APPENDIX A

NATIVE VEGETATION MAPPING OF THE WALLERAWANG MAP SHEET

25 March 2013

Dorian Walsh
Senior Environmental Scientist
Hansen Bailey
6/127-129 John Street
Singleton, NSW, 2330

Cumberland Ecology
PO Box 2474
Carlingford Court 2118
NSW Australia
Telephone (02) 9868 1933
Mobile 0425 333 466
Facsimile (02) 9868 1977
Email: david@cumberlandecology.com.au

COALPAC CONSOLIDATION PROJECT RESPONSE TO COLONG FOUNDATION SUBMISSION RE: NATIVE VEGETATION OF THE WALLERAWANG MAP SHEET

Dear Dorian,

The purpose of this letter is to provide a response to the Colong Foundation for Wilderness (Colong Foundation) submission lodged with the Department of Planning and Infrastructure (DP&I) via email dated 18th March 2013 by Keith Muir.

For the purposes of this letter, the term "Project Boundary" refers to the Coalpac Consolidation as per the Exhibited Environmental Assessment.

1. Background

The Planning Assessment Commission (PAC) report criticised the vegetation mapping provided within the Environmental Assessment for the Coalpac Consolidation Project prepared by Cumberland Ecology. This criticism was based largely on information supplied by the Colong Foundation. Cumberland Ecology provided a detailed report responding to the ecological issues raised by the PAC and has included a discussion of the Colong Foundations reference to the earlier 1990s mapping.

1.1.1 Colong Foundation Information Supplied to the PAC

On the 28th September 2012, the Colong Foundation for Wilderness fulfilled a request by the PAC to provide further information on the importance of vegetation on Permian sediments in the region. In their responding letter to the PAC, the Colong Foundation made reference to vegetation mapping that included vegetation within the Project Boundary by Benson and Keith (1990).

The Colong Foundation accused Cumberland Ecology of producing misleading vegetation mapping by overlooking what the Foundation asserted was a poorly

conserved vegetation type, referred to as map unit "10h Tableland Grassy Woodland Complex" (Benson and Keith 1990) and depicting it as a more widespread form of vegetation. The map unit used by Cumberland Ecology in the Environmental Assessment mapping was Exposed Blue Mountains Sydney Peppermint - Silvertop Ash Shrubby Woodland, a vegetation community containing two of the most commonly found eucalypt trees in the Great Blue Mountains Region.

1.1.2 Cumberland Ecology Mapping and Review

The Benson and Keith (1990) mapping referred to by the Colong Foundation is a broad scale vegetation map of the Wallerawang map sheet, which includes the Project Boundary, and was published 23 years ago in Cunninghamia Volume 2, Number 2, in 1990. It has been superseded by more accurate mapping prepared by OEH in 2006, as explained below.

Cumberland Ecology reviewed the mapping referred to by the Colong Foundation and concluded the vegetation descriptions of Benson and Keith (1990) were broad (often containing complexes made up of two to several recognizable plant communities) and crudely maps seven "vegetation complexes" and woodlands within the Project Boundary. Similarly, Office of Environment and Heritage (OEH) also mention the Benson and Keith regional scale mapping (scale 1:100,000) was not appropriate for use in the development of Western Blue Mountains Mapping (scale of 1:25,000) (DEC (NSW) 2006). Cumberland Ecology has mapped 19 different "vegetation communities" across the Project Boundary including a number of conservation significant communities.

Contrary to the Colong Foundation's accusations, Cumberland Ecology has mapped a much wider array of vegetation communities across the slopes and valleys compared to Benson and Keith (1990). The Cumberland Ecology mapping shows 10 different forest and woodland "vegetation communities" across the slopes and valleys, whereas the outdated 1990 mapping only shows one forest type.

The 10 different forest and woodlands communities Cumberland Ecology mapped in the area previously mapped as Tablelands Grassy Woodland Complex by Benson and Keith (1990) includes:

- **Tableland Gully Snow Gum - Ribbon Gum Grassy Forest;**
- **Tableland Gully Ribbon Gum Blackwood Applebox Forest;**
- **Capertee Rough-barked Apple - Red Gum - Yellow Box Grassy Woodland (Box Gum Woodland listed under the EPBC Act and TSC Act);**
- Capertee Rough-barked Apple - Red Gum - Yellow Box Woodland (non grassy);
- Exposed Blue Mountains Sydney Peppermint - Silvertop Ash Shrubby Woodland
- Tableland Scribbly Gum – Narrow-leaved Stringybark Shrubby Open Forest;
- Tableland Broad-leaved Peppermint - Brittle Gum - Red Stringybark Grassy Woodland;

- **Tableland Slopes Brittle Gum – Broad-leaved Peppermint Grassy Forest;**
- **Tableland Gully Mountain Gum - Broad-leaved Peppermint Grassy Forest;** and
- Cox's Permian Red Stringybark - Brittle Gum Woodland.

Six of the 10 vegetation communities above are grassy forests or woodlands. All ten vegetation communities listed above contain more tree species than that identified in the "vegetation complex" "10h Tableland Grassy Woodland Complex" by Benson and Keith (1990).

The vegetation communities listed above in bold, have also been identified as vegetation occurring on soils derived from Permian geology that are of conservation significance due to extensive past clearing and poor reservation. This has been previously explained in Chapter 5 and Chapter 8 of the Response to the PAC Report (Cumberland Ecology 2013).

It is important to note that nine of these communities are not listed as endangered or even vulnerable under NSW or Commonwealth legislation. Only one community: Capertee Rough-barked Apple - Red Gum - Yellow Box Grassy Woodland is listed as Endangered under the *Environmental Protection and Biodiversity Conservation Act* 1999 (EPBC Act) and *Threatened Species Conservation Act 1995* (TSC Act). It is a form of Box Gum Woodland and has been largely exised from the Contracted Project mine plan.

1.1.3 Current Colong Foundation Submission

Since Cumberland Ecology (2013) responded to the PAC report, the Colong Foundation has reiterated its concerns about the misrepresentation of the Tablelands Grassy Woodland Complex.

In its most recent submission, the Colong Foundation submission requests an explanation from Cumberland Ecology for reasons why the vegetation types provided in Figure 5.3 of the Response to the Planning Assessment Commission Report (Cumberland Ecology 2013) is different to the vegetation types provided in the botanical journal Cunninghamia Volume 2, Number 2. The Colong Foundation submission implies that the difference may be due unprofessional conduct by Cumberland Ecology. This letter provides a response to such insinuations.

2. Explanation for Why There is Different Vegetation Typing of Benson and Keith (1990)

According to the map sheet provided in Cunninghamia Volume 2, Number 2, the slopes and valleys of the Project Boundary are mapped as "10h Tableland Grassy Woodland Complex". Figure 5.3 of the Response to the PAC Report (Cumberland Ecology 2013) shows the slopes and valleys of the Project Boundary mapped as "10i Talus Slope Woodland".

Cumberland Ecology reproduced the Benson and Keith (1990) mapping in the Response to the PAC Report in good faith. Unfortunately, it appears that Cumberland Ecology has reported erroneous data provided by the publically available OEH Spatial Data Online Access (OEH

2013). Cumberland Ecology has contacted OEH's data custodian and is awaiting an explanation.

From our internal investigation, there appear to be some errors in the "label" and "vegetation" fields" of the Benson and Keith (1990) attribute table downloaded from the OEH Spatial Data Online Access website. This error in the attribute table has caused two separate map units, "10h Tableland Grassy Woodland Complex" and "10i Talus Slope Woodland" to be lumped together and described as "Talus Slope Woodland" in the attribute table. There is no reference to "Tableland Grassy Woodland Complex" in the "vegetation" field of the OEH data which is used to describe the vegetation community.

3. Conclusion

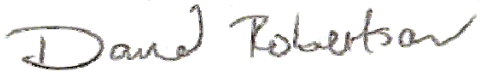
The Colong Foundation have accused Cumberland Ecology of producing misleading vegetation mapping by labelling what they believe to be a poorly conserved map unit "10h Tableland Grassy Woodland Complex" (Benson and Keith 1990) as Exposed Blue Mountains Sydney Peppermint - Silvertop Ash Shrubby Woodland, a community containing two of the most commonly found eucalypt trees in the Great Blue Mountains Region.

As explained in the Response to the PAC Report and within this letter, our mapping of the slopes and valleys encompasses 10 different vegetation communities (including grassy forests and woodlands) occurring across the Project Boundary. Furthermore, five of these vegetation communities have been recognised for their conservation significance including the Critically Endangered Capertee Rough-barked Apple - Red Gum - Yellow Box Grassy Woodland.

A review of the 23 year old Benson and Keith (1990) mapping proves it to be old and out of date as it crudely maps the slopes and valleys as one "vegetation complex".

Unfortunately Cumberland Ecology received and ultimately reported erroneous data on the Benson and Keith (1990) mapping and is pursuing OEH for an explanation. We still stand by our vegetation mapping of the Project Boundary and believe it still ultimately addresses concerns made by the Colong Foundation and the OEH regarding the conservation significance of the vegetation on Permian sediments. Our fine scale vegetation mapping was conducted based on detailed field survey and extensive ground-truthing over three years. Large scale mapping projects such Benson and Keith (1990) are by nature generalisations of reality, and it is impossible for the authors of such mapping to ground-truth each area mapped in the same level of detail as Cumberland Ecology employed during the field surveys of the Project Boundary.

Yours sincerely



David Robertson
Director
david.robertson@cumberlandecology.com.au

4. References

Cumberland Ecology. 2013. Ecological Assessment of the Coalpac Consolidation Project – Contracted Project Response to the PAC Review Report. Cumberland Ecology Pty. Ltd. Epping.

Benson, D. H. and D. A. Keith. 1990. The Natural Vegetation of the Wallerawang 1: 100 000 map sheet. Cunninghamia **2**:305-336.

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APPENDIX B

AIR QUALITY MODELLING RESULTS, CONTRACTED PROJECT COMPARISON

Pacific Environment Limited

Consulting • Technologies • Monitoring • Toxicology

30 May 2013

Hansen Bailey
Environmental Consultants
6/127-129 John Street
Singleton NSW 2330

COALPAC CONSOLIDATION PROJECT
CONTRACTED PROJECT REPORT – ALL YEARS

1 INTRODUCTION

1.1 Background

In 2011, Pacific Environment (then PAEHolmes) completed an air quality impact assessment (AQIA) for the Coalpac Consolidation Project, which included an estimation of greenhouse gas emissions for the project (**PAEHolmes, 2011**). That AQIA formed part of the Environmental Assessment (EA), referred to in the following sections as the Exhibited Project.

Since that time, Coalpac have made a number of changes to the Exhibited Project, including variations to mine plans, referred to now as the Contracted Project. The most significant changes, in terms of air quality, were made to the proposed Year 2 operations in order to reduce predicted particulate concentrations, particularly in the vicinity of Cullen Bullen. Pacific Environment have assessed the major mine plan changes for the Contracted Project in all four assessment years (Years 2, 8, 14 & 21), and this report quantifies the improvements in air quality predicted to be realised from the Contracted Project as compared to the Exhibited Project.

Pacific Environment Limited
Suite 1, Level 1, 146 Arthur Street, North Sydney, NSW 2060
(ASX: PEH) ABN: 43 692 285 758
www.pacific-environment.com
Ph: +61 2 9870 0900

1.2 Contracted Project Description

The Contracted Project has been developed in response to the Planning Assessment Commission (PAC) review of the Exhibited Project. Changes have been made in order to further reduce the environmental impacts described in the Exhibited Project. These are listed below:

1. Removal of the Hillcroft Mining Area and associated access infrastructure.
2. Removal of the sand extraction component of the Exhibited Project located in the Cullen Valley mining area, including the requirement for associated crushing and screening infrastructure and the transport of product sand by road from the site to market.
3. Reduction of the open cut mining footprint to avoid the area of Clandulla Geebung habitat previously located in the north western mining area at Cullen Valley Mine.
4. Reduction of the open cut mining footprint in relation to the Significant Pagoda Landforms (SPL) to improve ecological outcomes.
5. Reduction of the highwall mining footprint to avoid rock formations within the SPL to improve perceived ecological, heritage and geotechnical outcomes.
6. Implementation of a robust blast management system specifically tailored to further minimise the potential for blasting impacts to any SPL and Sandstone Outcrop.
7. Enhancement of the BOS proposed for any residual ecological impacts (not specifically related to air quality).
8. Commitments with regard to the monitoring, management and operation of the Contracted Project.

