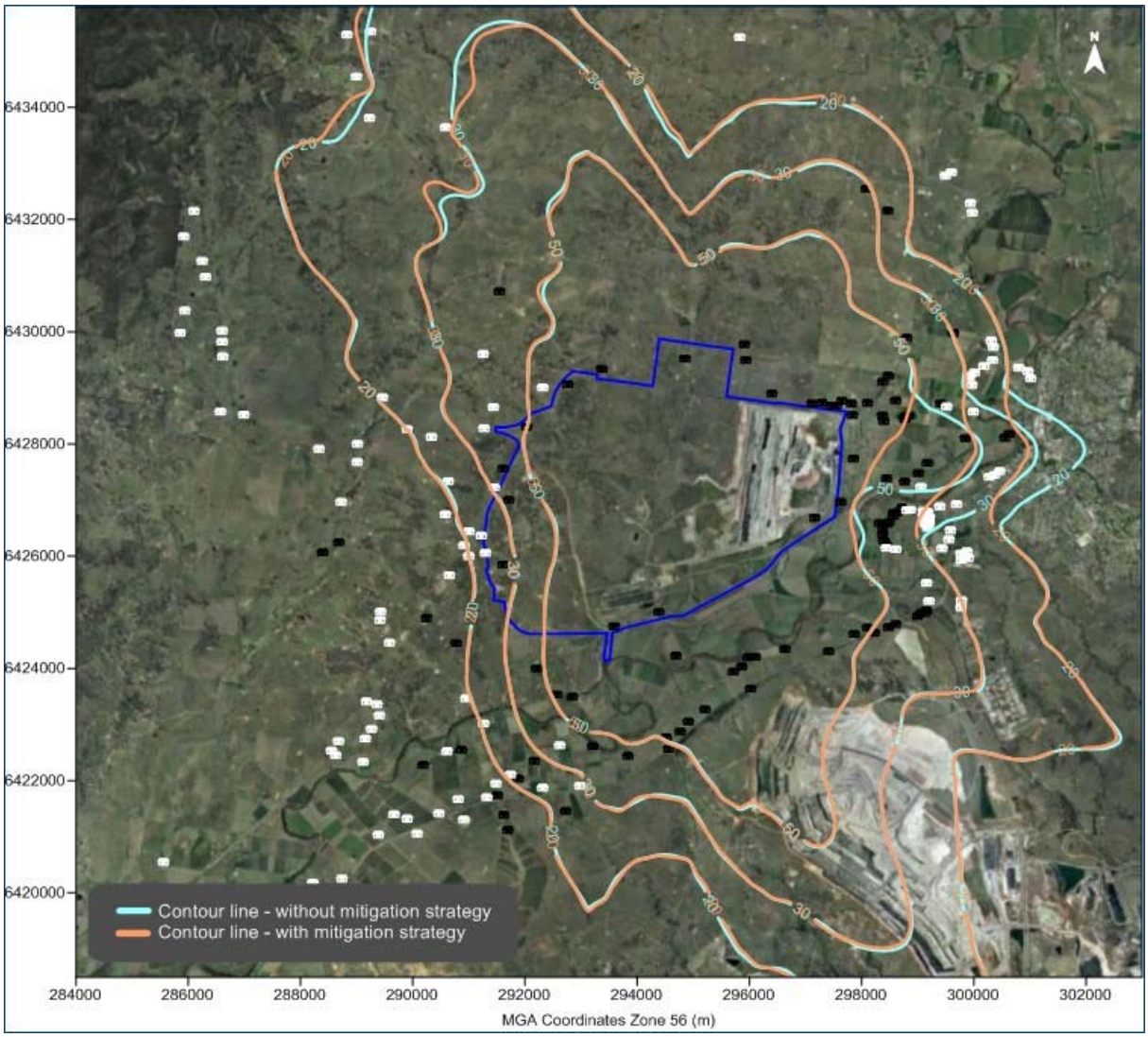


Figure 3: Comparison of predicted 24-hour PM_{10} levels for Year 4

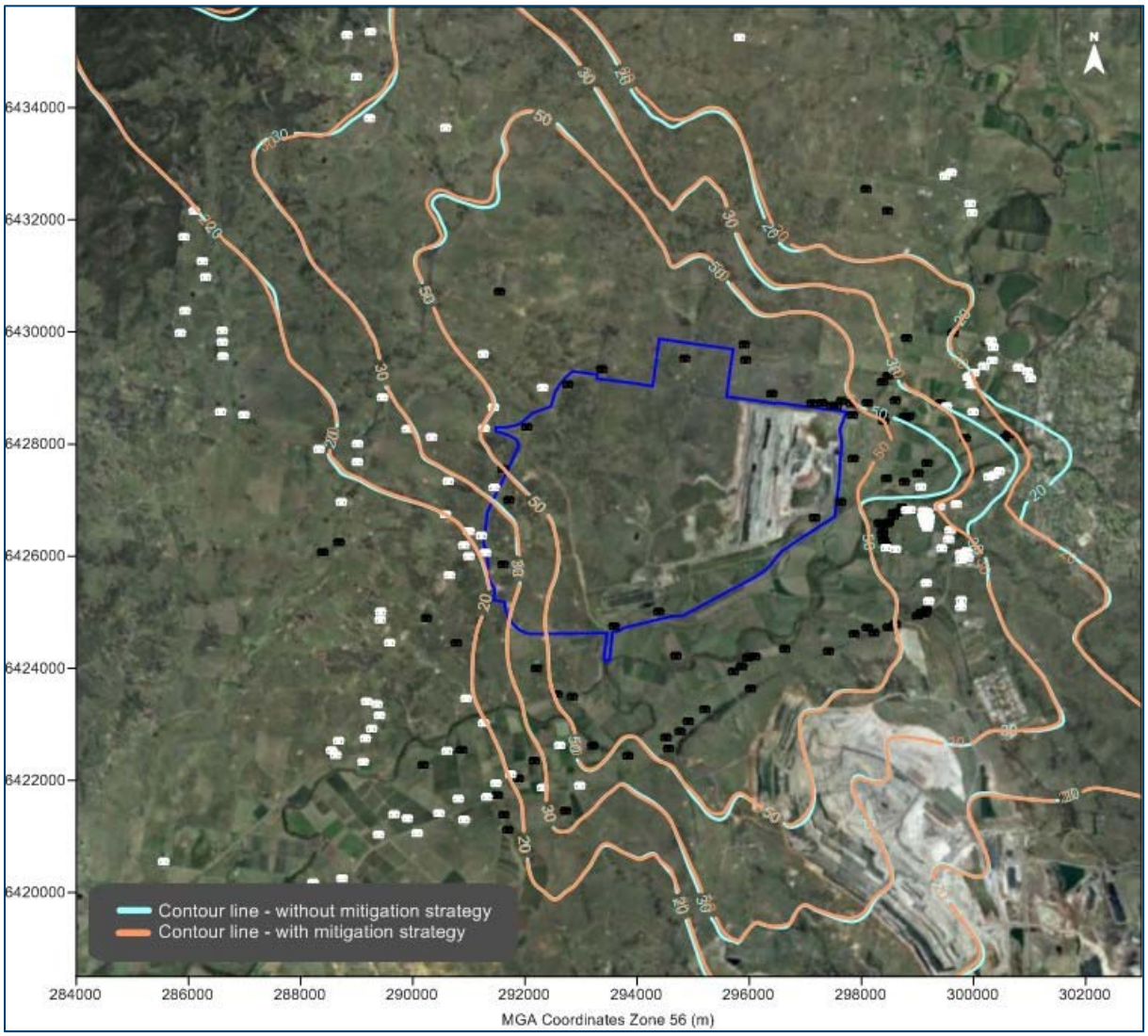


Figure 4: Comparison of predicted 24-hour PM_{10} levels for Year 8

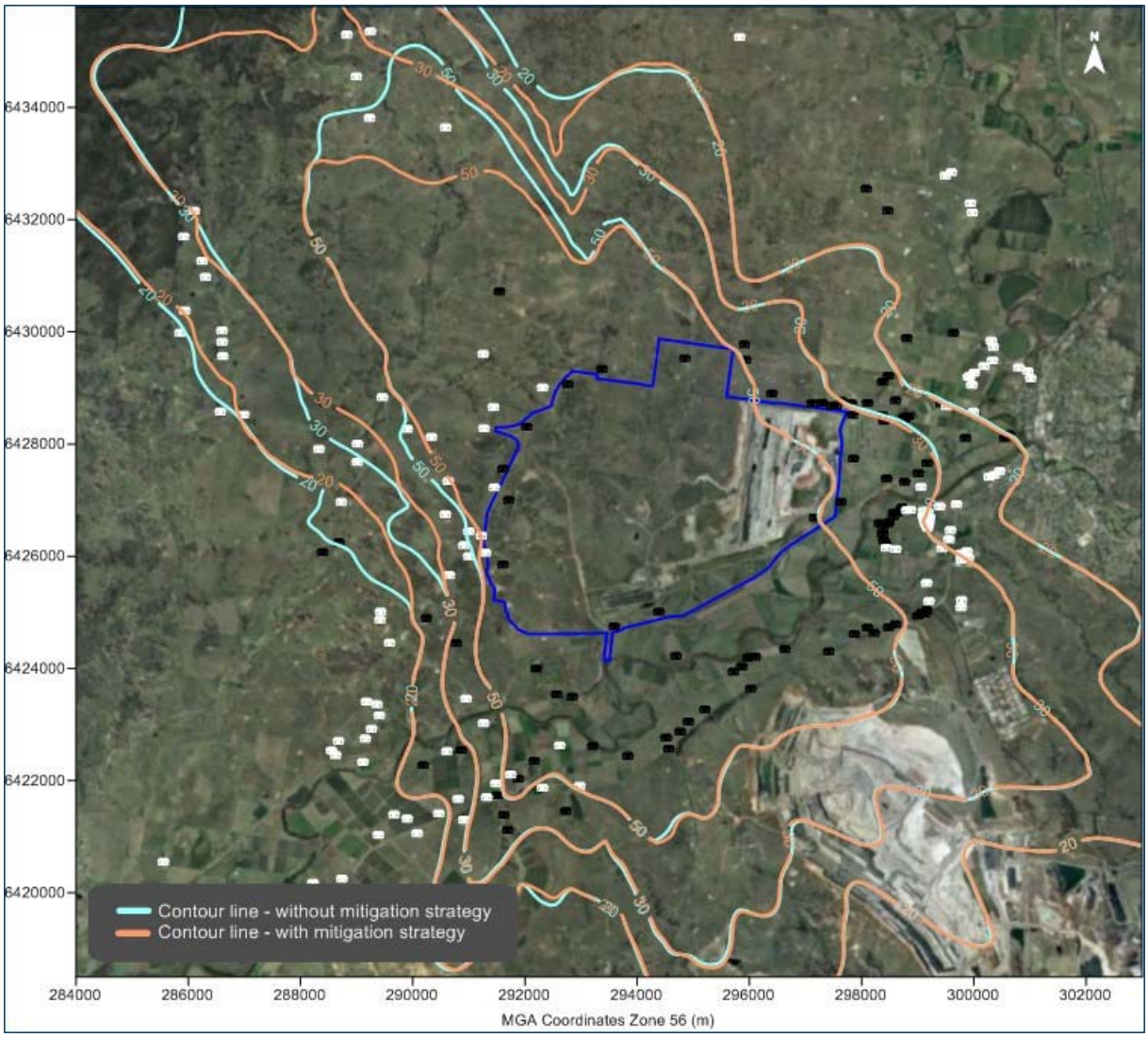


Figure 5: Comparison of predicted 24-hour PM_{10} levels for Year 24

APPENDIX B – SUPPLEMENTARY AIR QUALITY AND NOISE ASSESSMENT 20 JANUARY 2015

Kane Winwood

From: Craig (RTCA) White <Craig.White2@riotinto.com>
Sent: Tuesday, 20 January 2015 12:44 PM
To: Kane Winwood
Cc: Mike Young (DPE-DASP)
Subject: Bengalla Continuation Project - Additional Information for Air Quality & Final Void Requested by DP&E
Attachments: 150119 Bengalla Noise Impact Predictions_Receptor 167.pdf; 150119 Bengalla_TAS_Assessment.pdf

Kane,

Please see the information below in relation to your emailed queries of 14 January 2014.

1. **Air Quality - Receptors ID 215 and 216**

The vacant contiguous property ID 215 and 216 have been identified as being under the single land ownership of JH & CM Almond. As previously identified in correspondence dated 9 December 2014, this property has been predicted to exceed the PM_{10} - 24 hr 50 µg/m^3 incremental criterion on 1 day (or fewer) over 25% of the contiguous land holding associated with the Project revised air quality modelling.

Since the finalisation of the Voluntary Land Acquisition and Mitigation Policy (Acquisition Policy) dated 15 December 2014 it is understood that the PM_{10} - 24 hr acquisition criteria associated with this policy applies to impacts either at the residence or on more than 25% of any privately owned land where there is an existing dwelling or where a dwelling could be built under existing planning controls. For the purposes of this assessment it has been assumed that permission could be obtained to build a house anywhere on this contiguous property. Further, the Acquisition Policy identifies that acquisition criteria for PM_{10} - 24 hr 50 µg/m^3 applies to the incremental impact (i.e. increase in concentrations due to the development alone), with up to 5 allowable exceedances of the criteria over the life of the development.

As requested in your email of 14 January, Todoroski Air Sciences (TAS) has completed an additional assessment (see attached) to determine the predicted PM_{10} - 24 hr impacts at Receptor ID 215 and 216 in light of the Acquisition Policy. The results of the assessment have identified that that only one exceedance of the PM_{10} - 24 hr 50 µg/m^3 incremental impact criteria (over 25% of contiguous land associated with ID 215 and 216) is predicted to occur during Year 24.

2. **Noise - Receptor 167**

Since the preparation of the Continuation of Bengalla Mine Environmental Impact Statement (Bengalla EIS) Receptor 167 (RJ & SA Lane) has constructed a residence. As such, the Bengalla EIS had previously not provided a predicted a specific noise impact at this location. Bridges Acoustics has now completed an additional assessment (see attached) to calculate the predicted noise impact associated with Receptor 167 with results provided in Table 1.

Table 1 Predicted Noise Level at Receptor 167

Receptor ID	Day Neutral LAeq (15 min)					Day/Evening Prevailing LAeq (15 min)					Night Prev	
	Year 1	Year 4	Year 8	Year 15	Year 24	Year 1	Year 4	Year 8	Year 15	Year 24	Year 1	Year 4
167	19.3	18.8	19.2	21.8	24.1	35.8	35.3	35.1	37.3	38.3	31.9	28.5
Worst Case All Years Result	24.1					38.3						

An analysis of the results in Table 1 identify that Receptor 167 would be impacted above Project Specific Noise Levels by up to 3.3 dBA during Year 24 under Day/Evening prevailing condition only. No exceedances are predicted under day neutral or night prevailing conditions.

Trust this response is suitable and please call to discuss as required.

Regards

Craig White
Environmental and Approvals Specialist
Bengalla Mining Company
Bengalla Road, (Locked Mailbag 5)
Ph: (02) 6542 9525
M: 0428 429 525
F: (02) 6542 9599
Email: craig.white@rtca.riotinto.com.au

From: Kane Winwood
Sent: Wednesday, 14 January 2015 12:27 PM
To: 'Craig (RTCA) White'
Subject: RE: Bengalla Continuation Project - Additional Information for Air Quality & Final Void Requested by DP&E

Craig,

I'm reviewing the additional information against the Acquisition Policy as gazetted on 19th December (http://gazette.legislation.nsw.gov.au/so/download.w3p?id=Gazette_2014_2014-126.pdf) and have two queries in relation to the predicted impacts.