This report provides a comparison to the Exhibited Project, reflecting the major changes resulting from the Contracted Project mine plan, that is:

1. Removal of the Hilcroft Mining Area and associated access infrastructure
2. Removal of the sand extraction component of the Exhibited Project located in the Cullen Valley mining area, including the requirement for associated crushing and screening infrastructure and the transport of product sand by road from the site to market.

Please note that other mine plan changes, including those listed in Points 3, 4 and 5 above, have not been included in the modelling at this stage. In addition to that, the relocation of the haul road connecting the Cullen Valley and East Tyldesley mining areas has not yet been included in the modelling.

Other changes in the modelling for the Contracted Project include the use of site specific parameters for silt and moisture contents of materials, as well as updates to emission factors. These are described in further detail in **Section 3.2**.

Please note that references in this report to the 'Contracted Project', only refer to the removal of the Hillcroft mining area and the removal of sand extraction operations at the Cullen Valley mining area.

2 ASSESSMENT CRITERIA

The relevant air quality criteria, against which predictions resulting from the Contracted Project have been assessed, are listed below. **Table 2.1** lists the NSW EPA assessment criteria, while **Table 2.2** lists the criteria applied by the Department of Planning and Infrastructure (DP&I) to properties eligible for acquisition. Assessment criteria provide benchmarks, which are intended to protect the community against the adverse effects of particulates. These criteria reflect current Australian standards for the protection of health and protection against nuisance effects.

Table 2.1: Air quality assessment criteria

Pollutant	Criterion	Averaging Period	Application	Source
TSP	90 µg/m^3	Annual	Cumulative	NHMRC (1996)
PM_{10}	50 µg/m^3	24-hour	Cumulative	NEPC (1998)
	30 µg/m^3	Annual	Cumulative	NSW EPA (1998)
Deposited Dust	2 g/m^2/month	Annual	Incremental	NERDDC (1988)
	4 g/m^2/month	Annual	Cumulative	NERDDC (1988)

Table 2.2: Air quality acquisition criteria

Pollutant	Criterion	Averaging Period	Application
TSP	90 µg/m^3	Annual	Cumulative
PM_{10}	150 µg/m^3	24-hour	Cumulative
	50 µg/m^3	24-hour	Incremental
	30 µg/m^3	Annual	Cumulative
Deposited Dust	2 g/m^2/month	Annual	Incremental
	4 g/m^2/month	Annual	Cumulative

3 ASSESSMENT METHODOLOGY

3.1 Meteorology

In terms of the preparation of the meteorological data used in the dispersion modelling, this remains unchanged from the Exhibited Project. The TAPM and CALMET models (as defined below) were used in conjunction with surface observations from five sites, as well as local terrain data, to provide a three-dimensional representation of the meteorology within the modelling domain. This methodology is described in detail in Section 5 of the Exhibited Project AQIA. In summary, the modelling system works as follows:

- TAPM is a prognostic meteorological model that generates gridded three-dimensional meteorological data for each hour of the model run period.
- CALMET, the meteorological pre-processor for the dispersion model CALPUFF, calculates fine resolution three-dimensional meteorological data based upon observed ground and upper level meteorological data, as well as observed or modelled upper air data generated for example by TAPM.
- CALPUFF then calculates the dispersion of plumes within this three-dimensional meteorological field.

3.2 Emissions estimation

As discussed in **Section 1.1**, this air quality assessment involves remodelling operations in each of the years modelled for the EA. The two major changes for the Contracted Project mine plan include the removal of the Hillcroft Mining Area and associated access infrastructure, and the removal of the sand extraction component in the Cullen Valley mining area. The removal of the sand mining component also involves the removal of the associated crushing and screening infrastructure and the transport of product sand by road.

In addition to eliminating these activities in the Contracted Project, revisions were made to the emission estimation techniques for wind blown dust emissions. Site specific silt and moisture content measurements were also made in order to populate the emission estimate equations, which replaced the conservative estimates used in the Exhibited Project AQIA.

3.2.1 Site specific parameterisation

Site specific parameterisation refers to taking samples of on-site material and analysing them to determine parameters such as silt and moisture content. These results are then used in emissions estimation equations (emission factors) to calculate emission rates for individual mining activities.

Much of the current discussion around the requirement for site specific parameters to use in emission factors has arisen since the implementation of the NSW EPA's Dust Stop Pollution Reduction Program (PRP) process in 2011/2012. The Exhibited Project AQIA was completed well in advance of this process, and so a high level of conservatism was applied to the modelling at that time.

These measurements were subsequently carried out on 31 January 2013 for both Cullen Valley Mine and Invincible Colliery. The monitoring reports for these measurements are attached in **Appendix A**. As expected, the values used in the Exhibited Project AQIA modelling were conservative. Using the site specific data has led to considerable reductions in emission estimates for the Contracted Project.

Table 3.1 summarises the values used in both the Exhibited and Contracted Project. With the exception of product coal[1], it can be seen that all the Exhibited Project AQIA assumptions were conservative (higher moisture content and lower silt content than the site specific data used in the Contracted Project AQIA).

Table 3.1: Assumed and measured silt and moisture contents

Area	As adopted in the Exhibited Project	As adopted in the Contracted Project	As adopted in the Exhibited Project	As adopted in the Contracted Project
	Moisture content (%)		Silt content (%)	
Haul roads	N/A	N/A	5	3.4 - 3.9
ROM coal	7	7 - 8	10	3
Product coal	7	5.3	N/A	N/A
Overburden	2	4 - 5	10	4 - 5
Topsoil	2	6 - 7	8	5 - 6
Rehab	2	5 - 6	10	5 - 6

Note: A range of values occur as measurements were taken at both Cullen Valley Mine and Invincible Colliery. Values adopted for East Tyldesley mining area were taken as the average of the two.

3.2.2 *Wind blown dust emissions*

Wind blown dust emissions refer to those particulate emissions arising from erosion of exposed areas such as the pit or active dumping or rehabilitation areas. The amount of particulate lift-off is dependent on a number of factors which include the threshold friction velocity (the wind velocity necessary to initiate soil erosion).

There are a number of different emission estimation techniques that can be used to determine wind blown dust emissions. One such technique is the US EPA AP-42 factor (US EPA (2006) Chapter 13.2.5) which takes into account site specific wind data and erodible material properties.

Experience has shown that this method can result in very low emission estimates for wind erosion, which are not realistic. The older and more conservative factor of 0.4 kg/ha/hr (**SPCC, 1983**) was therefore used to represent these emissions in the Exhibited Project AQIA modelling.

To confirm this, a site specific measurement for threshold friction velocity (TFV) was made at the Invincible Colliery on 31 January 2013, to determine the wind blown dust from exposed areas. **Table 3.2** below presents the measured data relevant to the equation.

Table 3.2: Measurements of threshold friction velocity from Invincible Colliery

Cullen Valley Mine	
Area measured	**Threshold friction velocity (cm/s)**
Overburden Dump Pit 105	100
Overburden Dump Pit 106	100
Invincible Colliery	
ROM Coal Inpit A	100
ROM Coal Inpit B	76
Overburden Current Dump (average)	72

[1] It should be noted that emissions from product coal do not form a significant percentage of the total emissions from the site (approximately 0.04%), and the difference between assumption and measurement is also small (1.7%).

Not all exposed areas will be active constantly, meaning that dust will only be generated if the wind velocity is sufficient to lift dust from the surface. This occurs when the surface wind velocity is greater than the TFV of the material. Surfaces with a low TFV have greater propensity for fine particles to be lifted at relatively low wind speeds. Since larger material and other non-erodible elements (e.g. crusting of stockpiles) add protection against wind erosion, they act to raise the TFV if they are present on the surface.

The US EPA AP-42 emission factor (Chapter 13.2.5) takes into account site specific wind data, erodible material properties (TFV, particulate size distribution of the material eroded) and the frequency of material disturbance.

Using the site-specific measurements (**Table 3.1**) and adopting this approach would result in almost no wind initiated dust lift-off emissions from exposed areas, which is unrealistic. For this reason, we have not used this result, but have adopted the US EPA's AP42 factors of 0.1 kg/ha/hr factor (for exposed areas) and [1.8 x wind speed] kg/ha/hr (for active stockpiles) for modelling the Contracted Project.

3.2.3 Summary of emissions

Table 3.3 shows a comparison between the annual total suspended particulate (TSP) calculated for both the Exhibited and Contracted Project in Year 2. The values for the Contracted Project include changes due to the use of site specific parameters and also the updated wind blown dust equation.

As expected, emissions calculated for the Contracted Project are significantly lower than for the Exhibited Project.

Table 3.3: Comparison of Exhibited and Contracted Project TSP emissions calculated for each year

Estimated TSP in kg/year	Exhibited Project (Conservative Assumptions Made)	Contracted Project (Site Specific Inputs Adopted)	Percentage change
Year 2			
Cullen Valley Mine	371,719	430,587	+ 16%
Hillcroft Mine	966,310	-	- 100%
East Tyldesley Mine	757,984	487,977	- 36%
Invincible Colliery	771,266	523,430	- 32%
TOTAL	**2,867,279**	**1,441,993**	**- 50%**
Year 8			
Cullen Valley Mine	1,392,040	616,864	-56%
East Tyldesley Mine	874,261	509,241	-42%
Invincible Colliery	725,916	401,400	-45%
TOTAL	**2,991,885**	**1,527,505**	**-49%**
Year 14			
Cullen Valley Mine	1,559,411	644,276	-59%
East Tyldesley Mine	1,062,012	553,702	-48%
Invincible Colliery	1,022,260	580,879	-43%
TOTAL	**3,643,683**	**1,778,857**	**-51%**
Year 20			
Cullen Valley Mine	1,106,657	614,452	-44%
East Tyldesley Mine	963,484	532,819	-45%
Invincible Colliery	912,904	557,329	-39%
TOTAL	**2,983,044**	**1,704,600**	**-43%**

Note: Cullen Valley Mine (Year 2) extracted sand only in the Exhibited EA modelling and extracts coal in the Contracted Project.

3.3 CALPUFF dispersion modelling

Once the TSP emissions were estimated for each activity and for each mining operation, these activities were assigned locations based on their likely positions throughout the course of the Contracted Project operations. **Figure 3.1** – **Figure 3.4** show these locations for each year respectively, as modelled for this assessment.

The only difference in the CALPUFF modelling inputs between the Exhibited Project and the Contracted Project are the emission estimation values and the source locations. All other settings remain unchanged from the Exhibited Project AQIA.

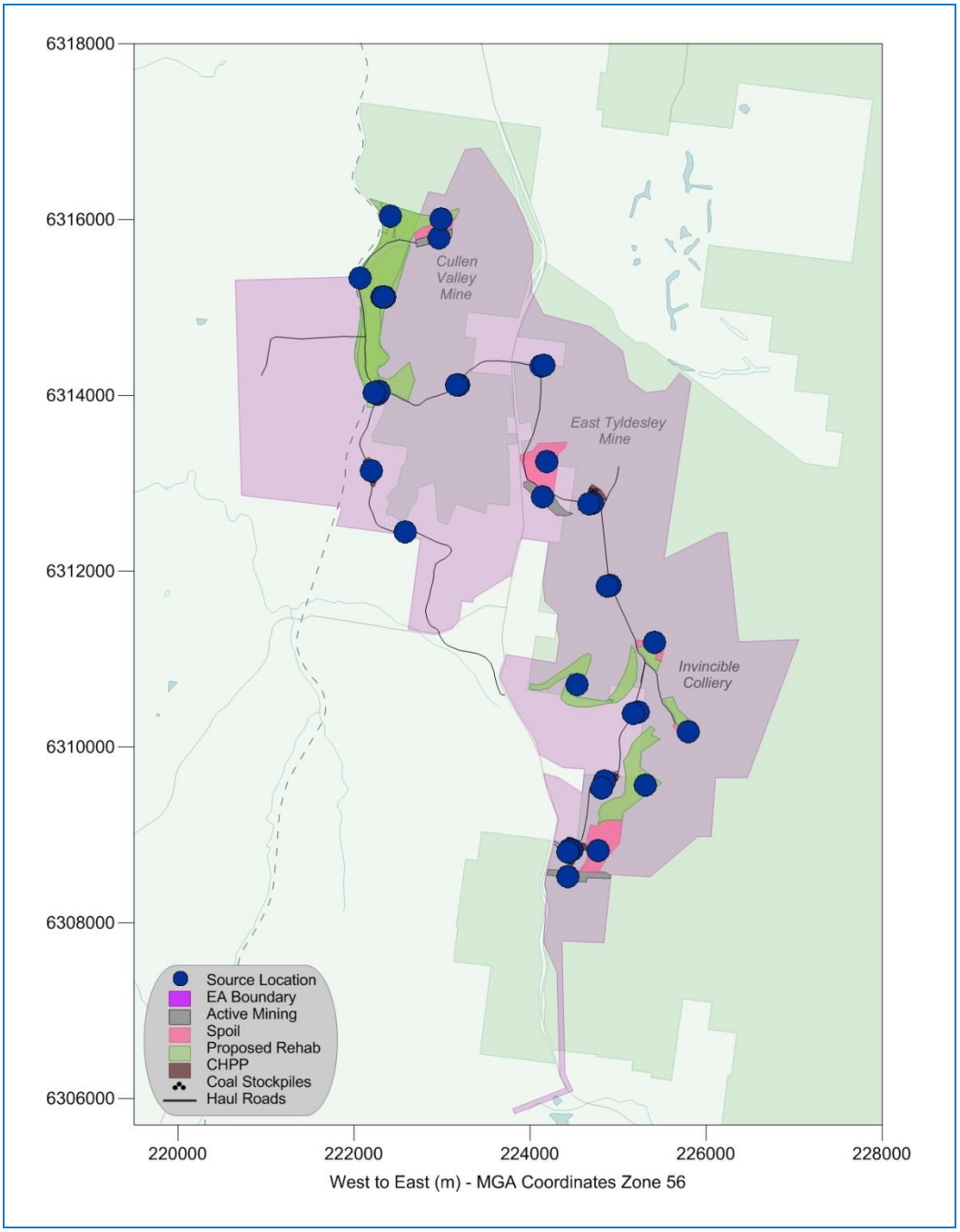


Figure 3.1: Modelled source locations for the Contracted Project – Year 2

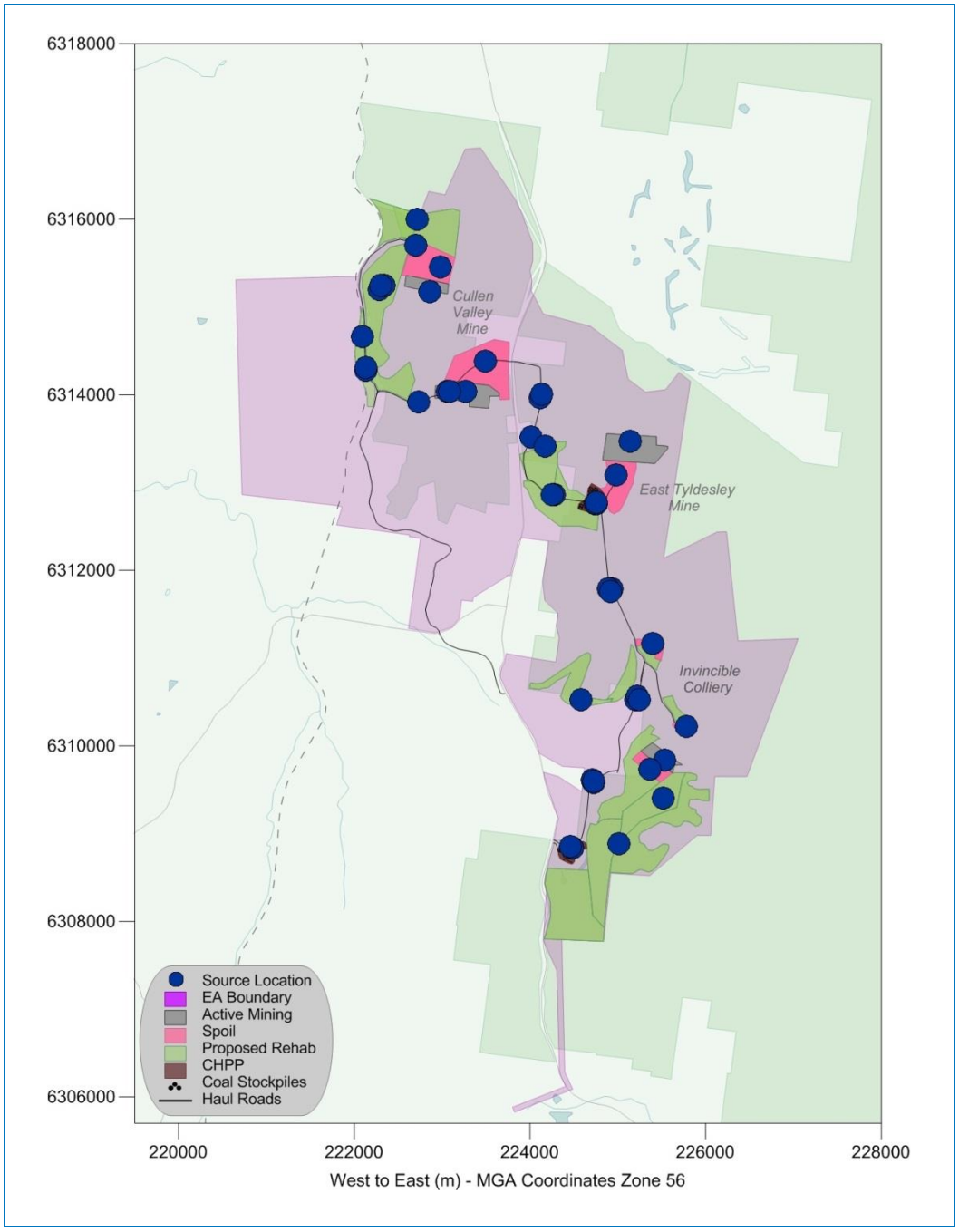


Figure 3.2: Modelled source locations for the Contracted Project – Year 8

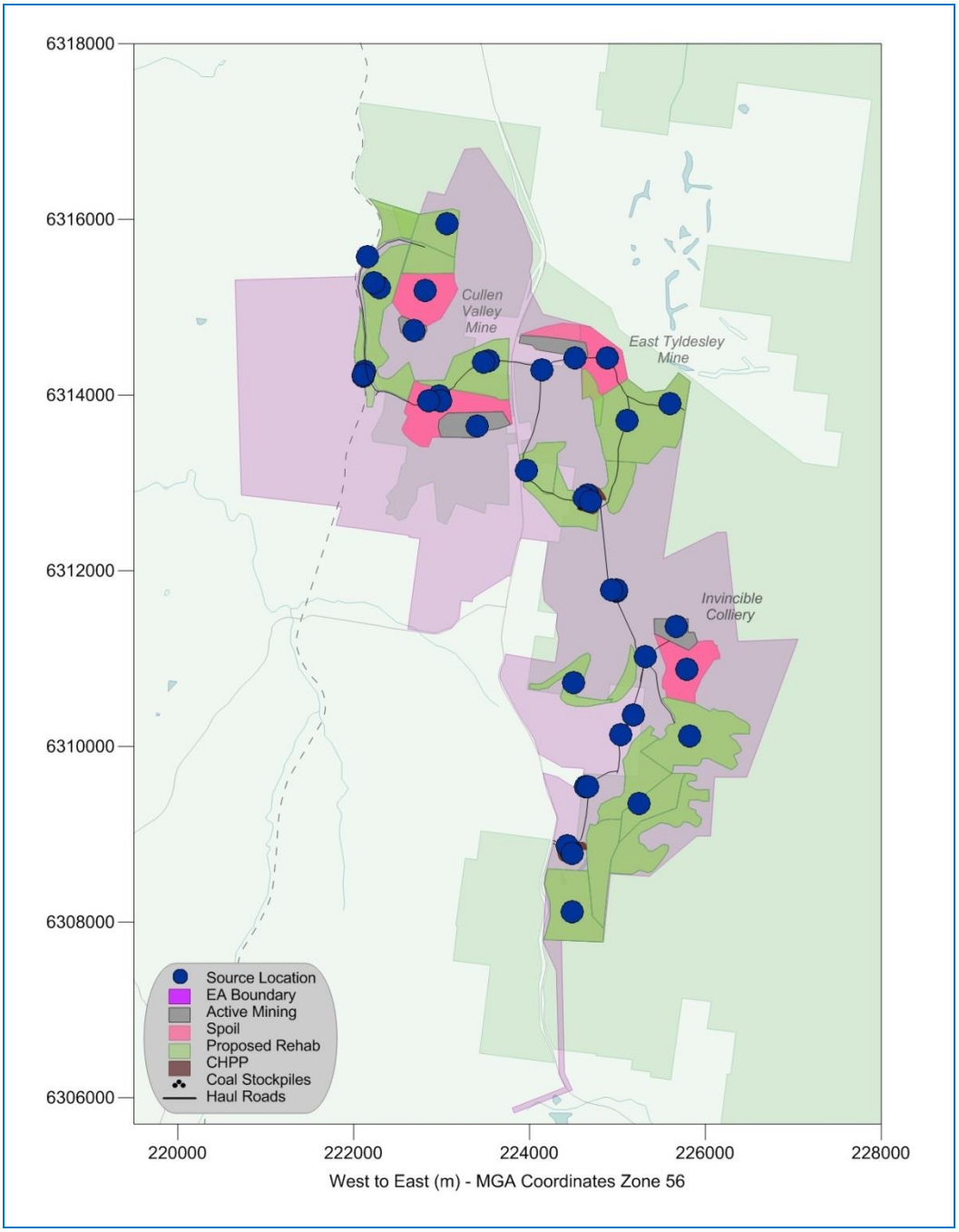


Figure 3.3: Modelled source locations for the Contracted Project – Year 14

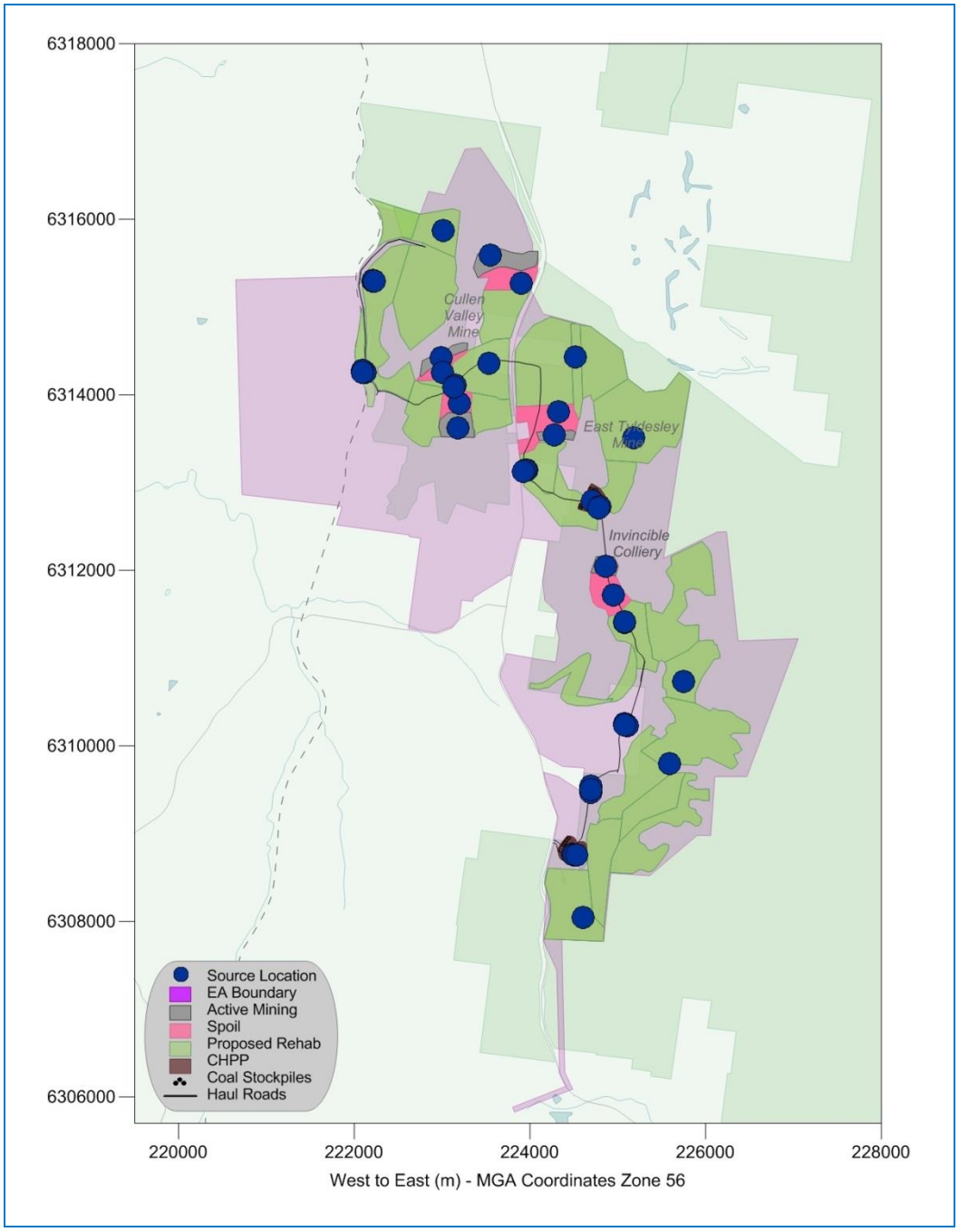


Figure 3.4: Modelled source locations for the Contracted Project – Year 20

4 AIR QUALITY IMPACT ASSESSMENT FOR THE PREFERRED PROJECT

4.1 Modelling results

Using the site specific measurements and updated wind erosion equation, discussed in **Section 3.2**, to compile new emissions inventories in combination with the major changes to the Exhibited Project EA mine plan, further dispersion modelling was carried out for Years 2, 8, 14 and 20. The following sections present and compare these modelling results.