The first relates to properties 215 and 216 and the number of days the project is predicted to exceed 50µg/m^3, the Todoroski report states it would be one or more days.

The second relates to receiver 167 and the predicted noise impacts. As it currently stands the draft development consent would restrict noise from the project at this receiver to 35 dBA however it is apparent from the noise contours that the day and evening noise would be higher than this, therefore the predicted noise from the project at this receiver should be calculated.

Please contact me to discuss these queries when you have a chance.

Regards,
Kane

Kane Winwood
Team Leader, Mining Projects

NSW Planning & Environment
GPO Box 39 | Sydney NSW 2001
T 02 9228 6298 E kane.winwood@planning.nsw.gov.au

From: Craig (RTCA) White [mailto:Craig.White2@riotinto.com]
Sent: Tuesday, 9 December 2014 8:24 PM
To: David Kitto
Cc: Kane Winwood; Mike Young (DPE-DASP)
Subject: Bengalla Continuation Project - Additional Information for Air Quality & Final Void Requested by DP&E

David/Mike

Further to our phone call this morning attached is Bengalla Mining Company response to the additional information request from the Department of Planning and Environment with respect to the final void and draft Voluntary Acquisition and Mitigation Policy.

If you have any queries please contact us.

Regards

Craig White
Environmental and Approvals Specialist
Bengalla Mining Company
Bengalla Road, (Locked Mailbag 5)
Ph: (02) 6542 9525
M: 0428 429 525
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Phone: (02) 9874 2123
Fax: (02) 9874 2125
Email: info@airsciences.com.au
Web: www.airsciences.com.au
ACN: 151 202 765 | ABN: 74 955 076 914

19 January 2015

Jason Martin
Senior Environmental Scientist
Hansen Bailey
Via email: jmartin@hansenbailey.com.au

RE: Bengalla Continuation – Analysis for voluntary land acquisition rights

Dear Jason,
Todoroski Air Sciences have conducted further analysis of the revised dispersion modelling predictions based on incorporating the use of the predictive/reactive dust management strategies, as presented in the letter *Bengalla Continuation – Dust mitigation strategy for short-term dust impacts* (**Todoroski Air Sciences, 2013**).

This analysis focuses on the potential number of days where incremental 24-hour PM_{10} levels are predicted to exceed the relevant criterion of 50µg/m^3 on the vacant lots 215 and 216 (refer to **Figure 1**).

The dispersion modelling predictions for the 24-hour average PM_{10} concentration during the Year 24 scenario were analysed at representative locations for the respective vacant lots 215 and 216. A summary of the findings is presented in **Table 1** and a time series plot of the predicted levels for each of the respective lots is shown in **Figure 2** and **Figure 3**. The top graph in each of the figures shows the predicted levels in the order they would occur for the full year and the bottom graph shows the same data, ranked from highest to lowest.

Table 1: Analysis for Year 24 – maximum 24-hour average PM_{10} concentrations

Lot ID	No. of days over 50µg/m^3
215	1
216	1

The analysis indicates there is only one occasion where the 24-hour average PM_{10} level is predicted to exceed the relevant criterion at both locations. The time series graphs indicate that 24-hour average PM_{10} levels at these locations are relatively low for the majority of the time.

It should be noted that with the implementation of the proposed dust management strategies, it is likely that the potential dust levels in this area can be easily managed given the small occurrence of impacts predicted to occur.

Please feel free to contact us if you need to discuss (or require clarification on) any aspect of this report.

Yours faithfully,

Todoroski Air Sciences

Aleks Todoroski

Philip Henschke

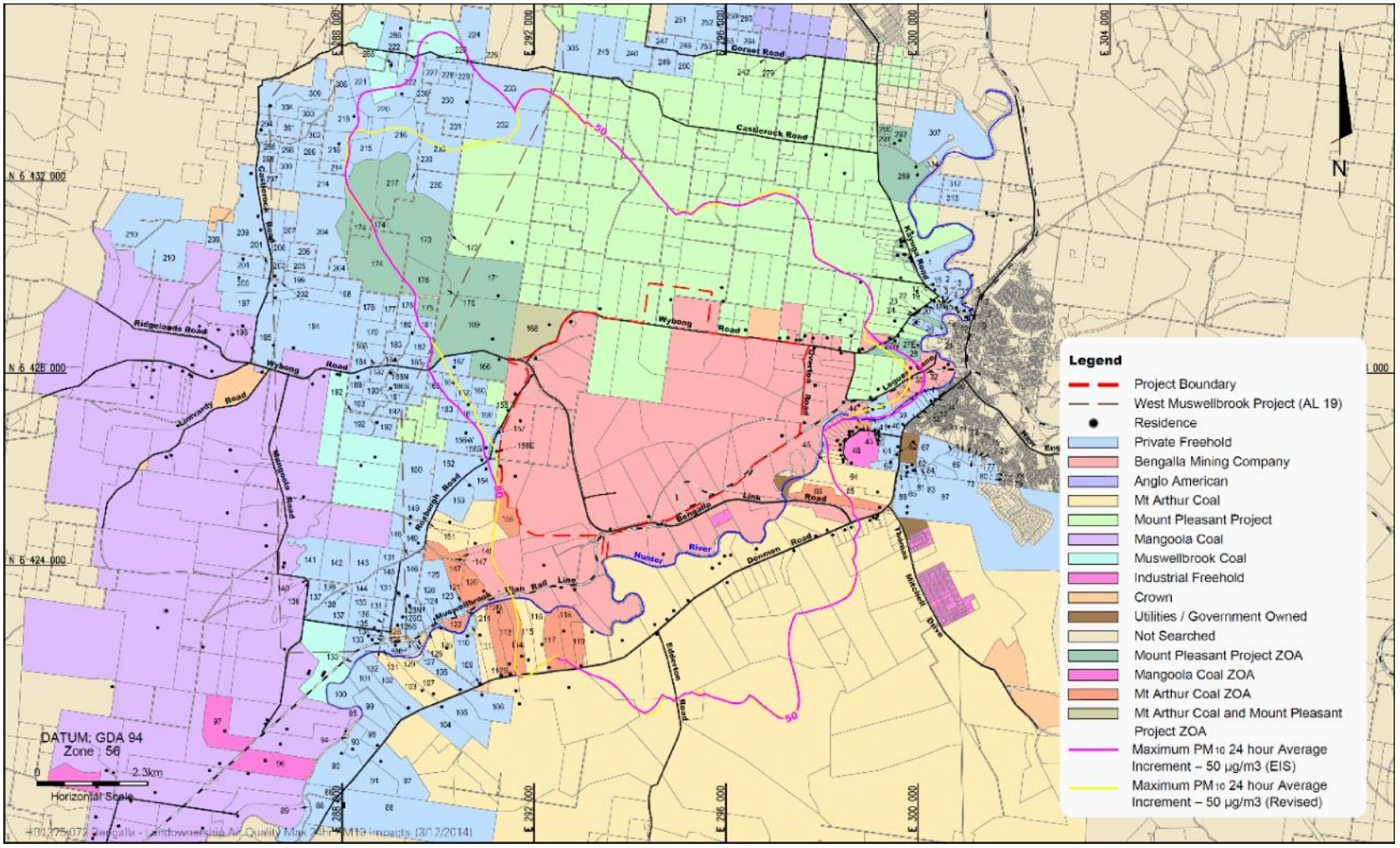


Figure 1: Contour plot of maximum incremental 24-hour average PM_{10} levels (relative to the magenta line, the yellow line shows the reduced impact due to relatively minimal application of predictive/ reactive dust mitigation.

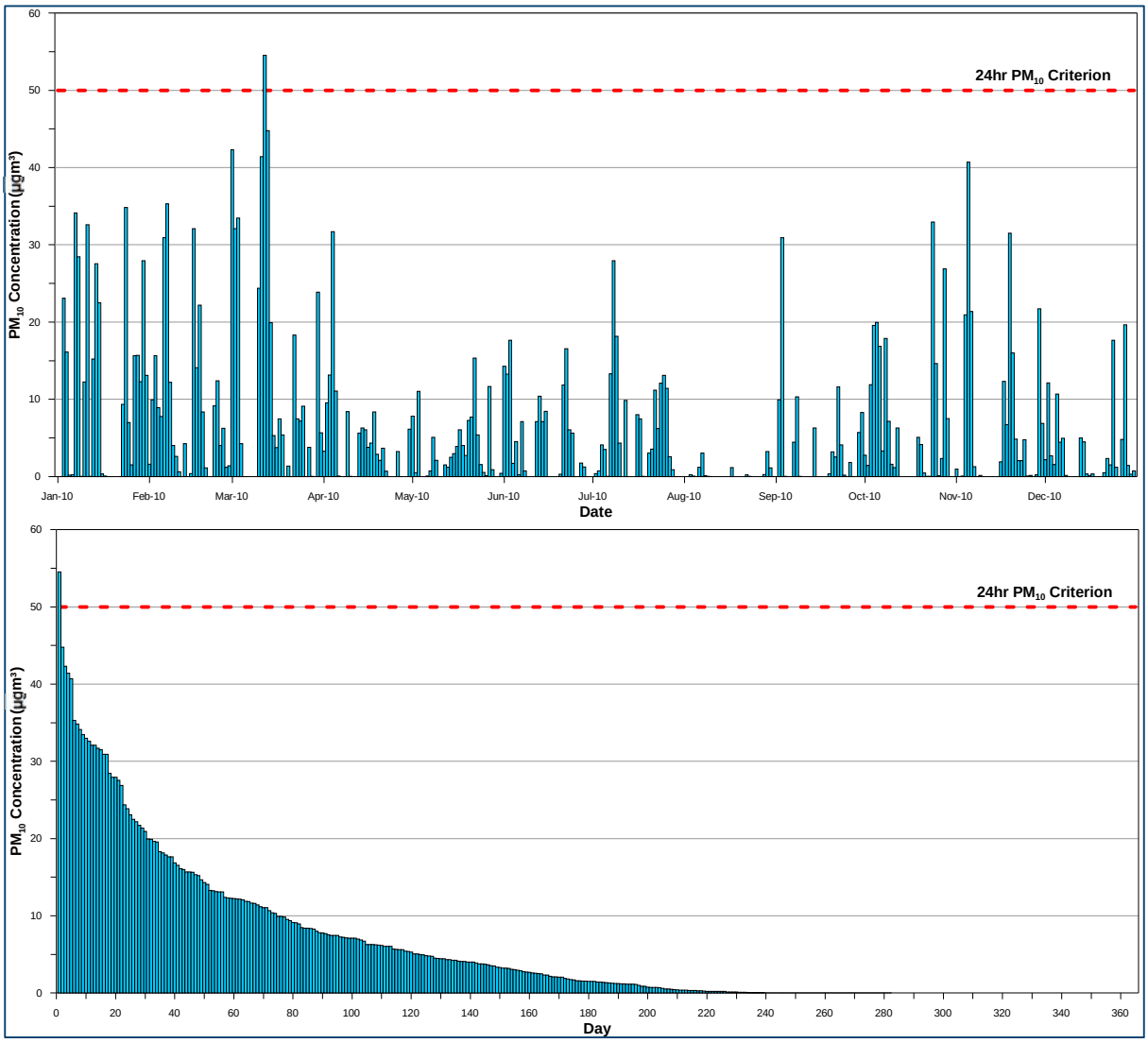


Figure 2: Time series results for Year 24 – Lot ID 215

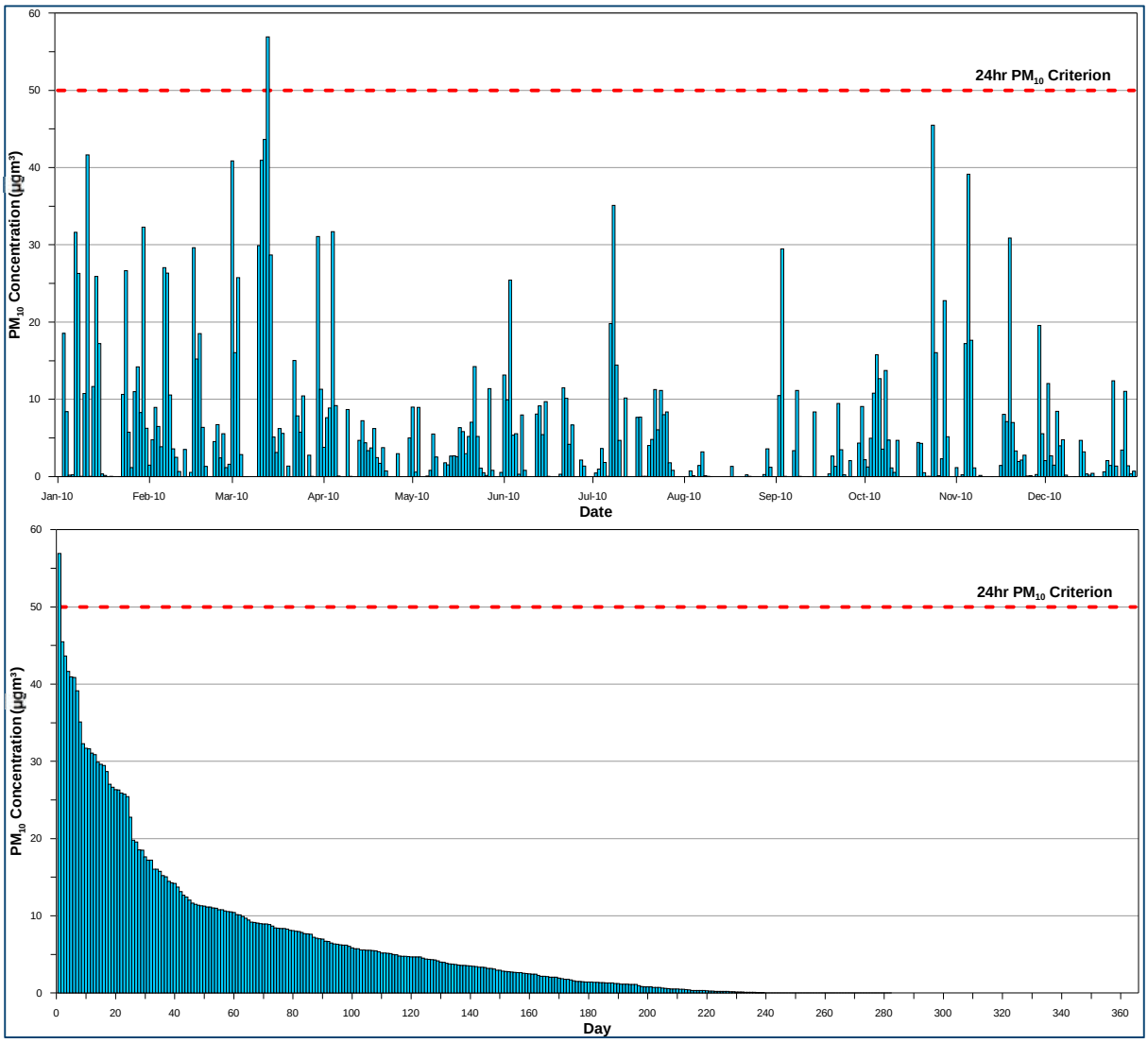


Figure 3: Time series results for Year 24 – Lot ID 216

Continuation of Bengalla Mine EIS

Calculated noise levels at Residence 167 (RJ & SA Lane) from the noise contours presented in J0130-40-R2 dated 25 July 2013

Receptor	Day Neutral					Day/Evening Prevailing					Night Prevailing				
	Yr 1	Yr 4	Yr 8	Yr 15	Yr 24	Yr 1	Yr 4	Yr 8	Yr 15	Yr 24	Yr 1	Yr 4	Yr 8	Yr 15	Yr 24
167	19.3	18.8	19.2	21.8	24.1	35.8	35.3	35.1	37.3	38.3	31.9	28.5	32.6	28.9	34.7
Worst case all years	24.1					38.3					34.7				

APPENDIX C – RECOMMENDED REVISONS TO THE DRAFT DEVELOPMENT CONSENT CONDITIONS 1 TO 4 OF SCHEDULE 3

ACQUISITION UPON REQUEST

1. Upon receiving a written request for acquisition from the owner of the land listed in Table 1, the Applicant shall acquire the land in accordance with the procedures in conditions 5 and 6 of schedule 4.

Table 1: Land subject to acquisition upon request

Acquisition Basis	***Receiver No***
Noise	152, 153, 154, 156

Note: To interpret the land referred to in Table 1, see the applicable figure in Appendix 4.

2. If acquisition is no longer available for the owner of the land listed in Table 2 under the relevant mining approval shown in the table, and the Applicant receives a written request for acquisition from the owner of the land, then the Applicant shall acquire the land in accordance with the procedures in conditions 5 and 6 of schedule 4.

Table 2: Land subject to acquisition upon request

Acquisition Basis	***Receiver No***	***Mine***
Noise	112, 113, 114, 120	Mt Arthur
Noise & Air	117, 118, 119, 155	
Noise & Air	166, 168, 171	Mt Pleasant
Air	169	

Notes: To interpret the land referred to in Table 2, see the applicable figure in Appendix 4.

ADDITIONAL MITIGATION UPON REQUEST

3. Upon receiving a written request from the owner of any residence on the land listed in Tables 1 and 2 (unless the landowner of that land has requested acquisition) and on the land listed in Table 3, the Applicant shall implement additional:
   (a) noise mitigation measures (such as double-glazing, insulation and/or air conditioning); and/or
   (b) air quality mitigation measures (such as air filters, a first flush roof water drainage system and/or air conditioning),

   at any residence in consultation with the owner.

   These measures must be reasonable and feasible, and directed towards reducing the noise and/or air quality impacts of the development on any residence.

   If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

Table 3: Land subject to additional noise and/or air quality mitigation upon request

Mitigation Basis	***Receiver***
Noise & Air Quality	167
Noise	105, 106[3], 108, 110[3], 126, 146, 156, 161[2], 169[2], 184
Air Quality	114[3]

Notes:
1. *To interpret the land referred to in Table 3, see the applicable figure in Appendix 4.*
2. *The Applicant is only required to provide additional mitigation for this property if these rights are no longer available under the development consent for the Mt Pleasant mine.*
3. *The Applicant is only required to provide additional mitigation for this property if these rights are no longer available under the project approval for the Mt Arthur mine.*

NOISE

Noise Criteria

4. Except for the noise-affected land in Tables 1 and 2, the Applicant shall ensure that the noise generated by the development does not exceed the criteria in Table 4 at any residence on privately-owned land.

Table 4: Noise Criteria dB(A)

Location	***Day***	***Evening***	***Night***	
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{A1\ (1\ min)}$
110, 156, 161	*40*	*40*	*40*	*45*
106, 108	*39*	*39*	*39*	*45*
27, 169	*39*	*39*	*36*	*45*
105, 126	*38*	*38*	*38*	*45*
22, 23, 24, 25, 29, 43, 44	*38*	*38*	*36*	*45*
167	*38*	*38*	*35*	*45*
19, 64, 66	*38*	*37*	*36*	*45*
180, 184, 186	*37*	*37*	*35*	*45*
146	*37*	*37*	*37*	*45*
102, 130, 145, 189	*36*	*36*	*36*	*45*
All other privately-owned residences	*35*	*35*	*35*	*45*

Note: To interpret the land referred to in Table 4, see the applicable figure in Appendix 4.

However, these criteria do not apply if the Applicant has a written agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise generated by the development is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy*. Appendix 5 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

APPENDIX D – REVISED DRAFT DEVELOPMENT CONSENT

Development Consent

Section 89E of the *Environmental Planning & Assessment Act 1979*

As delegate of the Minister for Planning, I approve the development application referred to in schedule 1, subject to the conditions in schedules 2 to 5.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

Carolyn McNally
Secretary

Sydney 2015

SCHEDULE 1

Application Number:	SSD-5170
Applicant:	Bengalla Mining Company Pty Limited
Consent Authority:	Minister for Planning
Land:	See Appendix 1
Development:	Bengalla Continuation Project

TABLE OF CONTENTS

DEFINITIONS

Annual review	The review required by condition 4 of schedule 5
ARI	Average recurrence interval
Applicant	Bengalla Mining Company Pty Limited, or anyone else who relies on this consent to carry out the development that is subject to this consent
BCA	Building Code of Australia
Biodiversity offset strategy	The biodiversity offset strategy described in the EIS, and depicted conceptually in the figures in Appendix 7
Blast misfire	The failure of one or more holes in a blast pattern to initiate
CCC	Community Consultative Committee
Conditions of this consent	Conditions contained in schedules 1 to 5 inclusive
Council	Muswellbrook Shire Council
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Development	The development described in the development application and EIS
Department	Department of Planning and Environment
DRE	Division of Resources and Energy within the NSW Department of Trade & Investment
EEC	Endangered ecological community, as defined under the *Threatened Species Conservation Act 1995*
EIS	Environmental impact statement titled *Continuation of Bengalla Mine, Environmental Impact Statement* (6 volumes), dated September 2013, as modified by the *Response to Submissions* dated March 2014
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPL	Environment Protection Licence issued under the POEO Act
Evening	The period from 6pm to 10pm
Feasible	Feasible relates to engineering considerations and what is practical to build or to implement
Incident	A set of circumstances that: • causes or threatens to cause material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in this consent
Land	As defined in the EP&A Act, except for where the term is used in the noise and air quality conditions in Schedule 3 of this consent where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this consent
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial
Mine water	Water that accumulates within, or drains from, active mining and infrastructure areas and any other areas where run-off may have come into contact with coal or carbonaceous material (synonymous with 'dirty water')
Mining operations	Includes the removal and emplacement of overburden; and the extraction, processing, handling, storage and transport of coal on site
Minister	Minister for Planning, or delegate
Mitigation	Activities associated with reducing the impacts of the development
MSB	Mine Subsidence Board
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
NOW	NSW Office of Water
NP&W Act	*National Parks and Wildlife Act 1974*
OEH	Office of Environment and Heritage within the Department of Premier and Cabinet
POEO Act	*Protection of the Environment Operations Act 1997*
Privately-owned land	Land that is not owned by a public agency or a mining company (or its subsidiary)
Public infrastructure	Infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications, etc
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Rehabilitation	The restoration of land disturbed by the development to a good condition to ensure it is safe, stable and non-polluting

RMS	Roads and Maritime Services
ROM	Run-of-mine
Secretary	Secretary of the Department, or nominee
Visual Receptor	Residence on privately-owned land and/or a tourist facility on privately-owned land (such as a cellar door)
Site	The land listed in Appendix 1
VPA	Voluntary Planning Agreement that is made under Division 6 of Part 4 of the EP&A Act

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance criteria established under this consent, the Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the development.

TERMS OF CONSENT

2. The Applicant shall:
   (a) carry out the development generally in accordance with the EIS; and
   (b) comply with the conditions of this consent.

   Note: The general layout of the development is shown in Appendix 2.

3. If there is any inconsistency between the above documents, the more recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.

4. The Applicant shall comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of:
   (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this consent;
   (b) any reports, reviews or audits commissioned by the Department regarding compliance with this consent; or
   (c) the implementation of any actions or measures contained in these documents.

LIMITS ON CONSENT

Mining Operations

5. The Applicant may carry out mining operations on the site until 31 December 2038.

   Note: Under this consent, the Applicant is required to rehabilitate the site and perform additional undertakings to the satisfaction of either the Secretary or the DRE. Consequently this consent will continue to apply in all other respects other than the right to conduct mining operations until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.

Coal Extraction

6. The Applicant shall not extract and/or process more than 15 million tonnes of ROM coal on site in any calendar year.

Coal Transport

7. The Applicant shall:
   (a) only transport coal from the site by rail; and
   (b) restrict train movements from the Bengalla load point to a maximum of 16 laden trains a day.

Bengalla Link Road Construction Hours

8. The Applicant shall only construct the Bengalla Link Road between the hours of 7 am to 6 pm, Monday to Friday and 8 am to 1 pm on Saturdays.

NOTICE OF COMMENCEMENT

9. Prior to carrying out any development under this consent, the Applicant shall:
   (a) certify that it has obtained all the necessary approvals required to commence development; and
   (b) notify the Secretary in writing of the date of commencement of development under this consent.

SURRENDER OF EXISTING DEVELOPMENT CONSENT

10. By the end of June 2016, unless the Secretary agrees otherwise, the Applicant shall surrender the existing development consent for mining operations on site in accordance with Section 104A of the EP&A Act.

    Prior to the surrender of this consent, the conditions of this consent (once operational) shall prevail to the extent of any inconsistency with the conditions of this consent.

STRUCTURAL ADEQUACY

11. The Applicant shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structure, are constructed in accordance with the relevant requirements of the BCA and MSB.

    Notes:
    - *Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.*
    - *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.*
    - *The development is located in the Muswellbrook Mine Subsidence District. Under Section 15 of the Mine Subsidence Compensation Act 1961, the Applicant is required to obtain the MSB's approval before conducting any improvements on site.*

DEMOLITION

12. The Applicant shall ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures,* or its latest version.

PROTECTION OF PUBLIC INFRASTRUCTURE

13. Unless the Applicant and the applicable authority agree otherwise, the Applicant shall:
    (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and
    (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

    Note: This condition does not apply to any damage to roads caused as a result of general road usage.

OPERATION OF PLANT AND EQUIPMENT

14. The Applicant shall ensure that all plant and equipment used on site, and any equipment used offsite to monitor the performance of the development, is:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

UPDATING & STAGING SUBMISSION OF STRATEGIES, PLANS OR PROGRAMS

15. To ensure the strategies, plans or programs under this consent are updated on a regular basis, and that they incorporate any appropriate mitigation measures to improve the environmental performance of the development, the Applicant may at any time submit revised strategies, plans or programs to the Secretary for approval. With the agreement of the Secretary, the Applicant may also submit any strategy, plan or program required by this consent on a staged basis.

    With the agreement of the Secretary, the Applicant may revise any strategy, plan or program approved under this consent without consulting with all the parties nominated under the applicable conditions of consent.

    Notes:
    - *While any strategy, plan or program may be submitted on a progressive basis, the Applicant must ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times; and*
    - *If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*

VOLUNTARY PLANNING AGREEMENT

16. By the end of December 2015, or as otherwise agreed by the Secretary, the Applicant shall enter into a VPA for the development with Council in accordance with:
    (a) Division 6 of Part 4 of the EP&A Act; and
    (b) the terms of the Applicant's offer in Appendix 3.

SCHEDULE 3
ENVIRONMENTAL PERFORMANCE CONDITIONS

ACQUISITION UPON REQUEST

1. Upon receiving a written request for acquisition from the owner of the land listed in Table 1, the Applicant shall acquire the land in accordance with the procedures in conditions 5 and 6 of schedule 4.

Table 1: Land subject to acquisition upon request

Acquisition Basis	***Receiver No***
Noise	152, 153, 154, 156

Note: To interpret the land referred to in Table 1, see the applicable figure in Appendix 4.

2. If acquisition is no longer available for the owner of the land listed in Table 2 under the relevant mining approval shown in the table, and the Applicant receives a written request for acquisition from the owner of the land, then the Applicant shall acquire the land in accordance with the procedures in conditions 5 and 6 of schedule 4.

Table 2: Land subject to acquisition upon request

Acquisition Basis	***Receiver No***	***Mine***
Noise	112, 113, 114, 120	Mt Arthur
Noise & Air	117, 118, 119, 155	
Noise & Air	166, 168, 171	Mt Pleasant
Air	169	

Notes: To interpret the land referred to in Table 2, see the applicable figure in Appendix 4.

ADDITIONAL MITIGATION UPON REQUEST

3. Upon receiving a written request from the owner of any residence on the land listed in Tables 1 and 2 (unless the landowner of that land has requested acquisition) and on the land listed in Table 3, the Applicant shall implement additional:
   (a) noise mitigation measures (such as double-glazing, insulation and/or air conditioning); and/or
   (b) air quality mitigation measures (such as air filters, a first flush roof water drainage system and/or air conditioning),

   at any residence in consultation with the owner.

   These measures must be reasonable and feasible, and directed towards reducing the noise and/or air quality impacts of the development on any residence.

   If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

Table 3: Land subject to additional noise and/or air quality mitigation upon request

Mitigation Basis	***Receiver***
Noise & Air Quality	167
Noise	105, 106[3], 108, 110[3], 126, 146, 156, 161[2], 169[2], 184
Air Quality	114[3]

Notes:
1. *To interpret the land referred to in Table 3, see the applicable figure in Appendix 4.*
2. *The Applicant is only required to provide additional mitigation for this property if these rights are no longer available under the development consent for the Mt Pleasant mine.*
3. *The Applicant is only required to provide additional mitigation for this property if these rights are no longer available under the project approval for the Mt Arthur mine.*

NOISE

Noise Criteria

4. Except for the noise-affected land in Tables 1 and 2, the Applicant shall ensure that the noise generated by the development does not exceed the criteria in Table 4 at any residence on privately-owned land.

Table 4: Noise Criteria dB(A)

Location	Day	Evening	Night	
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{A1\ (1\ min)}$
110, 156, 161	40	40	40	45
106, 108	39	39	39	45
27, 169	39	39	36	45
105, 126	38	38	38	45
22, 23, 24, 25, 29, 43, 44	38	38	36	45
167	38	38	35	45
19, 64, 66	38	37	36	45
180, 184, 186	37	37	35	45
146	37	37	37	45
102, 130, 145, 189	36	36	36	45
All other privately-owned residences	35	35	35	45

Note: To interpret the land referred to in Table 4, see the applicable figure in Appendix 4.

However, these criteria do not apply if the Applicant has a written agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise generated by the development is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy*. Appendix 5 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

Construction Noise – Bengalla Road Realignment

5. The Applicant shall manage the noise associated with the construction of the Bengalla Road realignment in accordance with the noise management levels in Table 2 of the *Interim Construction Noise Guideline.*

Operating Conditions

6. The Applicant shall:
   (a) implement best noise management practice, which includes implementing all reasonable and feasible noise mitigation measures to minimise the construction, operational, road and rail noise of the development;
   (b) operate a comprehensive noise management system on site that uses a combination of predictive meteorological forecasting and real-time noise monitoring data to guide the day-to-day planning of mining operations and the implementation of both proactive and reactive noise mitigation measures to ensure compliance with the relevant conditions of this consent;
   (c) minimise the noise impacts of the development during meteorological conditions when the noise criteria in this consent do not apply (see Appendix 5);
   (d) co-ordinate noise management at the Bengalla mine with the noise management at the Mt Arthur and Mount Pleasant mines to minimise cumulative noise impacts; and
   (e) carry out regular attended monitoring in accordance with Appendix 5 (unless otherwise agreed with the Secretary), to determine whether the development is complying with the relevant conditions of this consent,

   to the satisfaction of the Secretary.

Noise Management Plan

7. The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:
   (a) be prepared in consultation with the EPA, and submitted to the Secretary for approval within 6 months of the date of this consent;
   (b) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent;
   (c) describe the proposed noise management system in detail; and
   (d) include a noise monitoring program that:
      - evaluates and reports on:
        - the effectiveness of the noise management system;

- compliance against the noise criteria in this consent; and
- compliance against the noise operating conditions;

- includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time (so the real-time noise monitoring program can be used as a trigger for further attended monitoring where there is a risk of non-compliance with the noise criteria in this consent); and
- defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

BLASTING

Blasting Criteria

8. The Applicant shall ensure that blasting on the site does not cause exceedances of the criteria in Table 5.

Table 5: Blasting criteria

Location	***Airblast overpressure (dB(Lin Peak))***	***Ground vibration (mm/s)***	***Allowable exceedance***
Residence on privately owned land [a]	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months

However, these criteria do not apply if the Applicant has a written agreement with the relevant owner for higher levels, and has advised the Department in writing of the terms of this agreement.