4.1.1 Year 2

Table 4.1, **Table 4.2** and **Table 4.3** provide comparisons of the predicted ground level concentrations for the Exhibited and Contracted Projects, for those residences where exceedances of the air quality criteria are predicted. As shown, there are significant reductions predicted at all locations where exceedances of the air quality criteria were predicted in the Exhibited Project AQIA for both PM_{10} and TSP. Privately owned properties are in bold text. Results for all modelled residential receptors are presented in **Appendix B**.

Table 4.1: Comparison of modelling results Year 2 – 24-hour average PM_{10}

ID	Ownership Details	Exhibited Project		Contracted Project	
		Max 24-hour Average PM_{10} Mine Alone (µg/m³)	Number of days over 50 µg/m³	Max 24-hour Average PM_{10} Mine Alone (µg/m³)	Number of days over 50 µg/m³
		Assessment criteria			
		*50**	*N/A*	*50**	*N/A*
169[b]	Portland Road Pastoral Co Pty Ltd	62	7	26	0
171[b]	Portland Road Pastoral Co Pty Ltd	64	4	25	0
195[cd]	KJ Blackley	191	105	114	28
196[ac]	Crown-owned	173	81	101	18
197[bc]	BE & CE Leisemann & IL & KID Follington	402	189	255	153
198[cd]	DA Tilley	199	115	126	50
199[cd]	DA Tilley	136	71	84	17
217b[a]	Crown-owned	52	1	28	0
327	**RG Wright & KL Norris**	**54**	**1**	28	0
394[b]	Coalpac	79	12	55	1
396[b]	Coalpac	90	24	69	4
426	**JWJ & SM Taylor**	**62**	**3**	40	0

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

* 50 µg/m³ refers to the cumulative criterion and should not be applied to Project alone results. This is shown here for reference only. A prediction over 50 µg/m³ by default will mean an exceedance of the cumulative criterion.

Table 4.2: Comparison of modelling results Year 2 – annual average PM_{10}

ID	Ownership Details	Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$) Exhibited Project	Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$) Contracted Project
		Assessment criteria	
		30	
195[cd]	KJ Blackley	49	33
196[ac]	Crown-owned	45	30
197[c]	BE & CE Leisemann & IL & KID Follington	90	62
198[cd]	DA Tilley	49	65
199[cd]	DA Tilley	40	29

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

Table 4.3: Comparison of modelling results Year 2 – annual average TSP

ID	Ownership Details	Annual Average TSP Mine & Other Sources ($\mu g/m^3$) Exhibited Project	Annual Average TSP Mine & Other Sources ($\mu g/m^3$) Contracted Project
		Assessment criteria	
		90	
195[cd]	KJ Blackley	125	70
196[ac]	Crown-owned	115	65
197[c]	BE & CE Leisemann & IL & KID Follington	231	140
198[cd]	DA Tilley	125	78
199[cd]	DA Tilley	102	65

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

Figure 4.1, **Figure 4.2** and **Figure 4.3** provide isopleths showing the changes in predicted ground level concentrations in Year 2. The blue contour shows the predictions from the Exhibited Project in Year 2 and red contour indicates predicted levels from the Contracted Project in Year 2. The predictions are clearly lower for the Contracted Project, except for the area immediately to the west of the Cullen Valley CHPP where activities are increased due to mining of coal rather than sand.

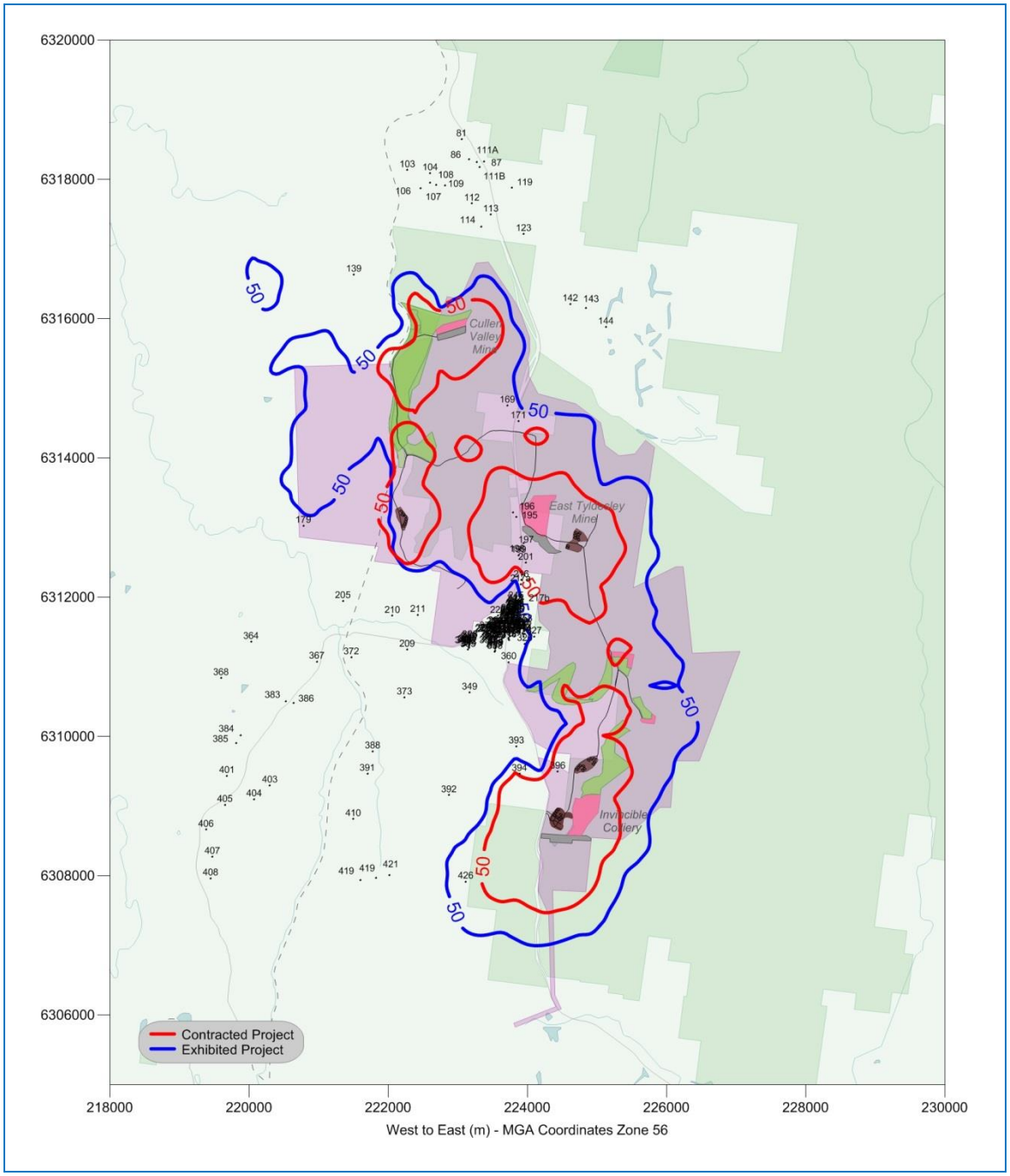


Figure 4.1: Comparison of Year 2 modelling results – 24-hour average PM_{10} (µg/m³)

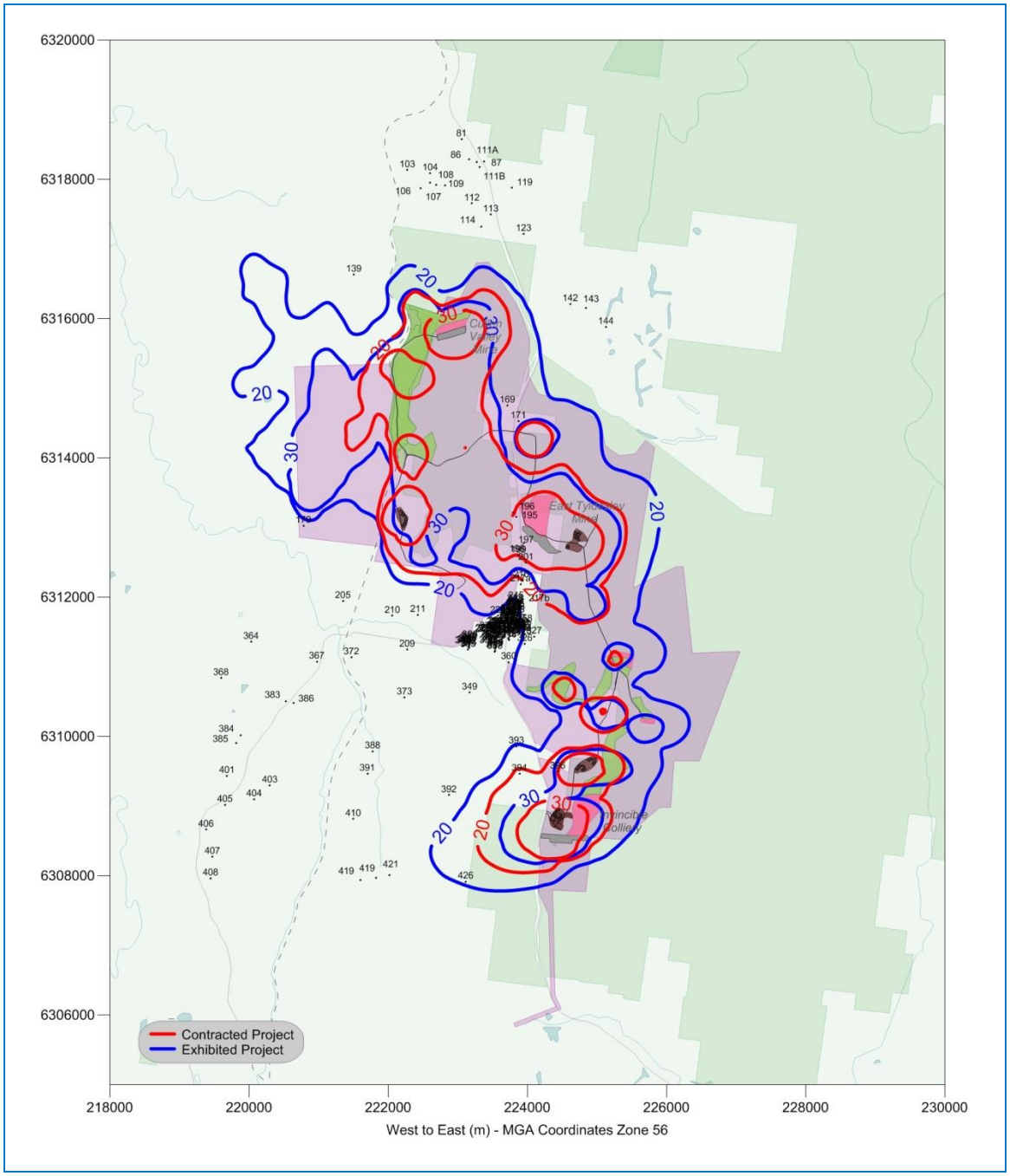


Figure 4.2: Comparison of Year 2 modelling results – annual average cumulative PM_{10} (µg/m^3)