Blasting Hours

9. The Applicant shall only carry out blasting on site between 7 am and 5 pm Monday to Saturday inclusive. No blasting is allowed on Sundays, public holidays, or at any other time without the written approval of the Secretary.

Blasting Frequency

10. The Applicant shall carry out a maximum of:
(a) 2 blasts a day;
(b) 6 blasts a week, averaged over a calendar year,
on the site.

This condition does not apply to blasts that generate ground vibration of 0.5 mm/s or less at any residence on privately-owned land, blast misfires or blasts required to ensure the safety of the mine, its workers or the general public.

Notes:
- *For the purposes of this condition, a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the mine.*
- *For the avoidance of doubt, should an additional blast be required after a blast misfire, this additional blast and the blast misfire are counted as a single blast.*
- *In circumstances of recurring unfavourable weather conditions (following planned but not completed blast events), to avoid excess explosive sleep times and minimise any potential environmental impacts, the Applicant may seek agreement from the Secretary for additional blasts to be fired on a given day.*

Property Inspections

11. If the Applicant receives a written request from the owner of any privately-owned land within 3 kilometres of the approved open cut mining pit on site for a property inspection to establish the baseline condition of any buildings and/or structures on his/her land, or to have a previous property inspection updated, then within 2 months of receiving this request the Applicant shall:
(a) commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to:
- establish the baseline condition of any buildings and other structures on the land, or update the previous property inspection report; and
- identify measures that should be implemented to minimise the potential blasting impacts of the development on these buildings and/or structures; and

(b) give the landowner a copy of the new or updated property inspection report.

If there is a dispute over the selection of the suitably qualified, experienced and independent person, or the Applicant or the landowner disagrees with the findings of the property inspection report, either party may refer the matter to the Secretary for resolution.

Property Investigations

12. If the owner of any privately-owned land claims that buildings and/or structures on his/her land have been damaged as a result of blasting on the site, then within 2 months of receiving this claim the Applicant shall:
    (a) commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to investigate the claim; and
    (b) give the landowner a copy of the property investigation report.

    If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Applicant shall repair the damage to the satisfaction of the Secretary.

    If there is a dispute over the selection of the suitably qualified, experienced and independent person, or the Applicant or the landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Secretary for resolution.

Operating Conditions

13. During mining operations on site, the Applicant shall:
    (a) implement best management practice to:
        - protect the safety of people and livestock in the surrounding area;
        - protect public or private infrastructure/property in the surrounding area from any damage; and
        - minimise the dust and fume emissions of any blasting;
    (b) ensure that blasting on site does not damage historic heritage sites (see the figure in Appendix 6);
    (c) minimise the frequency and duration of any road closures, and avoid road closures for blasting during peak traffic periods;
    (d) operate a suitable system to enable the public to get up-to-date information on the proposed blasting schedule on site and associated road closures;
    (e) co-ordinate the timing of blasting on site with the timing of blasting at the Mt Arthur and Mount Pleasant mines to minimise any cumulative blasting impacts; and
    (f) monitor and report on compliance with the relevant blasting conditions in this consent,

    to the satisfaction of the Secretary.

14. The Applicant shall not undertake blasting on site within 500 metres of:
    (a) any public road;
    (b) the Ulan – Muswellbrook railway line; or
    (c) any land outside the site that is not owned by the Applicant,

    unless:
    - the Applicant has a written agreement with the applicable infrastructure authority or landowner to allow blasting to be carried out closer to the infrastructure or land, and the Applicant has advised the Department in writing of the terms of this agreement; or
    - the Applicant has:
        - demonstrated to the satisfaction of the Secretary that the blasting can be carried out closer to the infrastructure or land without compromising the safety of people or livestock, or damaging buildings and/or structures; and
        - updated the Blast Management Plan to include the specific measures that would be implemented while blasting is being carried out within 500 metres of the road or land.

Blast Management Plan

15. The Applicant shall prepare and implement a Blast Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with the EPA, and submitted to the Secretary for approval within 6 months of the date of this consent;
    (b) describe the measures that would be implemented to ensure compliance with the blasting criteria and operating conditions of this consent;
    (c) propose and justify any alternative ground vibration limits for any public infrastructure in the vicinity of the site (if relevant); and
    (d) include a monitoring program for evaluating and reporting on compliance with the blasting criteria and operating conditions.

AIR QUALITY

Air Quality Criteria

16. Except for the air-affected land in Tables 1 and 2, the Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the particulate emissions generated by the development do not exceed the criteria listed in Tables 6, 7 and 8 at any residence on privately-owned land.

Table 6: Long term criteria for particulate matter

Pollutant	***Averaging period***	***[d] Criterion***
Total suspended particulate (TSP) matter	Annual	[a] 90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	[a] 30 µg/m^3

Table 7: Short term criterion for particulate matter

Pollutant	***Averaging period***	***[d] Criterion***
Particulate matter < 10 µm (PM_{10})	24 hour	[a] 50 µg/m^3

Table 8: Long term criteria for deposited dust

Pollutant	***Averaging period***	***Maximum increase in deposited dust level***	***Maximum total deposited dust level***
[c] Deposited dust	Annual	[b] 2 g/m^2/month	[a] 4 g/m^2/month

Notes for Tables 6 to 8:

- [a] *Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to other sources);*
- [b] *Incremental impact (i.e. incremental increase in concentrations due to the development on its own);*
- [c] *Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method*; *and*
- [d] *Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed to by the Secretary.*

Air Quality Acquisition Criteria

17. If particulate matter emissions generated by the development exceed the criteria, or contribute to the exceedance of the relevant cumulative criteria, in Tables 9, 10 and 11 at any residence or workplace on privately-owned land, or on more than 25% of any privately-owned land (and a dwelling could be built on that land under existing planning controls), then upon receiving a written request for acquisition from the landowner, the Applicant shall acquire the land in accordance with the procedures in conditions 5-6 of schedule 4.

Table 9: Long term land acquisition criteria for particulate matter

Pollutant	***Averaging period***	***[d] Criterion***
Total suspended particulate (TSP) matter	Annual	[a] 90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	[a] 30 µg/m^3

Table 10: Short term land acquisition criteria for particulate matter

Pollutant	***Averaging period***	***[da] Criterion***
Particulate matter < 10 µm (PM_{10})	24 hour	[a] 50 µg/m^3 @ 98.6 percentile[e]

Table 11: Long term land acquisition criteria for deposited dust

Pollutant	***Averaging period***	***Maximum increase in deposited dust level***	***Maximum total deposited dust level***
[c] Deposited dust	Annual	[b] 2 g/m^2/month	[a] 4 g/m^2/month

Notes to Tables 9-11:

- [a] *Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to other sources);*
- [b] *Incremental impact (i.e. incremental increase in concentrations due to the development on its own);*
- [c] *Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method*;
- [d] *Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed to by the Secretary; and*
- [e] *The 98.6 percentile reflects a permitted number of predicted or monitored exceedances (being up to 5) within the 365 24-hour block averages comprising any one year. Where more than 5 exceedances are predicted or recorded, the percentile is exceeded. While the criterion relates to cumulative (i.e. total) impacts, it also excludes contributions from extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents and illegal activities*

Mine-owned Land

18. The Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria in Tables 6, 7 and 8 at any occupied residence on mine-owned land (including land owned by another mining company) unless:
    (a) the tenant or landowner (if the residence is owned by another mining company) has been notified of any health risks associated with such exceedances in accordance with the notification requirements in schedule 4 of this consent;
    (b) the tenant of any land owned by the Applicant can terminate their tenancy agreement without penalty at any time, subject to giving reasonable notice;
    (c) air quality monitoring is regularly undertaken to inform the tenant or landowner (if the residence is owned by another mining company) of the actual particulate emissions at the residence; and
    (d) data from this monitoring is presented to the tenant or landowner (if the residence is owned by another mining company) in an appropriate format for a medical practitioner to assist the tenant or landowner in making informed decisions on the health risks associated with occupying the residence,

    to the satisfaction of the Secretary.

Operating Conditions

19. The Applicant shall:
    (a) implement all reasonable and feasible measures to minimise the:
        - odour, fume and dust emissions of the development; and
        - release of greenhouse gas emissions from the site;
    (b) minimise any visible air pollution generated by the development;
    (c) minimise the surface disturbance of the site;
    (d) operate a comprehensive air quality management system that uses a combination of predictive meteorological forecasting, predictive air dispersion modelling and real-time air quality monitoring data to guide the day-to-day planning of mining operations and implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of this consent;
    (e) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note d to Tables 6-8 above);
    (f) implement all reasonable and feasible measures to co-ordinate the air quality management at the Bengalla mine with the air quality management at the Mt Arthur and Mount Pleasant mines to minimise any cumulative air quality impacts; and
    (g) monitor and report on compliance with the relevant air quality conditions in this consent,

    to the satisfaction of the Secretary.

Air Quality Management Plan

20. The Applicant shall prepare and implement a detailed Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with the EPA and Council, and submitted to the Secretary for approval within 6 months of the date of this consent;
    (b) describe the measures that would be implemented to ensure compliance with air quality criteria and operating conditions of this consent;
    (c) describe the proposed air quality management system; and
    (d) include an air quality monitoring program that:
        - uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the development against the air quality criteria in this consent;
        - adequately supports the proactive and reactive air quality management system;
        - evaluates and reports on:
            - the effectiveness of the air quality management system; and

- compliance with the air quality operating conditions; and
- defines what constitutes an air quality incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents.

METEOROLOGICAL MONITORING

21. During the life of the development, the Applicant shall ensure that there is a suitable meteorological station operating in the vicinity of the site that:
    (a) complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South* Wales guideline; and
    (b) is capable of continuous real-time measurement of temperature lapse rate in accordance with the *NSW Industrial Noise Policy*, unless a suitable alternative is approved by the Secretary following consultation with the EPA.

WATER

Water Supply

22. The Applicant shall ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of mining operations to match its available water supply.

    Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain necessary water licences for the development.

Water Pollution

23. Unless an EPL or the EPA authorises otherwise, the Applicant shall comply with section 120 of the POEO Act and the *Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002*.

Water Management Performance Measures

24. The Applicant shall ensure mining operations comply with the performance measures in Table 12 to the satisfaction of the Secretary.

Table 12: Water management performance measures

Feature	***Performance Measure***
Water management – General	Minimise the use of clean water on site Minimise the need for make-up water from external supplies Minimise cumulative water impacts with the other mines in the region
Construction and operation of infrastructure	Design, install and maintain erosion and sediment controls generally in accordance with the series *Managing Urban Stormwater: Soils and Construction* including *Volume 1, Volume 2A – Installation of Services* and *Volume 2C – Unsealed Roads* Design, install and maintain the infrastructure within 40 m of watercourses generally in accordance with the *Guidelines for Controlled Activities on Waterfront Land (DPI 2007)*, or its latest version Design, install and maintain any creek crossings generally in accordance with the *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI, 2013) and *Why Do Fish Need To Cross The Road? Fish Passage Requirements for Waterway Crossings* (NSW Fisheries 2003), or their latest versions
Clean water diversion & storage infrastructure	Design, install and maintain the clean water system to capture and convey the 100 year ARI flood Maximise as far as reasonable and feasible the diversion of clean water around disturbed areas on site Design, install and maintain any temporary clean water diversion infrastructure to minimise erosion potential at discharge locations
Sediment dams	Design, install and maintain the dams generally in accordance with the series *Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2E Mines and Quarries*
Mine water storages	Design, install and maintain mine water storage infrastructure to ensure no unlicensed or uncontrolled discharge of mine water off-site

Feature	*Performance Measure*
	On-site storages (including mine infrastructure dams and treatment dams) are suitably designed, installed and maintained to minimise permeability Adequate freeboard within the pit void at all times to minimise the risk of discharge to surface waters
Overburden emplacements	Design, install and maintain emplacements to encapsulate and prevent migration of tailings, acid forming and potentially acid forming materials, and saline and sodic material Design, install and maintain emplacements to prevent and/or manage long term saline groundwater seepage
Chemical and hydrocarbon storage	Chemical and hydrocarbon products to be stored in bunded areas in accordance with the relevant Australian Standards
Aquatic and riparian ecosystem	Maintain or improve baseline channel stability Develop site-specific in-stream water quality objectives in accordance with ANZECC 2000 and *Using the ANZECC Guidelines and Water Quality Objectives in NSW* procedures (DECC 2006), or its latest version

Water Management Plan

25. The Applicant shall prepare and implement a Water Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with the EPA and NOW, and submitted to the Secretary for approval within 6 months of the date of this consent; and
    (b) in addition to the standard requirements for management plans (see condition 3 of schedule 5), include a:
        (i) Site Water Balance that:
            - includes details of:
                - sources and security of water supply, including contingency planning for future reporting periods;
                - water use and management on site;
                - any off-site water transfers and discharges;
                - reporting procedures, including the preparation of a site water balance for each calendar year; and
            - investigates and implements all reasonable and feasible measures to minimise water use on site;
        (ii) Surface Water Management Plan, that includes:
            - detailed baseline data on surface water flows and quality in the watercourses that could potentially be affected by the development;
            - a detailed description of the water management system on site, including the:
                - clean water diversion systems;
                - erosion and sediment controls (mine water system); and
                - mine water management systems;
            - detailed plans, including design objectives and performance criteria, for:
                - design and management of final voids;
                - design and management for the emplacement of coal reject materials;
                - design and management of the temporary Dry Creek diversion infrastructure and discharge points;
                - reinstatement of drainage lines on the rehabilitated areas of the site; and
                - control of any potential water pollution from the rehabilitated areas of the site;
            - performance criteria for the following, including trigger levels for investigating any potentially adverse impacts associated with the development:
                - mine water management system;
                - surface water quality of the Hunter River;
            - a program to monitor and report on:
                - the effectiveness of the mine water management system; and
                - surface water flows and quality, stream and riparian vegetation health in the Hunter River potentially affected by the development;
            - a plan to respond to any exceedances of the performance criteria, and mitigate and/or offset any adverse surface water impacts of the development; and
        (iii) Groundwater Management Plan, which includes:
            - detailed baseline data on groundwater levels, yield and quality in the region, and privately-owned groundwater bores, that could be affected by the development;

- groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts;
- a program to monitor and report on:
  - the seepage/leachate from water storages, emplacements, backfilled voids, and final voids;
  - the impacts of the development on:
    - groundwater inflows to the open cut pits;
    - regional aquifers;
    - groundwater supply of potentially affected landowners;
    - the Hunter River alluvial aquifer; and
    - any groundwater dependent ecosystems and riparian vegetation; and
    - base flows to the Hunter River;
- a program to validate the groundwater model for the development, including an independent review of the model with every independent environmental audit, and compare the monitoring results with modelled predictions; and
- a plan to respond to any exceedances of the groundwater assessment criteria.

BIODIVERSITY

Biodiversity Offset Strategy

26. The Applicant shall implement the biodiversity offset strategy as outlined in Table 13 and as generally described in the EIS (and shown in Appendix 7), to the satisfaction of the Secretary.

Table 13: Biodiversity Offset Strategy

Area	***Offset Type***	***Minimum Size (hectares)***
Kenalea Properties Offset Area	Existing vegetation to be managed and enhanced	4,096
Black Mountain Offset Area	Existing vegetation to be managed and enhanced	1,222
Merriwa River Offset Area	Existing vegetation to be managed and enhanced	897
Total		**6,215**

Note: To identify the areas referred to in Table 13 refer to the applicable figures in Appendix 7.