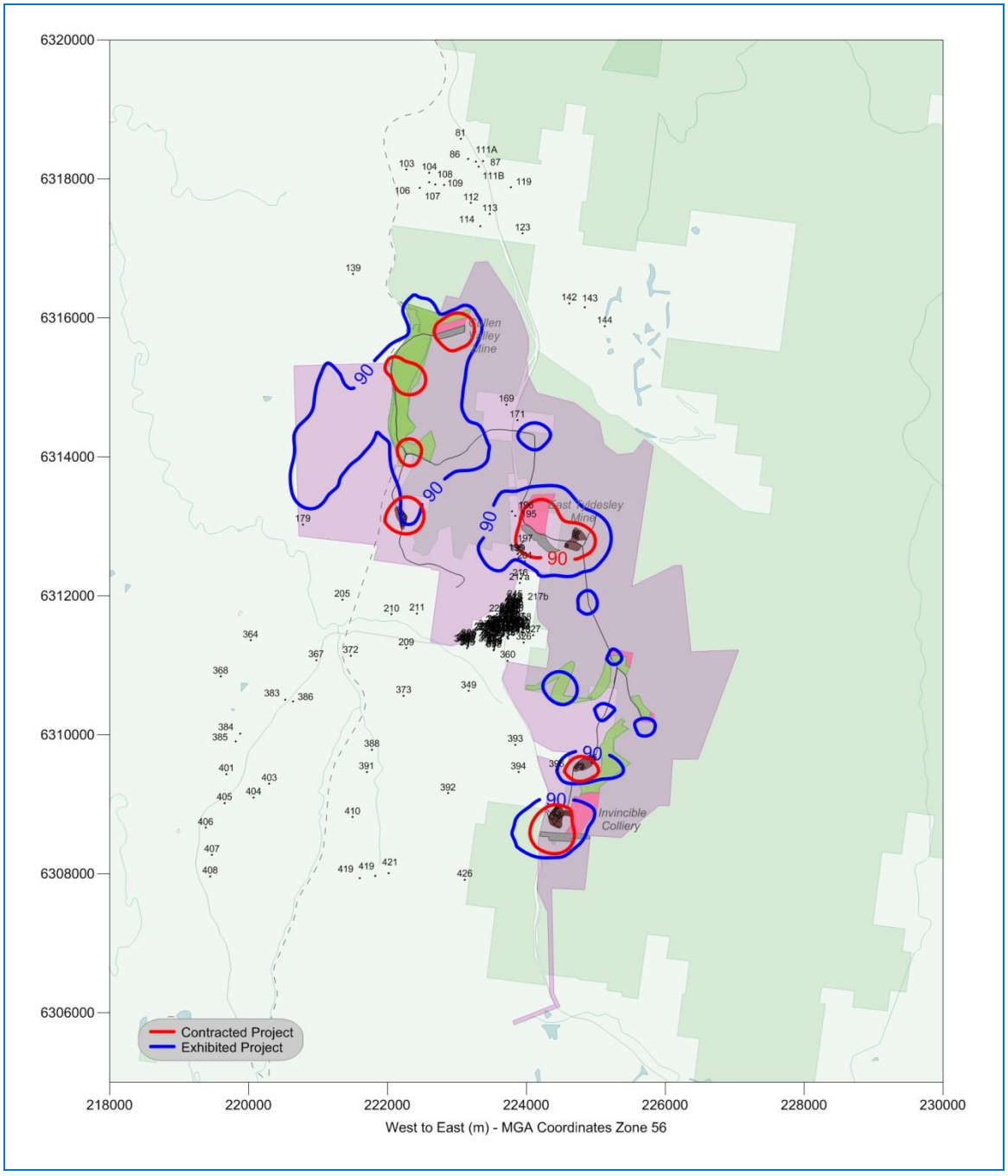


Figure 4.3: Comparison of Year 2 modelling results – annual average cumulative TSP (µg/m^3)

4.1.2 Year 8

Table 4.4, **Table 4.5** and **Table 4.6** provide comparisons of the predicted ground level concentrations for the Exhibited and Contracted Projects, for those residences where exceedances of the air quality criteria are predicted. As shown, there are significant reductions predicted at all locations where exceedances of the air quality criteria were predicted in the Exhibited Project AQIA for both PM_{10} and TSP. Privately owned properties are in bold text. Results for all modelled residential receptors are presented in **Appendix B**.

Table 4.4: Comparison of modelling results for Year 8 – 24-hour average PM_{10}

ID	Ownership Details	Exhibited Project		Contracted Project	
		Max 24-hour Average PM_{10} Mine Alone (µg/m³)	Number of days over 50 µg/m³	Max 24-hour Average PM_{10} Mine Alone (µg/m³)	Number of days over 50 µg/m³
		Assessment criteria			
		50	*N/A*	*50*	*N/A*
169[b]	Portland Road Pastoral Co Pty Ltd	88	38	46	0
171[b]	Portland Road Pastoral Co Pty Ltd	65	14	46	0
195[cd]	KJ Blackley	141	102	98	34
196[ac]	Crown-owned	160	106	66	10
197[bc]	BE & CE Leisemann & IL & KID Follington	64	6	34	0
198[cd]	DA Tilley	56	3	30	0
199[cd]	DA Tilley	53	2	29	0
394[b]	Coalpac	64	6	41	0
396[b]	Coalpac	74	20	48	0
426	**JWJ & SM Taylor**	**53**	**1**	31	0

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

* 50 µg/m³ refers to the cumulative criterion and should not be applied to Project alone results. This is shown here for reference only. A prediction over 50 µg/m³ by default will mean an exceedance of the cumulative criterion.

Table 4.5: Comparison of modelling results for Year 8 – annual average PM_{10}

ID	Ownership Details	Annual Average PM_{10} Mine & Other Sources (µg/m³) Exhibited Project	Annual Average PM_{10} Mine & Other Sources (µg/m³) Contracted Project
		Assessment criteria	
		30	
169[b]	Portland Road Pastoral Co Pty Ltd	33	23
171[b]	Portland Road Pastoral Co Pty Ltd	33	23
195[cd]	KJ Blackley	48	36
196[ac]	Crown-owned	49	30
197[bc]	BE & CE Leisemann & IL & KID Follington	31	21

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

Table 4.6: Comparison of modelling results for Year 8 – annual average TSP

ID	Ownership Details	Annual Average TSP Mine & Other Sources (µg/m³) Exhibited Project	Annual Average TSP Mine & Other Sources (µg/m³) Contracted Project
		Assessment criteria	
		90	
195[cd]	KJ Blackley	123	81
196[ac]	Crown-owned	126	66

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

Figure 4.4, **Figure 4.5** and **Figure 4.6** provide isopleths showing the changes in predicted ground level concentrations in Year 8, due to the Contracted Project. The blue contour shows the predictions from the Exhibited Project in Year 8 and red contour indicates predicted levels from the Contracted Project in Year 8. The predictions are clearly lower for the Contracted Project.

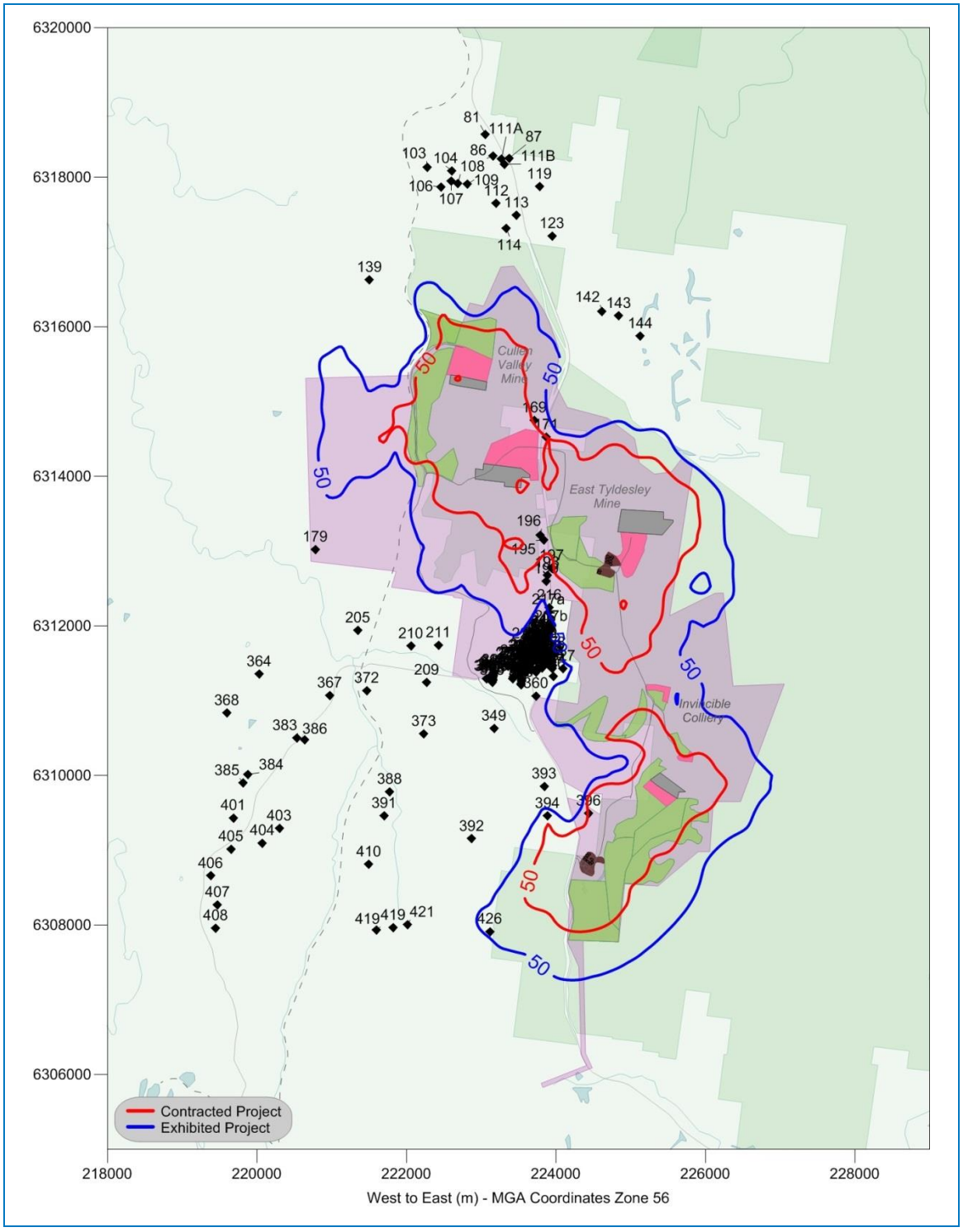


Figure 4.4: Comparison of Year 8 modelling results – 24-hour average PM_{10} (µg/m^3)