27. The Applicant shall ensure that the offset strategy an/or rehabilitation strategy is focused on the establishment of:
    (a) significant and/or threatened plant communities, including:
        - Box Gum Woodland;
        - Central Hunter Ironbark – Spotted Gum – Grey Box Woodland;
        - Hunter Floodplain Red Gum Woodland;

    (b) significant and/or threatened plant species, including the:
        - Tiger Orchid (*Cymbidium canaliculatum*);
        - Pine Donkey Orchid (*Diuris tricolor*);
        - Weeping Myall (*Acacia pendula*);
        - River Red Gum (*Eucalyptus camaldulensis*);
        - Austral Toadflax (*Thesium australe*); and

    (c) habitat for significant and/or threatened fauna species, including the:
        - Brown Treecreeper;
        - Speckled Warbler;
        - Black-chinned Honeyeater;
        - Grey-crowned Babbler;
        - Squirrel Glider; and
        - Yellow-bellied Sheathtail-bat.

Long Term Security of Offsets

28. Within 12 months of the commencement of development under this consent, unless otherwise agreed with the Secretary, the Applicant shall make suitable arrangements to provide appropriate long term security for the land within the Biodiversity Offset Strategy identified in Table 13, to the satisfaction of the Secretary.

Biodiversity Management Plan

29. The Applicant shall prepare and implement a Biodiversity Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with OEH, and submitted to the Secretary for approval within 6 months of the date of this consent;
    (b) describe how the implementation of the offset strategy would be integrated with the overall rehabilitation of the site;
    (c) establish baseline data for the existing habitat in the biodiversity offset areas and on the site;
    (d) include:
        (i) a description of the short, medium, and long term measures that would be implemented to:
            - implement the biodiversity offset strategy; and
            - manage the remnant vegetation and habitat on the site;
        (ii) include detailed performance and completion criteria for evaluating the performance of the biodiversity offset strategy and triggering remedial action (if necessary);
        (iii) a detailed description of the measures that would be implemented over the next 3 years, including the procedures to be implemented for:
            - enhancing the quality of existing vegetation and fauna habitat in the biodiversity offset areas;
            - restoring native vegetation and fauna habitat on the biodiversity offset areas and rehabilitation areas through focusing on assisted natural regeneration, targeted vegetation establishment and the introduction of naturally scarce fauna habitat features (where necessary);
            - collecting and propagating seed;
            - protecting vegetation outside the disturbance area;
            - managing salinity;
            - undertaking pre-clearance surveys;
            - managing impacts on fauna;
            - salvaging and reusing material from the site for habitat enhancement;
            - translocation of threatened flora from the site in accordance with the *Guidelines for the Translocation of Threatened Plants in Australia* (Vallee *et al.*, 2004);
            - controlling weeds and feral pests;
            - managing grazing and agriculture;
            - controlling access; and
            - bushfire management;
        (iv) include a seasonally-based program to monitor and report on the effectiveness of these measures, and progress against the detailed performance and completion criteria;
        (v) identify the potential risks to the successful implementation of the biodiversity offset strategy, and include a description of the contingency measures that would be implemented to mitigate these risks; and
        (vi) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

Conservation Bond

30. Within 6 months of the approval of the Biodiversity Management Plan, the Applicant shall lodge a conservation bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria of the Biodiversity Management Plan. The sum of the bond shall be determined by:
    (a) calculating the full cost of implementing the biodiversity offset strategy (other than land acquisition costs); and
    (b) employing a suitably qualified quantity surveyor to verify the calculated costs,
    to the satisfaction of the Secretary.

    The calculation of the conservation bond must be submitted to the Department for approval at least 1 month prior to lodgement of the final bond.

    If the offset strategy is completed generally in accordance with the completion criteria in the Biodiversity Management Plan to the satisfaction of the Secretary, the Secretary will release the bond.

    If the offset strategy is not completed generally in accordance with the completion criteria in the Biodiversity Management Plan, the Secretary will call in all, or part of, the conservation bond, and arrange for the satisfactory completion of the relevant works.

    Notes:
    - *Alternative funding arrangements for long term management of the biodiversity offset strategy, such as provision of capital and management funding as agreed by OEH as part of a Biobanking Agreement or transfer to conservation reserve estate (or any other mechanism agreed with OEH) can be used to reduce the liability of the conservation bond.*

- *The sum of the bond may be reviewed in conjunction with any revision to the biodiversity offset strategy or the completion of major milestones within the approved plan.*

HERITAGE

Aboriginal Heritage Management Plan

31. The Applicant shall prepare and implement an Aboriginal Heritage Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with OEH and the relevant Aboriginal stakeholders, and submitted to the Secretary for approval within 6 months of the date of this consent;
    (b) include a program/procedures for:
        - salvage, excavation and/or management of Aboriginal sites and potential archaeological deposits within the project disturbance area;
        - assessment and removal of scarred trees;
        - protection and monitoring of Aboriginal sites outside the project disturbance area;
        - managing the discovery of any new Aboriginal objects or skeletal remains during the development;
        - maintaining and managing access to archaeological sites by the relevant Aboriginal stakeholders; and
        - ongoing consultation and involvement of the relevant Aboriginal stakeholders in the conservation and management of Aboriginal cultural heritage on the site.

Historic Heritage Management Plan

32. The Applicant shall prepare and implement a Historic Heritage Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with the Heritage Branch and Council, and submitted to the Secretary for approval within 6 months of the date of this consent;
    (b) include the following for the management of other historic heritage on site:
        - conservation management plans for the Bengalla and Overdene homesteads;
        - measures to minimise the visual impacts of the development on the Edinglassie and Rous Lench Homesteads; and
        - a program/procedures for:
            - o photographic and archival recording of potentially affected historic heritage items;
            - o protection and monitoring of historic heritage items outside the project disturbance area;
            - o monitoring, notifying and managing the effects of blasting on potentially affected historic heritage items; and
            - o additional archival recording of any significant historic heritage items requiring demolition (including the Stockyard).

TRANSPORT

Monitoring of Coal Transport

33. The Applicant shall keep records of the:
    (a) amount of coal transported from the site in each calendar year;
    (b) number of coal haulage train movements generated by the development (on a daily basis); and
    (c) make these records available on its website at the end of each calendar year.

Road Works

34. Prior to mining within 200 metres of the Bengalla Link Road, the Applicant shall realign the road and associated intersections as shown conceptually in Appendix 8 to the satisfaction of Council.

    Note: The proposed conceptual realignment of Bengalla Link Road is shown in the figure in Appendix 8.

Road Upgrades and Maintenance

35. The Applicant shall contribute to the upgrade and maintenance of Thomas Mitchell Drive and its intersections with Denman Road and the New England Highway, proportionate to its impact (based on usage) on that infrastructure, in accordance with the Contributions Study prepared by GHD titled, "*Thomas Mitchell Drive Contributions Study, December 2013*" (or its latest version), unless otherwise agreed by the Secretary.

    The road or intersection upgrades referred to in this condition may be satisfied through funding the required upgrades, subject to the agreement of the applicable roads authority, and subject to providing the funding such that the upgrades can be completed within the stated timeframe.

For Thomas Mitchell Drive, the contributions must be paid to Council in accordance with the upgrade and maintenance schedule established in accordance with the Contributions Study during the life of the development, unless otherwise agreed with Council.

If there is any dispute between the Applicant and Council or the RMS in relation to the funding or completion of the upgrades, then any of the parties may refer the matter to the Secretary for resolution.

Note: In making a determination about the applicable maintenance contributions for Thomas Mitchell Drive, the Secretary shall take into account the contributions already paid and currently required to be paid towards the maintenance of the local road network surrounding Muswellbrook under this consent and the voluntary planning agreement summarised in Appendix 3.

VISUAL

Visual Amenity and Lighting

36. The Applicant shall:
    (a) implement all reasonable and feasible measures to mitigate the visual and off-site lighting impacts of the development;
    (b) ensure no outdoor lights shine above the horizontal; and
    (c) ensure that all external lighting associated with the development complies with relevant Australian Standards, including *Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting*,

    to the satisfaction of the Secretary.

Additional Visual Impact Mitigation

37. Within 6 months of the commencement of development under this consent, the Applicant shall prepare a Visual Impact Mitigation Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) identify the visual receptors within the western and southern view sectors that are likely to have significant direct views of the development;
    (b) include a site specific visual impact assessment of each of these visual receptors to determine the severity of the visual impact;
    (c) describe the additional mitigation measures that could be implemented to reduce the visual impacts of the development on these visual receptors.

    Note: The western and southern view sectors are shown in the figure in Appendix 9.

38. Within 1 months of the approval of this plan, the Applicant shall advise the owners of the visual receptors identified in the plan that they are entitled to additional mitigation measures to reduce the visibility of the development from these visual receptors.

39. Upon receiving a written request from the owner of a visual receptor identified in this plan, the Applicant shall implement additional visual impact mitigation measures (such as landscaping treatments or vegetation screens) at the visual receptor in consultation with the landowner, and to the satisfaction of the Secretary.

    These mitigation measures must be reasonable and feasible.

    If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

    Note: The additional visual impact mitigation measures must be aimed at reducing the visibility of the development from the identified affected receptors and do not necessarily require measures to reduce visibility of the development from other locations on the 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).

Tree Plantings Along Public Roads

40. Within 2 years of the commencement of development under this consent, unless the Secretary agrees otherwise, the Applicant shall plant tree screening along those sections of Denman Road, Roxburgh Road and Wybong Road that will have direct views of mining operations on site. This screening must be planted, in consultation with Council (and where relevant the RMS), and maintained to the satisfaction of the Secretary.

41. At least five years prior to construction of the Bengalla Road realignment, or as otherwise agreed by the Secretary, the Applicant shall plant trees screening along the proposed Bengalla Link Road realignment. This screening must be planted, in consultation with Council, and maintained to the satisfaction of the Secretary.

BUSHFIRE MANAGEMENT

42. The Applicant shall:
    (a) ensure that the development is suitably equipped to respond to any fires on site; and
    (b) assist the Rural Fire Service and emergency services as much as possible if there is a fire in the surrounding area.

WASTE

43. The Applicant shall:
    (a) implement all reasonable and feasible measures to minimise the waste (including coal reject) generated by the development;
    (b) ensure that the waste generated by the development is appropriately stored, handled and disposed of; and
    (c) monitor and report on effectiveness of the waste minimisation and management measures each calendar year,

    to the satisfaction of the Secretary.

REHABILITATION

Rehabilitation Objectives

44. The Applicant shall rehabilitate the site to the satisfaction of the DRE. The rehabilitation must comply with the objectives in Table 14 and be consistent with the conceptual final landform plan shown in Appendix 10.

Table 14: Rehabilitation Objectives

Feature	***Objective***
Mine site (as a whole)	• Safe, stable and non-polluting • Final landforms designed to incorporate natural micro-relief and natural drainage lines to integrate with surrounding landforms
Overburden Emplacement Area – exposed to Muswellbrook and Denman	• Rehabilitate the entire face with high density woody vegetation as soon as practicable following the completion of mining operations
Final void	• Designed as a long term groundwater sink and to maximise groundwater flows across back-filled pits to the final void • Minimise to the greatest extent practicable: o the size and depth of the final void o the drainage catchment of the final void o any high wall instability risk o risk of flood interaction
Agricultural land	• Restore or maintain land capability generally as described in the EIS and shown conceptually in Appendix 10
Revegetation areas	• Restore a minimum 10% treed coverage at the mine site • Higher density planting along the riparian zone of the Dry Creek reinstatement, and around the final void
Dry Creek reinstatement	• No net loss of creek length • Restore, maintain and/or improve hydrological and ecological function, quality and geomorphic stability • Incorporate erosion control measures based on vegetation and engineering revetments • Revegetate with suitable native species
Surface infrastructure	• To be decommissioned and removed, unless DRE agrees otherwise
Community	• Ensure public safety • Minimise the adverse socio-economic effects associated with mine closure

Progressive Rehabilitation

45. The Applicant shall carry out rehabilitation progressively, that is, as soon as reasonably practicable following disturbance (particularly on the face of emplacements that are visible off-site). Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation.

Note: It is accepted that parts of the site that are progressively rehabilitated may be subject to further disturbance in future.

Rehabilitation Management Plan

46. The Applicant shall prepare and implement a Rehabilitation Management Plan for the development to the satisfaction of the DRE. This plan must:
    (a) submitted to the DRE for approval within 6 months of the date of this consent;
    (b) be prepared in consultation with the Department, NOW, OEH, Council and the CCC;
    (c) be prepared in accordance with relevant DRE guidelines;
    (d) describe how the rehabilitation of the site would be integrated with the implementation of the biodiversity offset strategy;
    (e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);
    (f) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform including final voids, and final land use;
    (g) include interim rehabilitation where necessary to minimise the area exposed for dust generation;
    (h) include a research program that seeks to improve the understanding and application of rehabilitation techniques and methods in the Hunter Valley;
    (i) include a schedule for establishment of native vegetation corridors and habitat linkages across the site;
    (j) include a landscape management plan for the proposed Bengalla Link Road realignment;
    (k) include a plan for the reinstatement of Dry Creek including:
        - detailed design specifications for the reinstatement of the creek;
        - a schedule of works describing how the reinstatement work would be staged and integrated with mining operations and the final landform;
        - a revegetation program;
        - hydrological, ecological and geomorphic performance and completion criteria for the reinstated creek based on the assessment of baseline conditions; and
        - a program to monitor, maintain and/or improve the hydrological and ecological function, quality and geomorphic stability of the reinstated creek;
    (l) include a program to monitor, independently audit and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and
    (m) build to the maximum extent practicable on other management plans required under this consent.

SCHEDULE 4
ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS/TENANTS

1. Within 1 month of the date of this consent, the Applicant shall:
   (a) notify in writing the owners of:
      - the land listed in Tables 1 and 2 of schedule 3 that they have the right to require the Applicant to acquire their land at any stage during the development and/or request the Applicant to ask for additional noise and/or air quality mitigation measures (whichever is relevant) to be installed at their residence at any stage during the development (if they have not requested acquisition);
      - any residence on the land listed in Table 3 of schedule 3 that they have the right to request the Applicant to ask for additional noise and/or air quality mitigation measures (whichever is relevant) to be installed at their residence at any stage during the development; and
      - any privately-owned land within 3 kilometres of the approved open cut mining pit/s that they are entitled to ask for an inspection to establish the baseline condition of any buildings or structures on their land, or to have a previous property inspection report updated;
   (b) notify the tenants of any mine-owned land of their rights under this consent (see condition 18 of schedule 3); and
   (c) send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the owners and/or existing tenants of any land (including mine-owned land) where the predictions in the EIS identify that dust emissions generated by the development are likely to be greater than the relevant air quality criteria in schedule 3 at any time during the life of the development.

2. Prior to entering into any tenancy agreement for any land owned by the Applicant that is predicted to experience exceedances of the recommended dust and/or noise criteria, or for any of the land listed in condition 1 that is subsequently purchased by the Applicant, the Applicant shall:
   (a) advise the prospective tenants of the potential health and amenity impacts associated with living on the land, and give them a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time); and
   (b) advise the prospective tenants of the rights they would have under this consent.

3. As soon as practicable after obtaining monitoring results showing:
   (a) an exceedance of any relevant criteria in schedule 3, the Applicant shall notify the affected landowners in writing of the exceedance, and provide regular monitoring results to these landowners until the development is again complying with the relevant criteria; and
   (b) an exceedance of any relevant air quality criteria in schedule 3, the Applicant shall send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and/or existing tenants of the land (including the tenants of any mine-owned land).

INDEPENDENT REVIEW

4. If an owner of privately-owned land considers the development to be exceeding the relevant criteria in schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land.

   If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision the Applicant shall:
   (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
      - consult with the landowner to determine his/her concerns;
      - conduct monitoring to determine whether the development is complying with the relevant criteria in schedule 3;
      - if the development is not complying with these criteria then identify the measures that could be implemented to ensure compliance with the relevant criteria; and
      - in cases where there is an exceedance of any air quality criteria, and more than one mine is responsible for the exceedance, determine the relative share of each mine regarding the impact of the development; and
   (b) give the Secretary and landowner a copy of the independent review.

LAND ACQUISITION

5. Within 3 months of receiving a written request from a landowner with acquisition rights, the Applicant shall make a binding written offer to the landowner based on:
   (a) the current market value of the landowner's interest in the land at the date of this written request, as if the land was unaffected by the development, having regard to the:
      - existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and
      - presence of improvements on the land and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of the additional noise and/or air quality mitigation measures in condition 2 of schedule 3;
   (b) the reasonable costs associated with:
      - relocating within the Muswellbrook, Cessnock or Singleton local government area, or to any other local government area determined by the Secretary; and
      - obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and
   (c) reasonable compensation for any disturbance caused by the land acquisition process.

   However, if at the end of this period, the Applicant and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Secretary for resolution.

   Upon receiving such a request, the Secretary will request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer to:
   - consider submissions from both parties;
   - determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (a)-(c) above;
   - prepare a detailed report setting out the reasons for any determination; and
   - provide a copy of the report to both parties.

   Within 14 days of receiving the independent valuer's report, the Applicant shall make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination.

   However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, they may refer the matter to the Secretary for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Secretary will determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in paragraphs (a)-(c) above, the independent valuer's report, the detailed report of the party that disputes the independent valuer's determination and any other relevant submissions.

   Within 14 days of this determination, the Applicant shall make a binding written offer to the landowner to purchase the land at a price not less than the Secretary's determination.

   If the landowner refuses to accept the Applicant's binding written offer under this condition within 6 months of the offer being made, then the Applicant's obligations to acquire the land shall cease, unless the Secretary determines otherwise.

6. The Applicant shall pay all reasonable costs associated with the land acquisition process described in condition 5 above, including the costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of this plan at the Office of the Registrar-General.

SCHEDULE 5
ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Applicant shall prepare and implement an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:
   (a) be submitted to the Secretary for approval prior to the commencement of any development under this consent;
   (b) provide the strategic framework for environmental management of the development;
   (c) identify the statutory approvals that apply to the development;
   (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
   (e) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the development;
      - receive, handle, respond to, and record complaints;
      - resolve any disputes that may arise during the course of the development;
      - respond to any non-compliance;
      - respond to emergencies; and
   (f) include:
      - copies of any strategies, plans and programs approved under the conditions of this consent; and
      - a clear plan depicting all the monitoring required to be carried out in relation to the development.

Adaptive Management

2. The Applicant shall assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

   Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:
   (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
   (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
   (c) implement remediation measures as directed by the Secretary,

   to the satisfaction of the Secretary.

Management Plan Requirements

3. The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:
   (a) detailed baseline data;
   (b) a description of:
      - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
      - any relevant limits or performance measures/criteria;
      - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
   (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
   (d) a program to monitor and report on the:
      - impacts and environmental performance of the development;
      - effectiveness of any management measures (see c above);
   (e) a contingency plan to manage any unpredicted impacts and their consequences;
   (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
   (g) a protocol for managing and reporting any:
      - incidents;
      - complaints;
      - non-compliances with statutory requirements; and
      - exceedances of the impact assessment criteria and/or performance criteria; and
   (h) a protocol for periodic review of the plan.

   Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Annual Review

4. By the end of March each year (or as otherwise agreed by the Secretary), the Applicant shall review the environmental performance of the development for the previous calendar year to the satisfaction of the Secretary. This review must:
   a) describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the current calendar year;
   b) include a comprehensive review of the monitoring results and complaints records of the development over the past year, which includes a comparison of these results against the:
      - relevant statutory requirements, limits or performance measures/criteria;
      - monitoring results of previous years; and
      - relevant predictions in the EIS;
   c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
   d) identify any trends in the monitoring data over the life of the development;
   e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
   f) describe what measures will be implemented over the next year to improve the environmental performance of the development.

Revision of Strategies, Plans and Programs

5. Within 3 months of the submission of:
   (a) an annual review under Condition 4 above;
   (b) an incident report under Condition 7 below;
   (c) an audit report under Condition 9 below; or
   (d) any modification to the conditions of this consent (unless the conditions require otherwise),

   the Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary.

   Where this review leads to revisions in any such document, then within 4 weeks of the review, unless the Secretary agrees otherwise, the revised document must be submitted to the Secretary for approval.

   Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.

Community Consultative Committee

6. The Applicant shall operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. This CCC must be operated in general accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Developments* (Department of Planning, 2007, or its latest version).

   Notes:
   - *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*
   - *In accordance with the guideline, the Committee should be comprised of an independent chair and appropriate representation from the Applicant, affected councils and the local community.*

REPORTING

Incident Reporting

7. The Applicant shall immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Regular Reporting

8. The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

INDEPENDENT ENVIRONMENTAL AUDIT

9. Within 1 year of the commencement of development under this consent, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
   (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
   (b) include consultation with the relevant agencies;
   (c) assess the environmental performance of the development and assess whether it is complying with the requirements in this consent and any relevant EPL or Mining Lease (including any assessment, plan or program required under these approvals);
   (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals; and
   (e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned approvals.

   Note: This audit team must be led by a suitably qualified auditor and include experts in any field specified by the Secretary.

10. Within 6 weeks of the completion of this audit, unless the Secretary agrees otherwise, the Applicant shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.

ACCESS TO INFORMATION

11. From the commencement of development under this consent, the Applicant shall:
   (a) make copies of the following publicly available on its website:
      - the EIS;
      - current statutory approvals for the development;
      - approved strategies, plans and programs required under the conditions of this consent;
      - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
      - a complaints register, which is to be updated monthly;
      - minutes of CCC meetings;
      - the annual reviews of the development (for the last 5 years, if applicable);
      - any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit;
      - any other matter required by the Secretary; and

   (b) keep this information up-to-date,

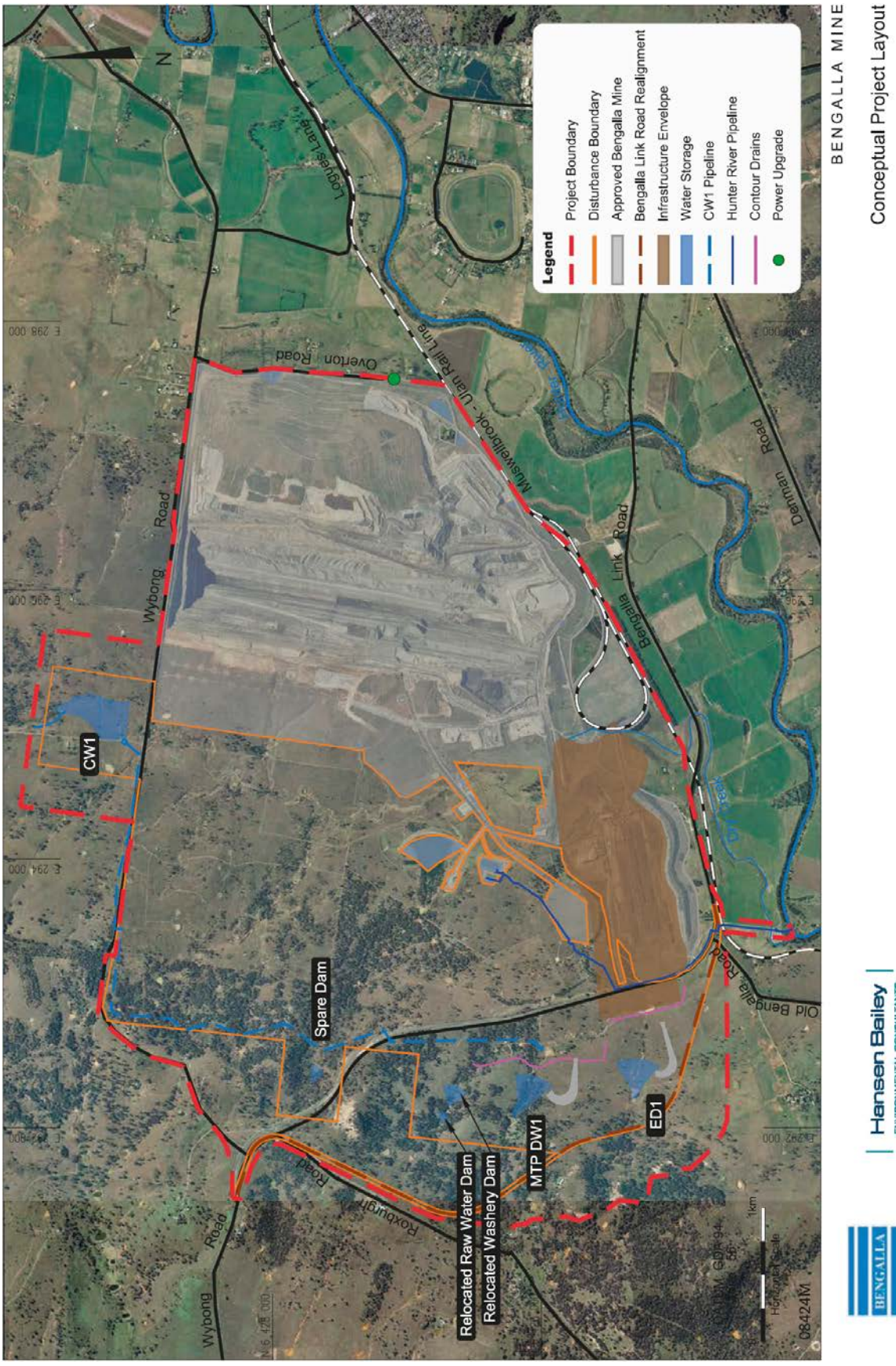
   to the satisfaction of the Secretary.

APPENDIX 1
SCHEDULE OF LAND

Lot	DP	Owner
9	39345	Bengalla Mining Company Limited
1	189134	Bengalla Mining Company Limited
1	236668	Bengalla Mining Company Limited
3	236668	Bengalla Mining Company Limited
6	236668	Bengalla Mining Company Limited
7	236668	Bengalla Mining Company Limited
10	236668	Bengalla Mining Company Limited
112	551930	Bengalla Mining Company Limited
110	556761	Bengalla Mining Company Limited
111	556761	Bengalla Mining Company Limited
2	561117	Bengalla Mining Company Limited
19	563495	Bengalla Mining Company Limited
1	570070	Bengalla Mining Company Limited
2	570070	Bengalla Mining Company Limited
91	620639	Bengalla Mining Company Limited
71	626353	Bengalla Mining Company Limited
72	626353	Bengalla Mining Company Limited
20	706045	Bengalla Mining Company Limited
505	711996	Bengalla Mining Company Limited
1	718834	Bengalla Mining Company Limited
1	735667	Bengalla Mining Company Limited
2	735667	Bengalla Mining Company Limited
21	776758	Bengalla Mining Company Limited
22	776758	Bengalla Mining Company Limited
41	792447	Bengalla Mining Company Limited
43	792447	Bengalla Mining Company Limited
5	801249	Bengalla Mining Company Limited
8	821183	Bengalla Mining Company Limited
20	1072668	Bengalla Mining Company Limited
22	1072668	Bengalla Mining Company Limited
24	1072668	Bengalla Mining Company Limited
25	1072668	Bengalla Mining Company Limited
26	1072668	Bengalla Mining Company Limited
27	1072668	Bengalla Mining Company Limited
100	1148907	Bengalla Mining Company Limited
101	1148907	Bengalla Mining Company Limited
102	1148907	Bengalla Mining Company Limited
103	1148907	Bengalla Mining Company Limited
104	1148907	Bengalla Mining Company Limited

Lot	DP	Owner
105	1148907	Bengalla Mining Company Limited
106	1148907	Bengalla Mining Company Limited
274	750926	Coal & Allied Operations Pty Limited
4	801249	Coal & Allied Operations Pty Limited
6	821183	Coal & Allied Operations Pty Limited
1	998477	Coal & Allied Operations Pty Limited
2	998477	Coal & Allied Operations Pty Limited
3	998477	Coal & Allied Operations Pty Limited
Sections of various Council roads		
Sections of Crown roads		
Sections of Muswellbrook-Ulan Rail Line		

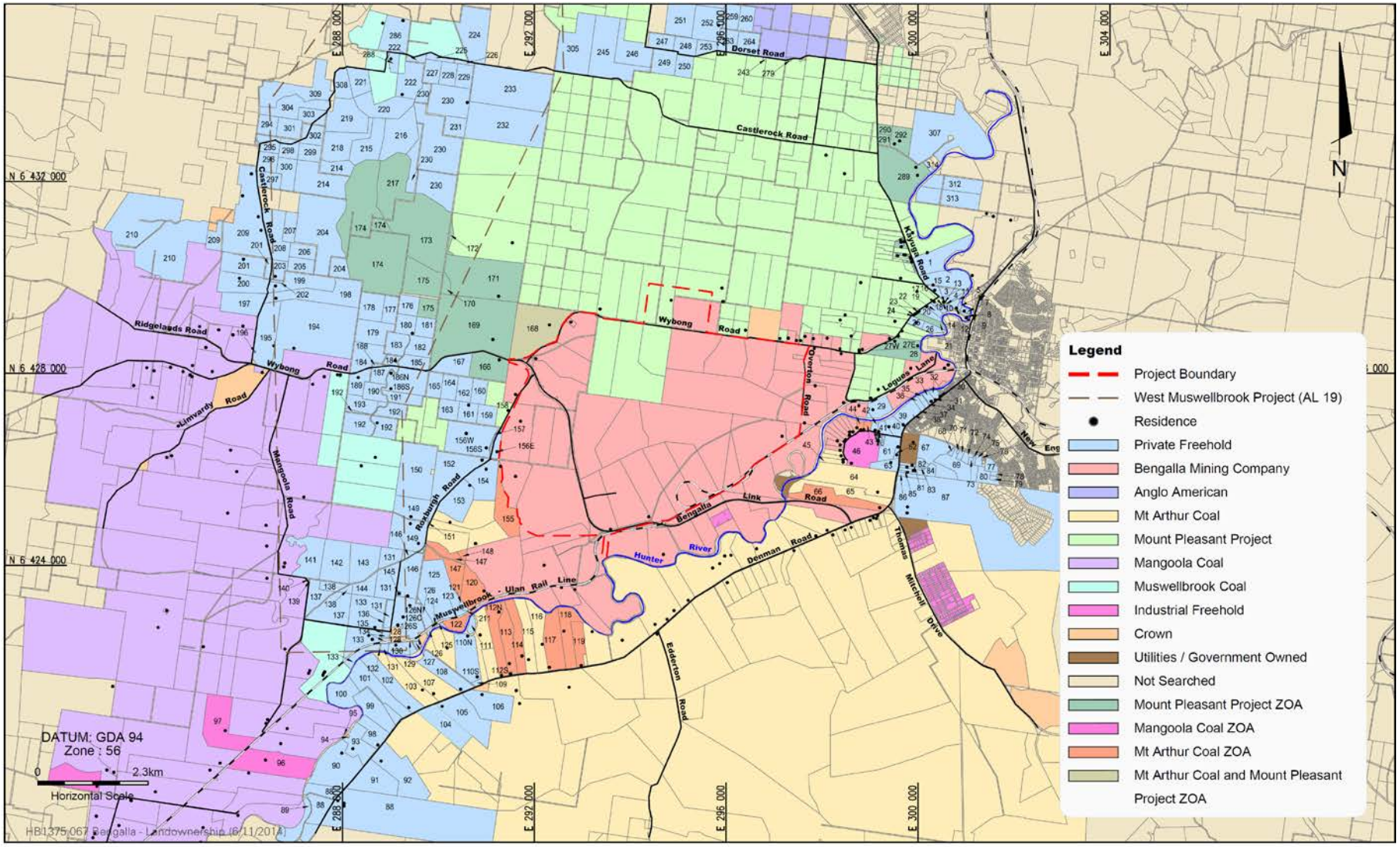
APPENDIX 2
DEVELOPMENT LAYOUT



APPENDIX 3
TERMS OF THE VOLUNTARY PLANNING AGREEMENT

Funding Component	Applicant Contribution
Bengalla Coal Community Fund	$400,000 per annum
Road maintenance requirements within the Muswellbrook LGA	$125,000 per annum
Council Environmental Officer position	$20,000 per annum
A commitment from the Applicant to seek to engage four apprentices per annum for the life of the mine sourced from residents within the local area.	N/A
General	$0.065 cents per tonne of product coal produced in excess of 8.5 Mt of product coal from the mine in any one calendar year.