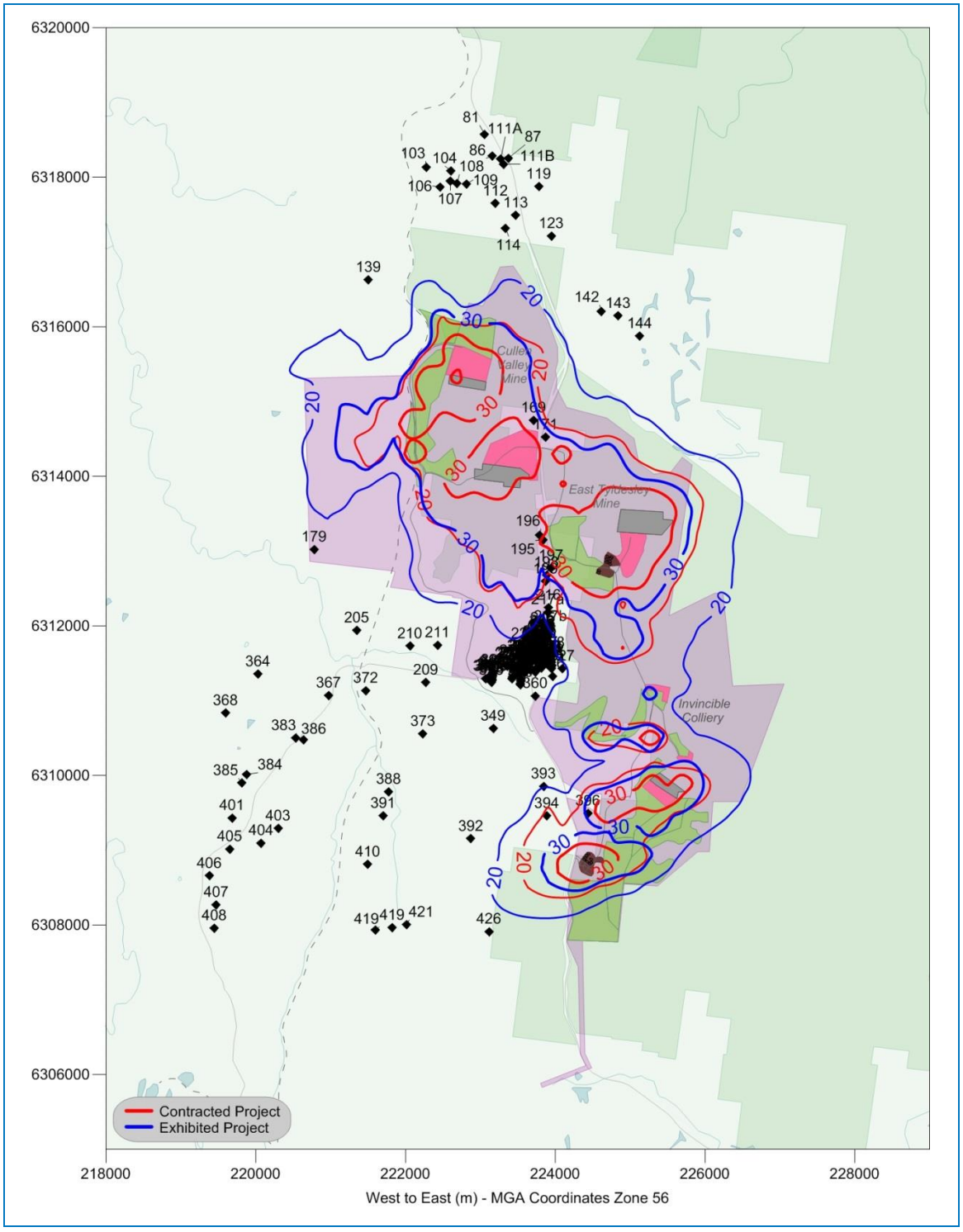


Figure 4.5: Comparison of Year 8 modelling results – annual average cumulative PM_{10} (µg/m^3)

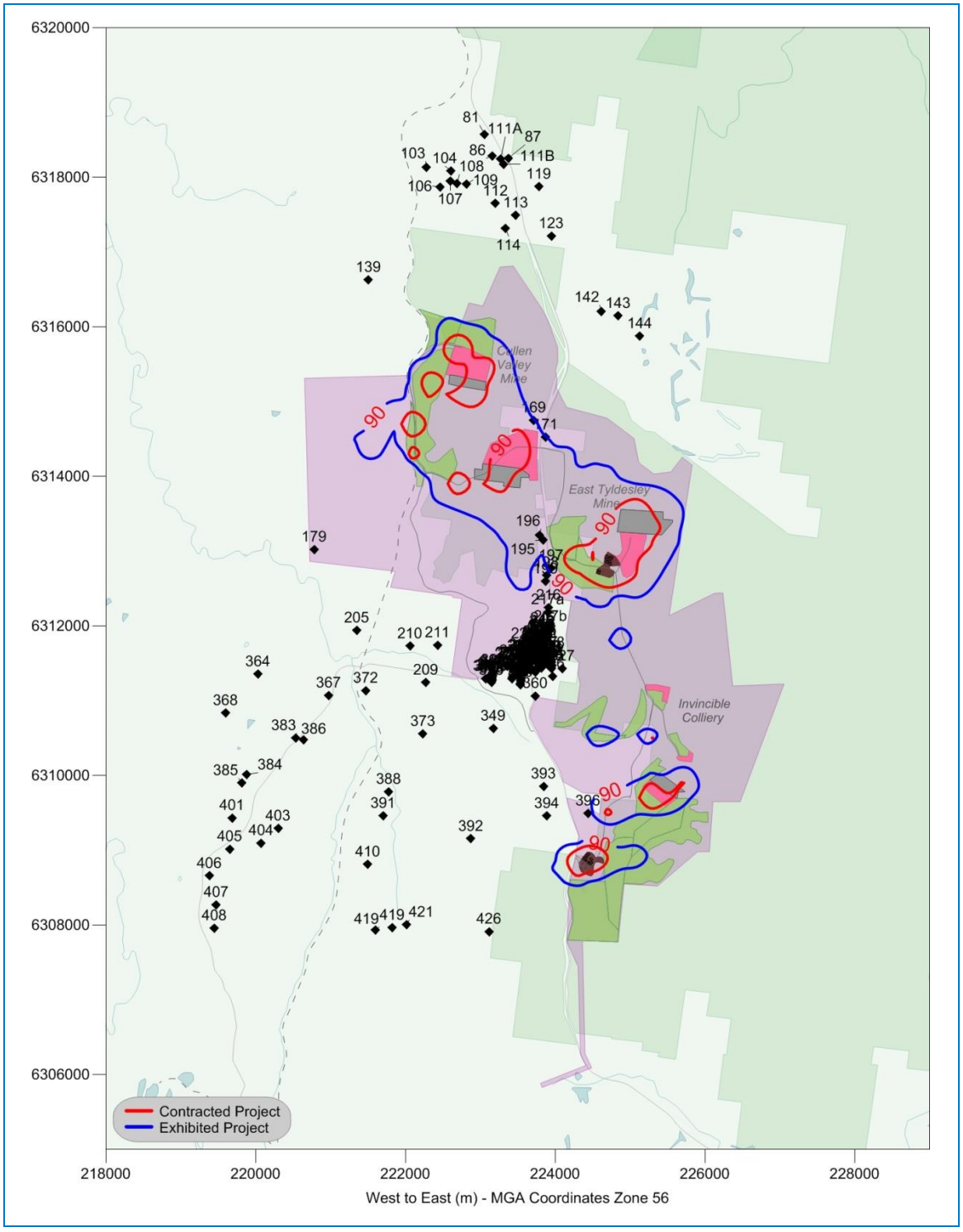


Figure 4.6: Comparison of Year 8 modelling results – annual average cumulative TSP (µg/m³)

4.1.3 Year 14

Table 4.7, **Table 4.8** and **Table 4.9** provide comparisons of the predicted ground level concentrations for the Exhibited and Contracted Projects, for those residences where exceedances of the air quality criteria are predicted. As shown, there are significant reductions predicted at all locations where exceedances of the air quality criteria were predicted in the Exhibited Project AQIA for both PM_{10} and TSP. Privately owned properties are in bold text. Results for all modelled residential receptors are presented in **Appendix B**.

Table 4.7: Comparison of modelling results for Year 14 – 24-hour average PM_{10}

ID	Ownership Details	Exhibited Project		Contracted Project	
		Max 24-hour Average PM_{10} Mine Alone (µg/m³)	Number of days over 50 µg/m³	Max 24-hour Average PM_{10} Mine Alone (µg/m³)	Number of days over 50 µg/m³
		Assessment criteria			
		50	*N/A*	*50*	*N/A*
169[b]	Portland Road Pastoral Co Pty Ltd	119	71	63	5
171[b]	Portland Road Pastoral Co Pty Ltd	120	60	74	2
195[cd]	KJ Blackley	160	142	95	37
196[ac]	Crown-owned	150	124	82	17
197[bc]	BE & CE Leisemann & IL & Kid Follington	65	8	35	0
198[cd]	DA Tilley	59	2	31	0
199[cd]	DA Tilley	60	2	31	0
394[b]	Coalpac	63	2	40	0
396[b]	Coalpac	58	3	40	0

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

* 50 µg/m³ refers to the cumulative criterion and should not be applied to Project alone results. This is shown here for reference only. A prediction over 50 µg/m³ by default will mean an exceedance of the cumulative criterion.

Table 4.8: Comparison of modelling results for Year 14 – annual average PM_{10}

ID	Ownership Details	Annual Average PM_{10} Mine & Other Sources (µg/m³) Exhibited Project	Annual Average PM_{10} Mine & Other Sources (µg/m³) Contracted Project
		Assessment criteria	
		30	
169[b]	Portland Road Pastoral Co Pty Ltd	42	30
171[b]	Portland Road Pastoral Co Pty Ltd	45	35
195[cd]	KJ Blackley	56	42
196[ac]	Crown-owned	52	38

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

Table 4.9: Comparison of modelling results for Year 14 – annual average TSP

ID	Ownership Details	Annual Average TSP Mine & Other Sources (µg/m³) Exhibited Project	Annual Average TSP Mine & Other Sources (µg/m³) Contracted Project
		Assessment criteria	
		90	
169[b]	Portland Road Pastoral Co Pty Ltd	109	59
171[b]	Portland Road Pastoral Co Pty Ltd	114	62
195[cd]	KJ Blackley	145	83
196[ac]	Crown-owned	133	72

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

Figure 4.7, **Figure 4.8** and **Figure 4.9** provide isopleths showing the changes in predicted ground level concentrations in Year 14, due to the Contracted Project. The blue contour shows the predictions from the Exhibited Project in Year 14 and red contour indicates predicted levels from the Contracted Project in Year 14. The predictions are clearly lower for the Contracted Project.

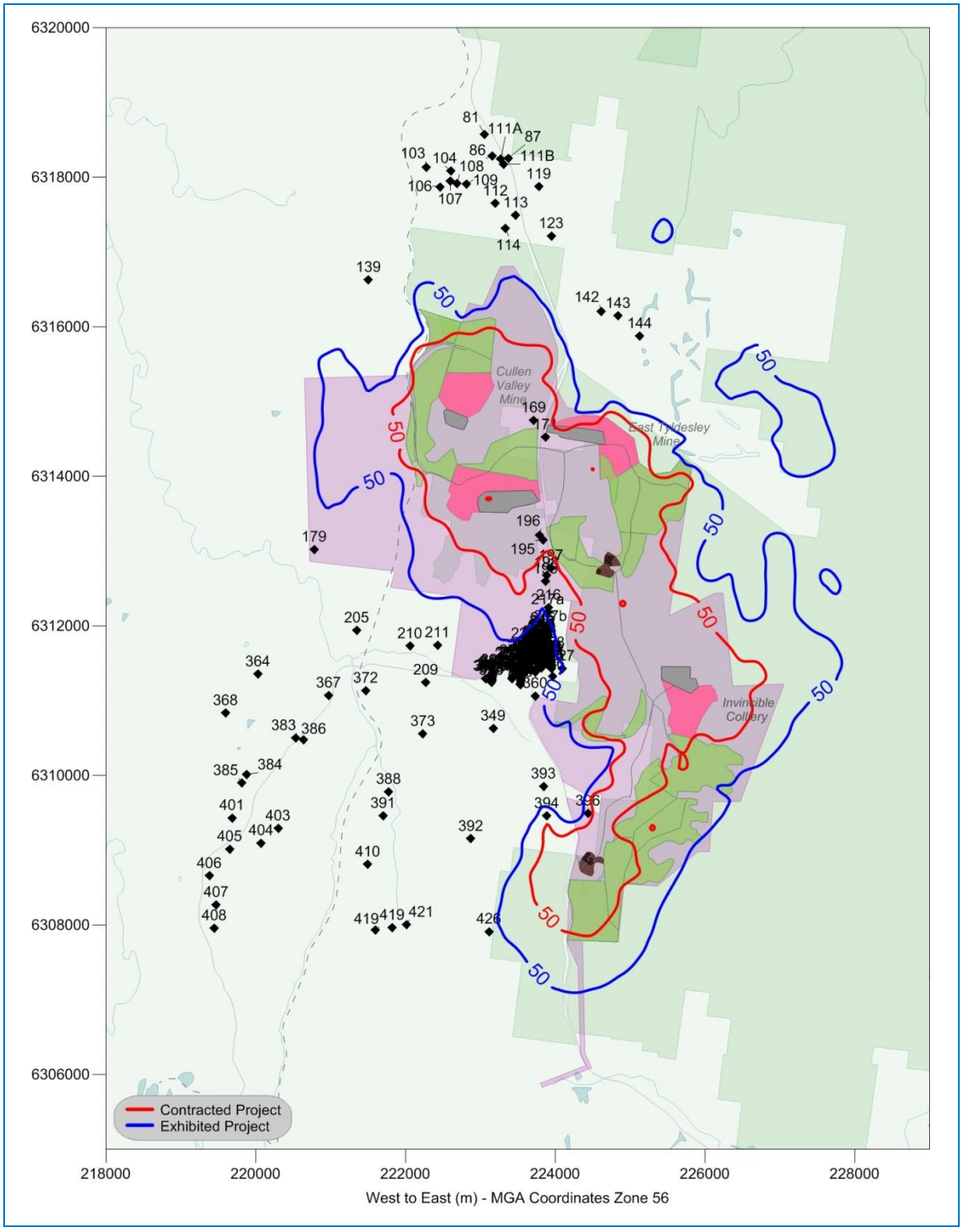


Figure 4.7: Comparison of Year 14 modelling results – 24-hour average PM_{10} (µg/m³)

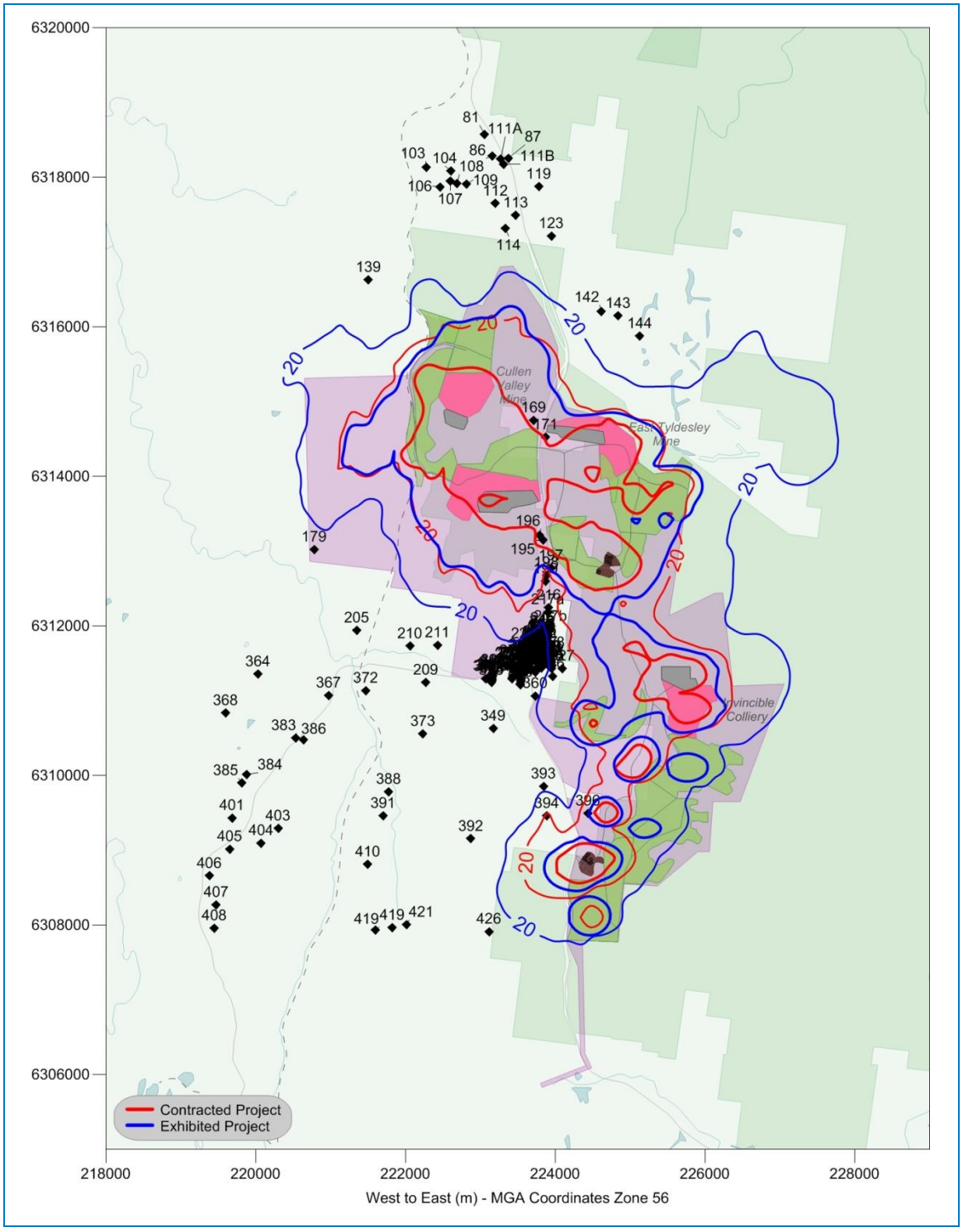


Figure 4.8: Comparison of Year 14 modelling results – annual average cumulative PM_{10} (µg/m³)

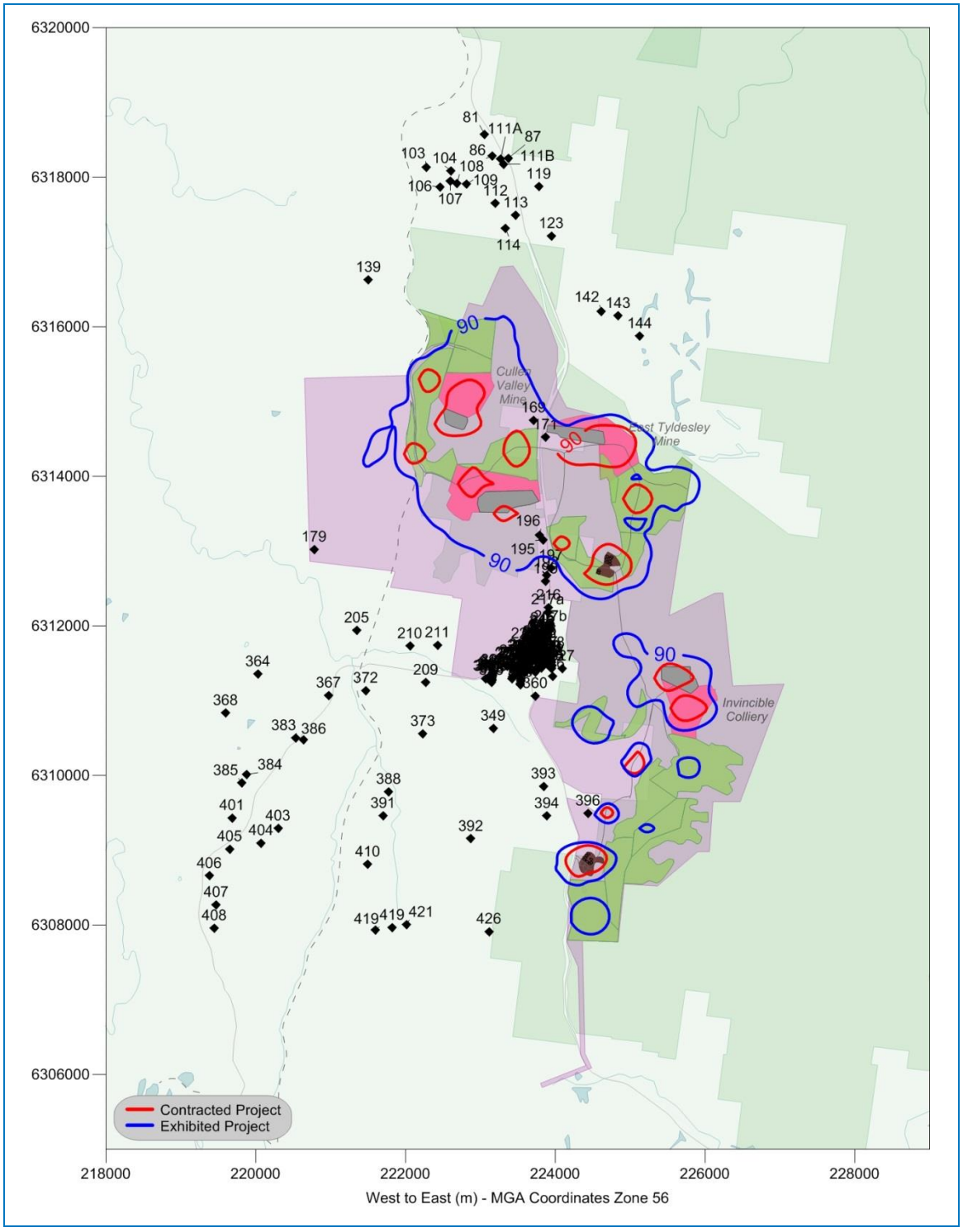


Figure 4.9: Comparison of Year 14 modelling results – annual average cumulative TSP (µg/m³)

4.1.4 Year 20

Table 4.10, **Table 4.11** and **Table 4.12** provide comparisons of the predicted ground level concentrations for the Exhibited and Contracted Projects, for those residences where exceedances of the air quality criteria are predicted. As shown, there are significant reductions predicted at all locations where exceedances of the air quality criteria were predicted in the Exhibited Project AQIA for both PM_{10} and TSP. Privately owned properties are in bold text. Results for all modelled residential receptors are presented in **Appendix B**.

Table 4.10: Comparison of modelling results for Year 20 – 24-hour average PM_{10}

ID	Ownership Details	Exhibited Project		Contracted Project	
		Max 24-hour Average PM_{10} Mine Alone (µg/m³)	Number of days over 50 µg/m³	Max 24-hour Average PM_{10} Mine Alone (µg/m³)	Number of days over 50 µg/m³
		Assessment criteria			
		50	*N/A*	*50*	*N/A*
169[b]	Portland Road Pastoral Co Pty Ltd	127	62	65	6
171[b]	Portland Road Pastoral Co Pty Ltd	90	23	51	2
195[cd]	KJ Blackley	667	246	157	217
196[ac]	Crown-owned	366	218	99	146
197[bc]	BE & CE Leisemann & IL & Kid Follington	118	35	34	4
198[cd]	DA Tilley	90	14	30	1
199[cd]	DA Tilley	89	11	29	1
216	**BM Emmott**	**56**	**2**	39	0
217a[a]	Crown-owned	57	1	35	0
217b[a]	Crown-owned	58	1	35	0
258	**S & H Filla**	**56**	**1**	33	0
325	**SP & SA Duggan**	**51**	**1**	29	0
326[b]	The Minister for Energy & Utilities	54	1	31	0
327	**J Playford**	**58**	**1**	33	0
394[b]	Coalpac	53	1	39	0

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

* 50 µg/m³ refers to the cumulative criterion and should not be applied to Project alone results. This is shown here for reference only. A prediction over 50 µg/m³ by default will mean an exceedance of the cumulative criterion.

Table 4.11: Comparison of modelling results for Year 20 – annual average PM_{10}

ID	Ownership Details	Annual Average PM_{10} Mine & Other Sources (µg/m³) Exhibited Project	Annual Average PM_{10} Mine & Other Sources (µg/m³) Contracted Project
		Assessment criteria	
		30	
169[b]	Portland Road Pastoral Co Pty Ltd	39	27
171[b]	Portland Road Pastoral Co Pty Ltd	35	24
195[cd]	KJ Blackley	157	84
196[ac]	Crown-owned	99	58
197[bc]	BE & CE Leisemann & IL & Kid Follington	34	25

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

Table 4.12: Comparison of modelling results for Year 20 – annual average TSP

ID	Ownership Details	Annual Average TSP Mine & Other Sources (µg/m³) Exhibited Project	Annual Average TSP Mine & Other Sources (µg/m³) Contracted Project
		Assessment criteria	
		90	
169[b]	Portland Road Pastoral Co Pty Ltd	100	56
171[b]	Portland Road Pastoral Co Pty Ltd	90	51
195[cd]	KJ Blackley	400	192
196[ac]	Crown-owned	251	126

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

Figure 4.10, **Figure 4.11** and **Figure 4.12** provide isopleths showing the changes in predicted ground level concentrations in Year 20, due to the Contracted Project. The blue contour shows the predictions from the Exhibited Project in Year 20 and red contour indicates predicted levels from the Contracted Project in Year 20. The predictions are clearly lower for the Contracted Project.