APPENDIX 4
LAND OWNERSHIP



BENGALLA MINE

Landownership

BENGALLA

Hansen Bailey
ENVIRONMENTAL CONSULTANTS

APPENDIX 5
NOISE COMPLIANCE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in Table 4 of schedule 3 are to apply under all meteorological conditions except the following:
   (a) during periods of rain or hail;
   (b) average wind speed at microphone height exceeds 5 m/s;
   (c) wind speeds greater than 3 m/s measured at 10 m above ground level; or
   (d) temperature inversion conditions greater than 3°C/100 m.

Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station located on the site.

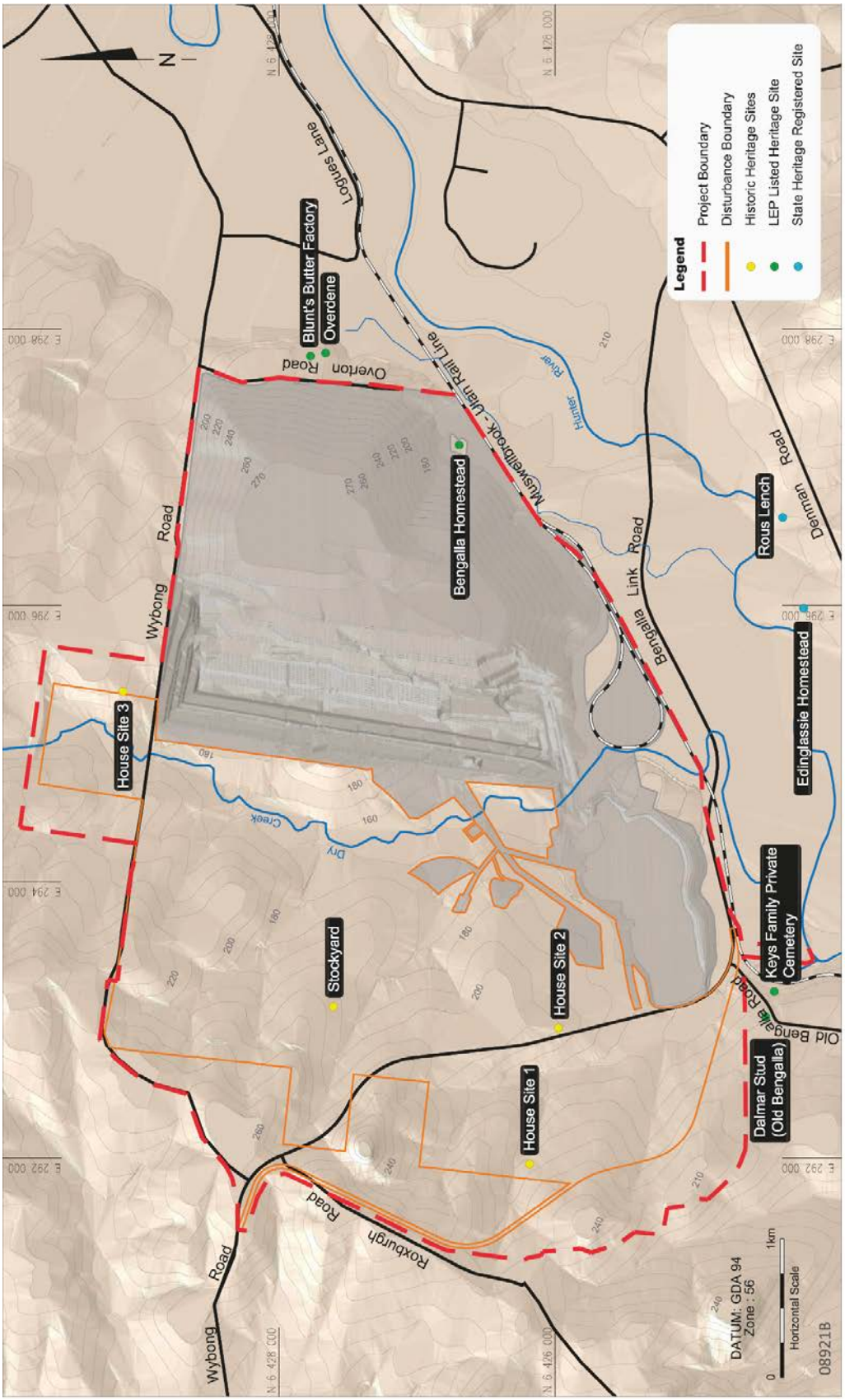
Compliance Monitoring

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent.

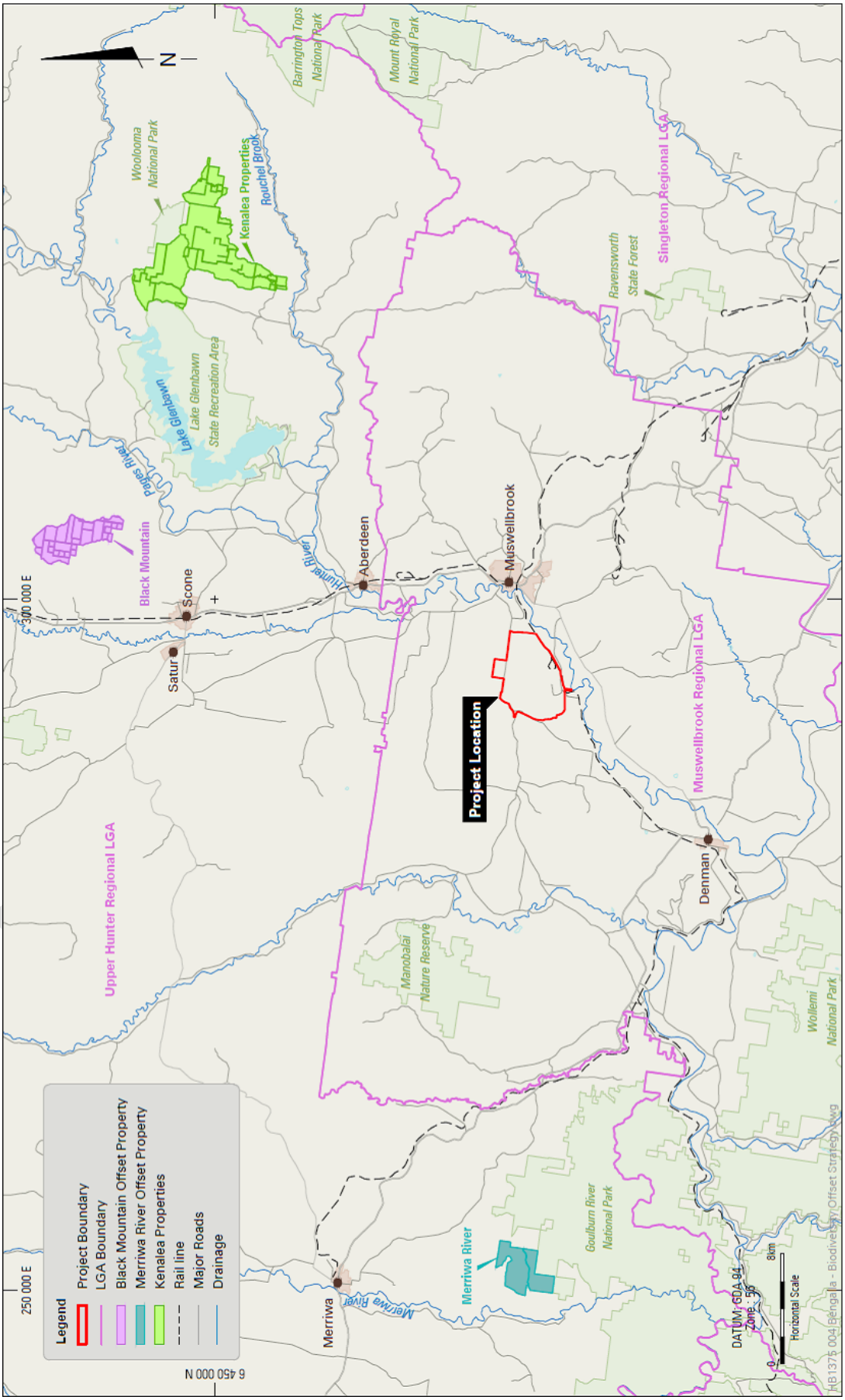
4. This monitoring must be carried out at least once a month (but at least two weeks apart) unless the Secretary directs otherwise.

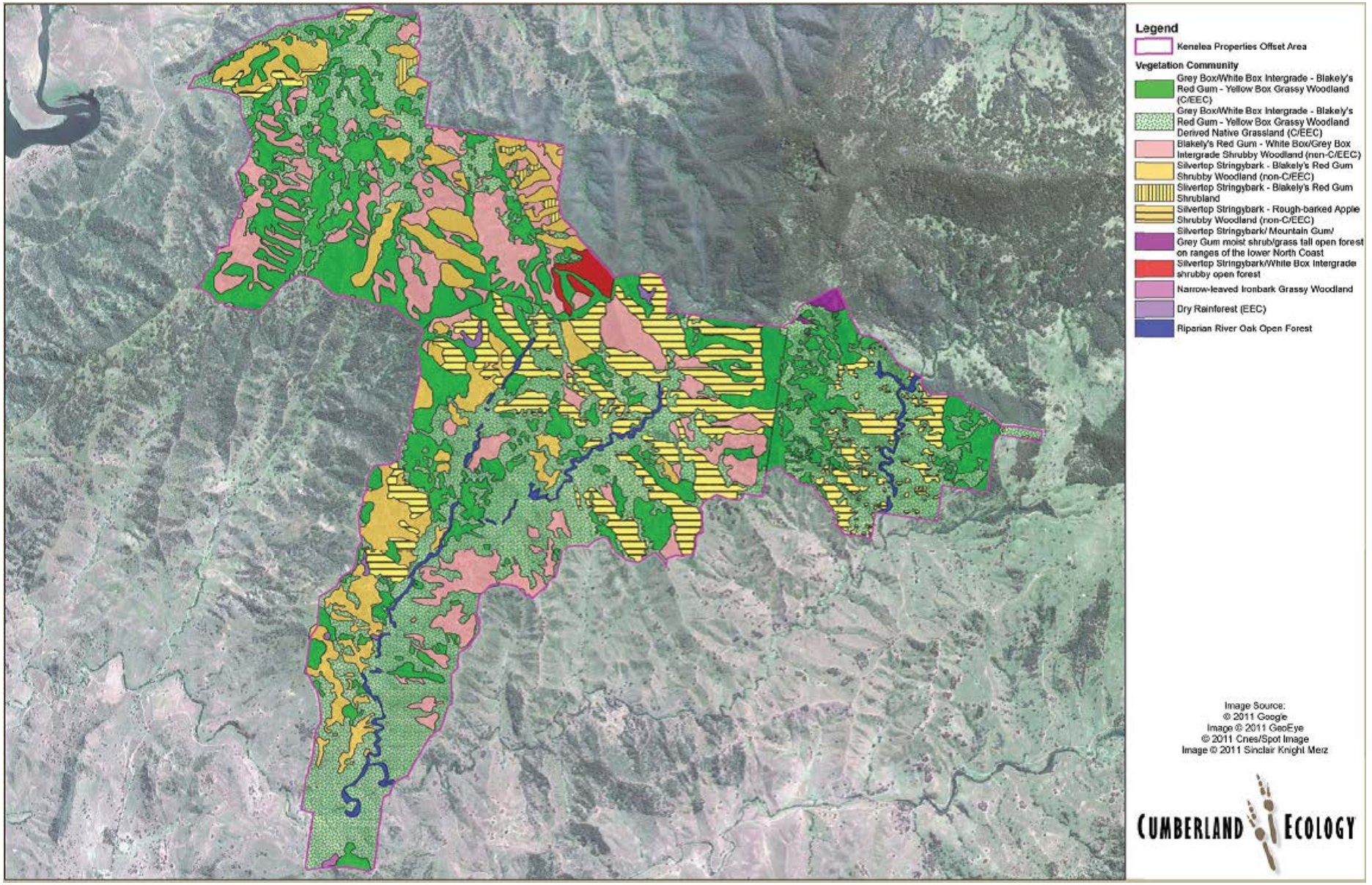
5. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to:
   (a) monitoring locations for the collection of representative noise data;
   (b) meteorological conditions during which collection of noise data is not appropriate;
   (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
   (d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

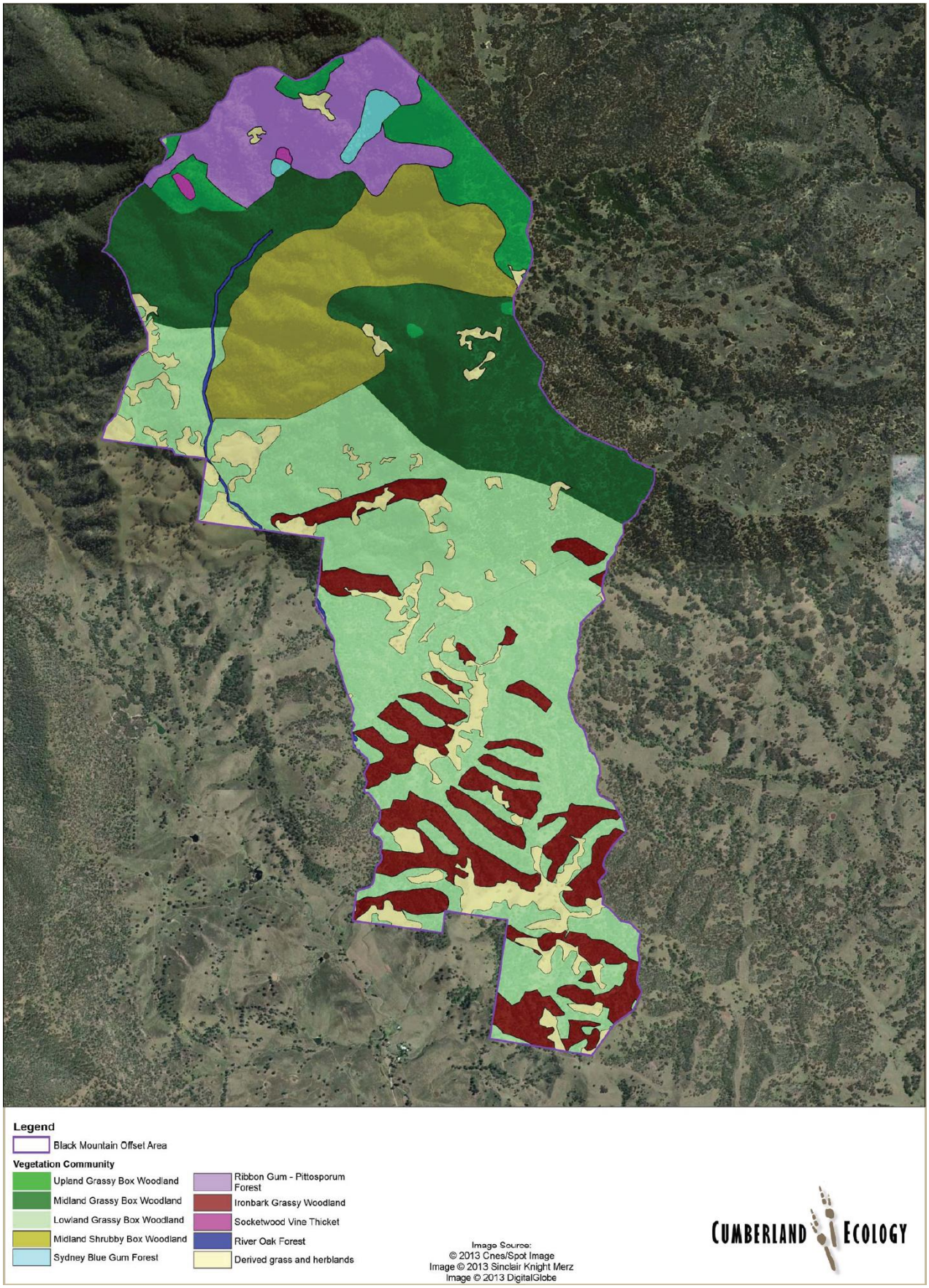
APPENDIX 6
HISTORIC HERITAGE SITES



APPENDIX 7
BIODIVERSITY OFFSET AREAS




Legend
Kenelea Properties Offset Area
Vegetation Community
Grey Box/White Box Intergrade - Blakely's Red Gum - Yellow Box Grassy Woodland (C/EEC)
Grey Box/White Box Intergrade - Blakely's Red Gum - Yellow Box Grassy Woodland Derived Native Grassland (C/EEC)
Blakely's Red Gum - White Box/Grey Box Intergrade Shrubby Woodland (non-C/EEC)
Silvertop Stringybark - Blakely's Red Gum Shrubby Woodland (non-C/EEC)
Silvertop Stringybark - Blakely's Red Gum Shrubland
Silvertop Stringybark - Rough-barked Apple Shrubby Woodland (non-C/EEC)
Silvertop Stringybark/ Mountain Gum/ Grey Gum moist shrub/grass tall open forest on ranges of the lower North Coast
Silvertop Stringybark/White Box Intergrade shrubby open forest
Narrow-leaved Ironbark Grassy Woodland
Dry Rainforest (EEC)
Riparian River Oak Open Forest
Image Source:
© 2011 Google
Image © 2011 GeoEye
© 2011 Cnes/Spot Image
Image © 2011 Sinclair Knight Merz
CUMBERLAND ECOLOGY


Legend
Black Mountain Offset Area
Vegetation Community
Upland Grassy Box Woodland
Midland Grassy Box Woodland
Lowland Grassy Box Woodland
Midland Shrubby Box Woodland
Sydney Blue Gum Forest
Ribbon Gum - Pittosporum Forest
Ironbark Grassy Woodland
Socketwood Vine Thicket
River Oak Forest
Derived grass and herblands
Image Source:
© 2013 Cnes/Spot Image
Image © 2013 Sinclair Knight Merz
Image © 2013 DigitalGlobe
CUMBERLAND ECOLOGY

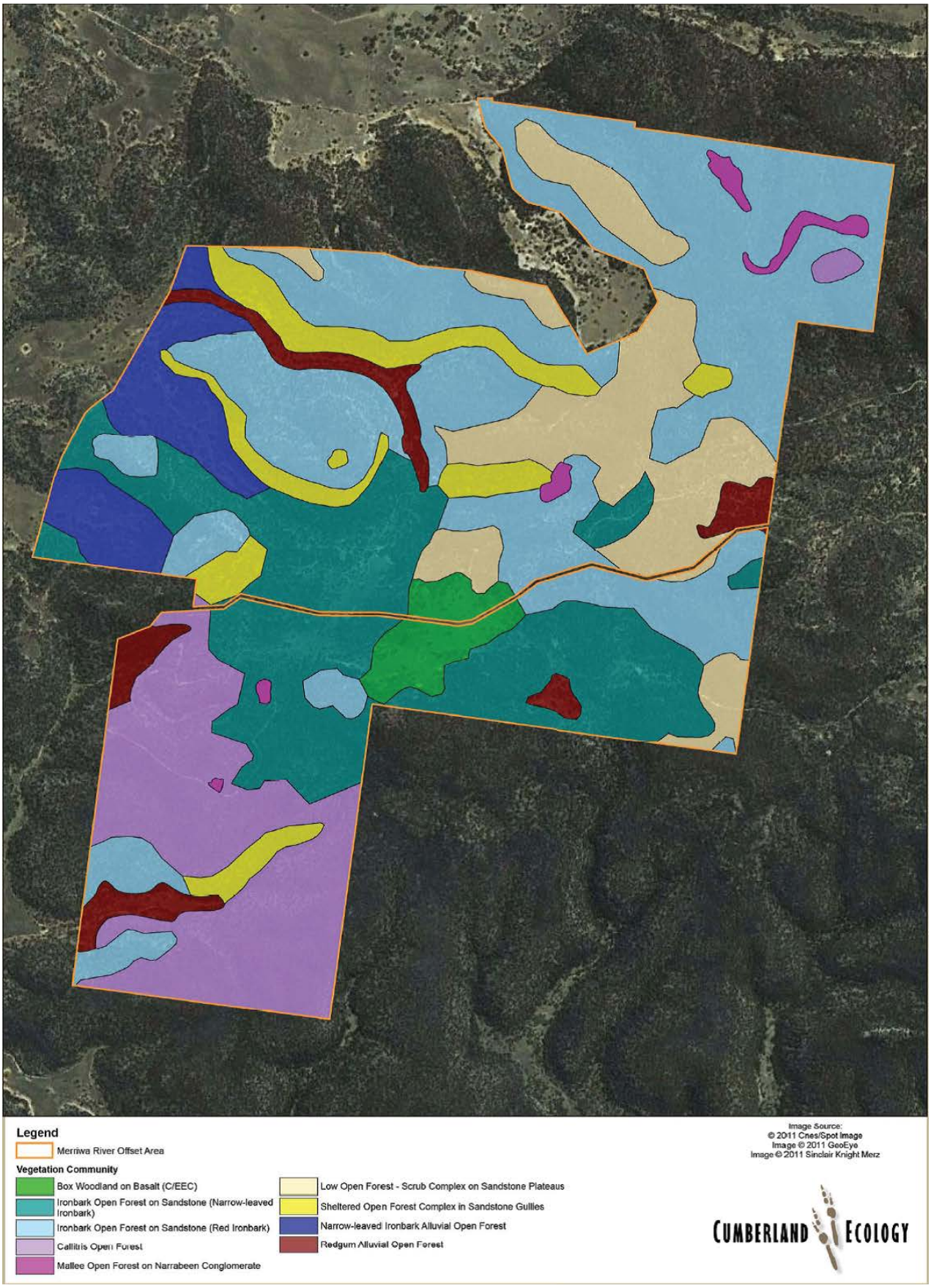

Legend
Merriwa River Offset Area
Vegetation Community
Box Woodland on Basalt (C/EEC)
Ironbark Open Forest on Sandstone (Narrow-leaved Ironbark)
Ironbark Open Forest on Sandstone (Red Ironbark)
Callitris Open Forest
Mallee Open Forest on Narrabeen Conglomerate
Low Open Forest - Scrub Complex on Sandstone Plateaus
Sheltered Open Forest Complex in Sandstone Gullies
Narrow-leaved Ironbark Alluvial Open Forest
Redgum Alluvial Open Forest
Image Source:
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Image © 2011 GeoEye
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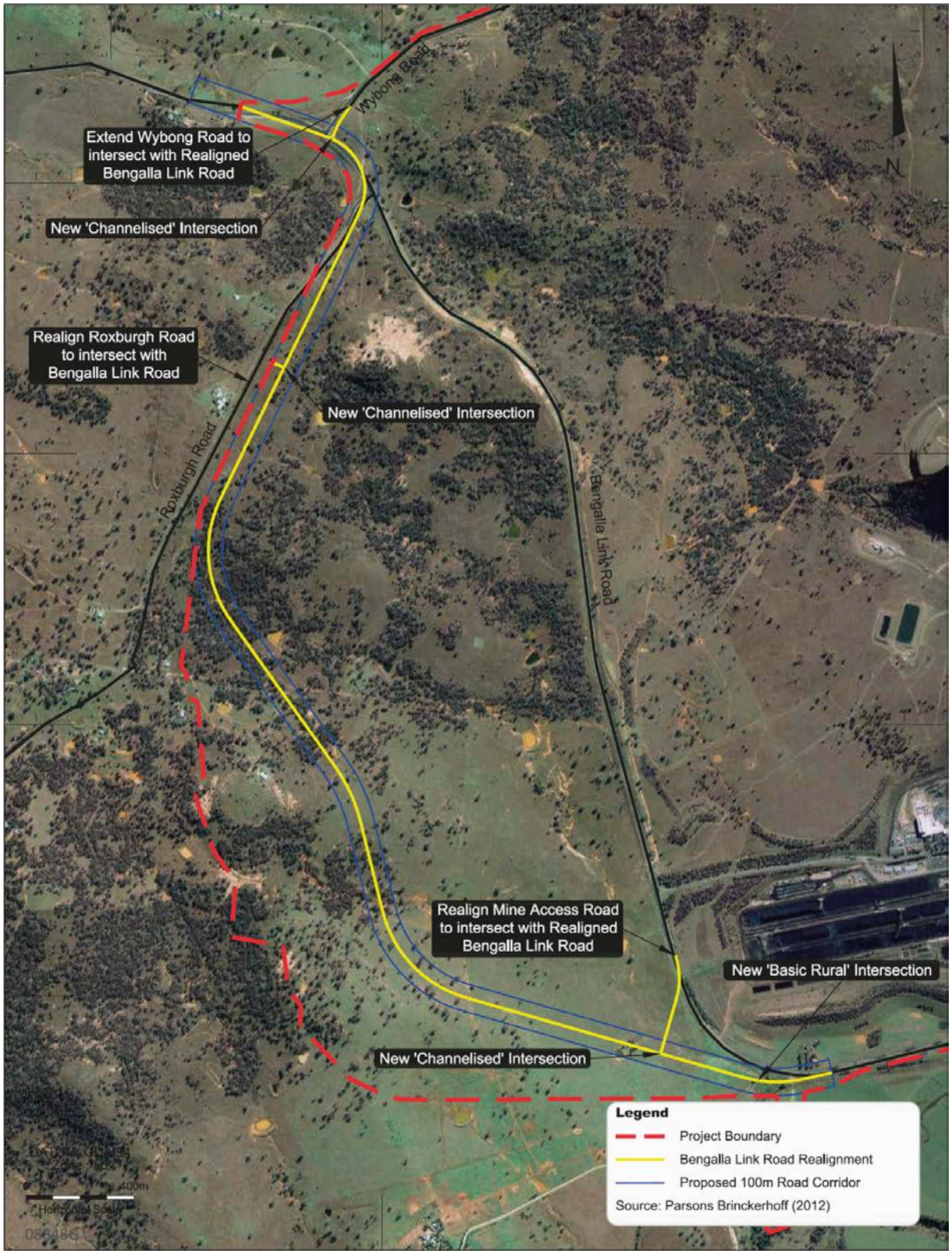
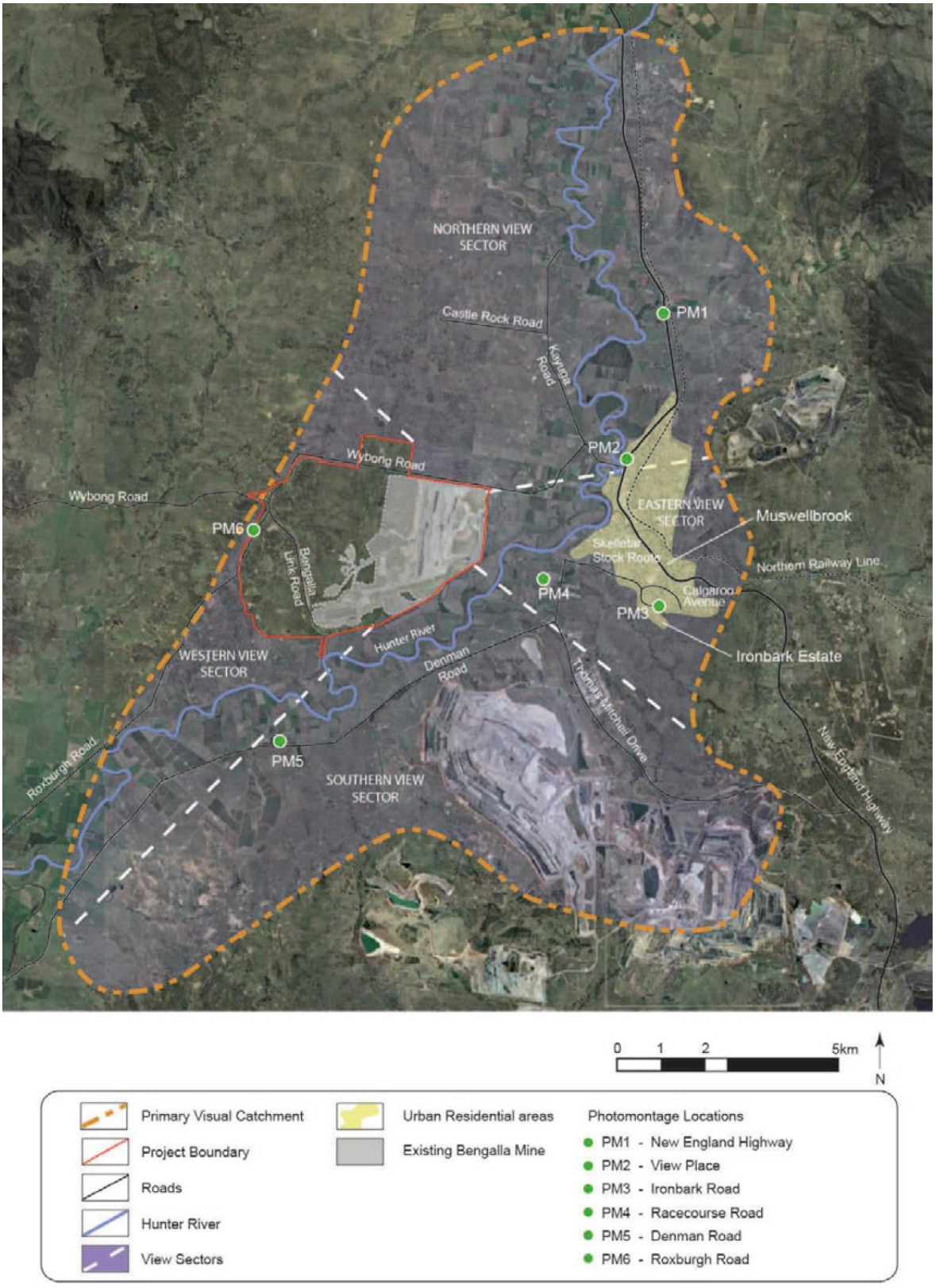
CUMBERLAND ECOLOGY

APPENDIX 8
CONCEPTUAL REALIGNMENT OF BENGALLA LINK ROAD



APPENDIX 9
VIEW SECTORS



APPENDIX 10
CONCEPTUAL FINAL LANDFORM