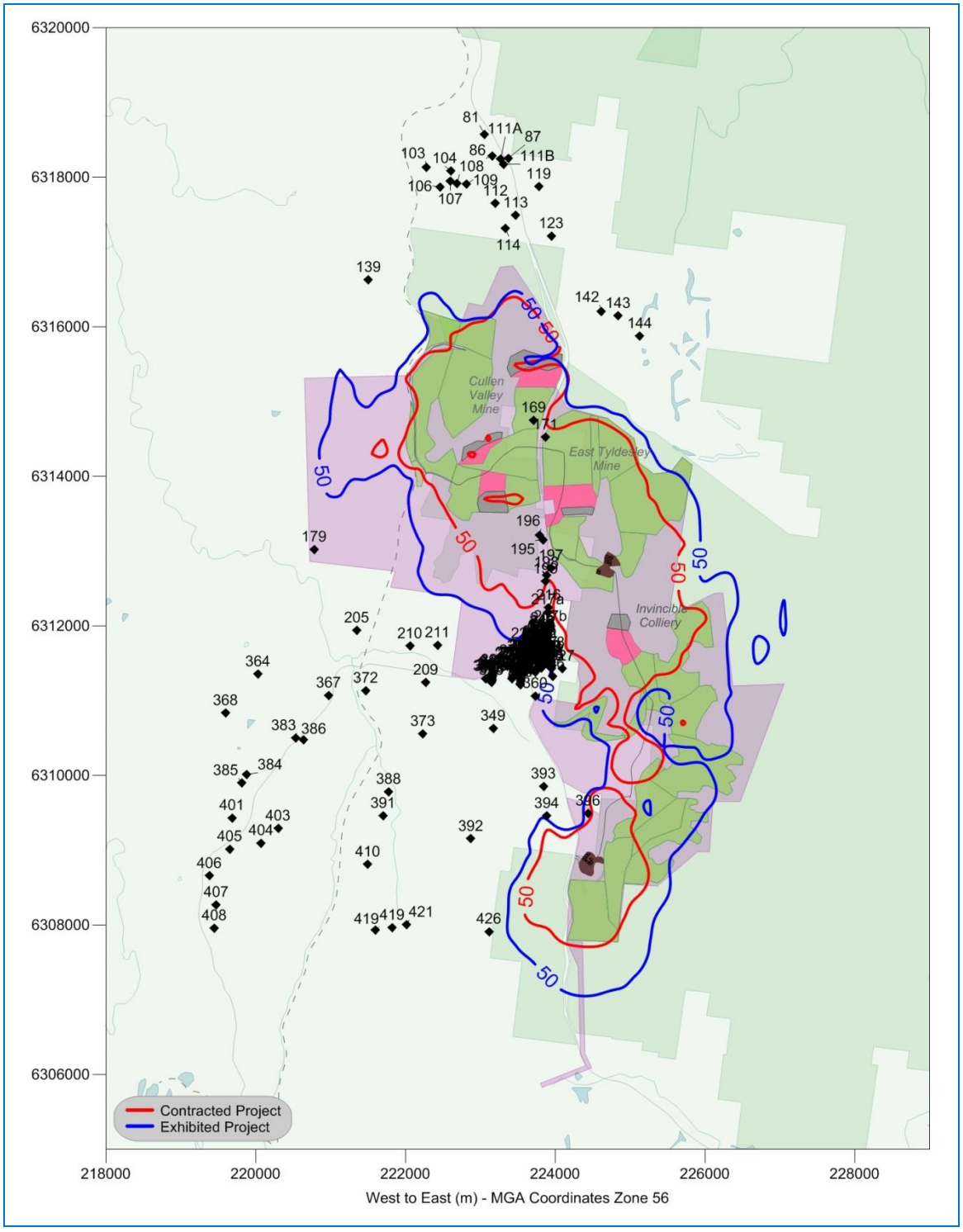


Figure 4.10: Comparison of Year 20 modelling results – 24-hour average PM_{10} (µg/m³)

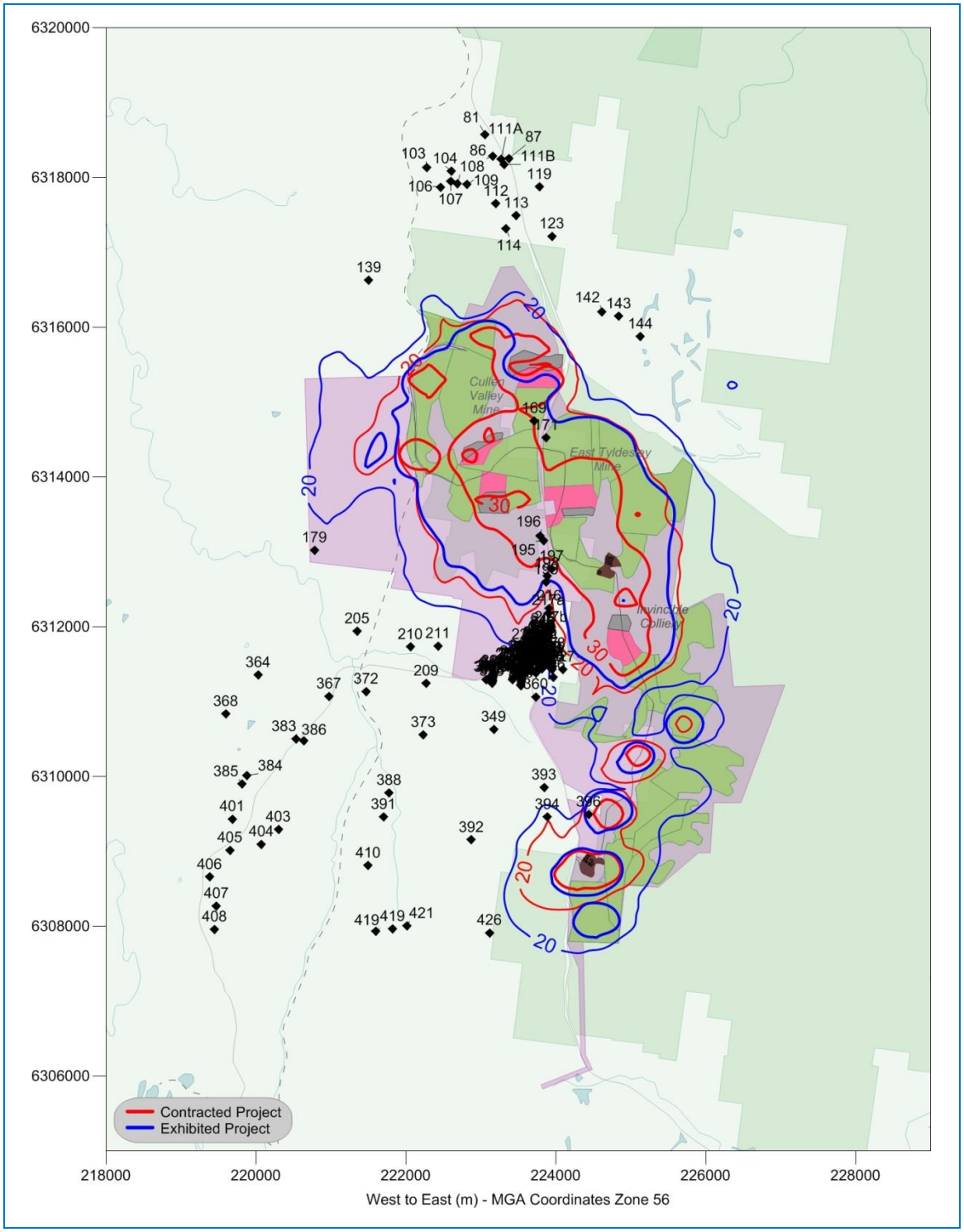


Figure 4.11: Comparison of Year 20 modelling results – annual average cumulative PM_{10} (µg/m³)

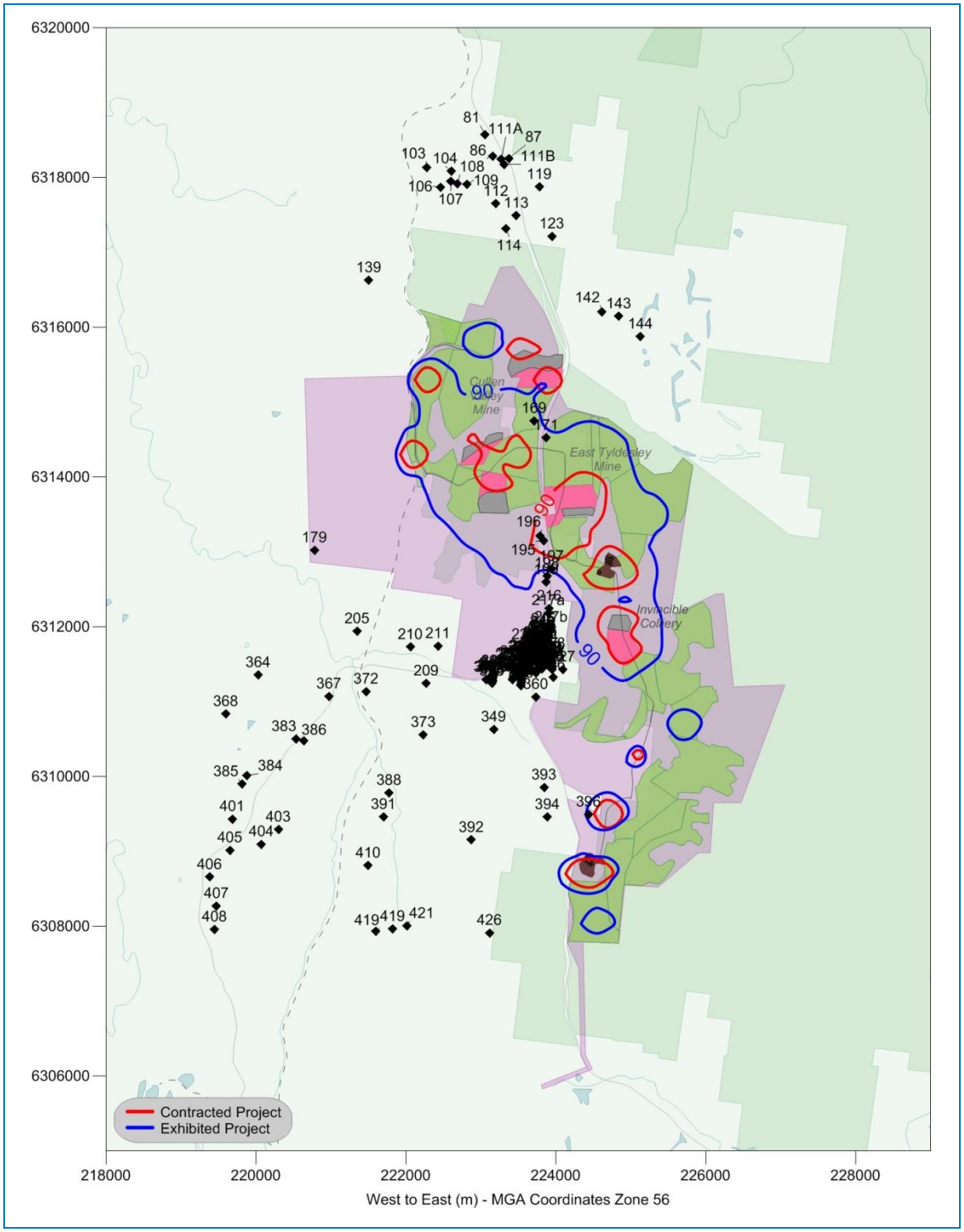


Figure 4.12: Comparison of Year 20 modelling results – annual average cumulative TSP (µg/m³)

4.2 Cumulative 24-hour PM_{10} Assessment

4.2.1 Introduction

It is difficult to accurately predict cumulative 24-hour average PM_{10} concentration using dispersion modelling due to the difficulties in resolving (on a day to day basis) the varying intensity, duration and precise locations of activities at mine sites, weather conditions at the time of the activity, or a combination of activities.

Difficulties in predicting cumulative 24-hour average impacts are compounded by the day to day variability in ambient dust levels and the spatial and temporal variation in any other anthropogenic activity, for example, agricultural activity, home heating (wood or coal), uncontrolled events such as bushfires, and so on, and including mining in the future. The variability in 24-hour average PM_{10} concentrations can be clearly seen in the data collected at the HVAS monitors located near the Cullen Valley and Invincible mining areas (**Figure 4.13**). Experience shows that in many cases the worst-case 24-hour average PM_{10} concentrations are strongly influenced by other sources in an area, such as bushfires and dust storms (see peaks in early and late 2009), which are essentially unpredictable.

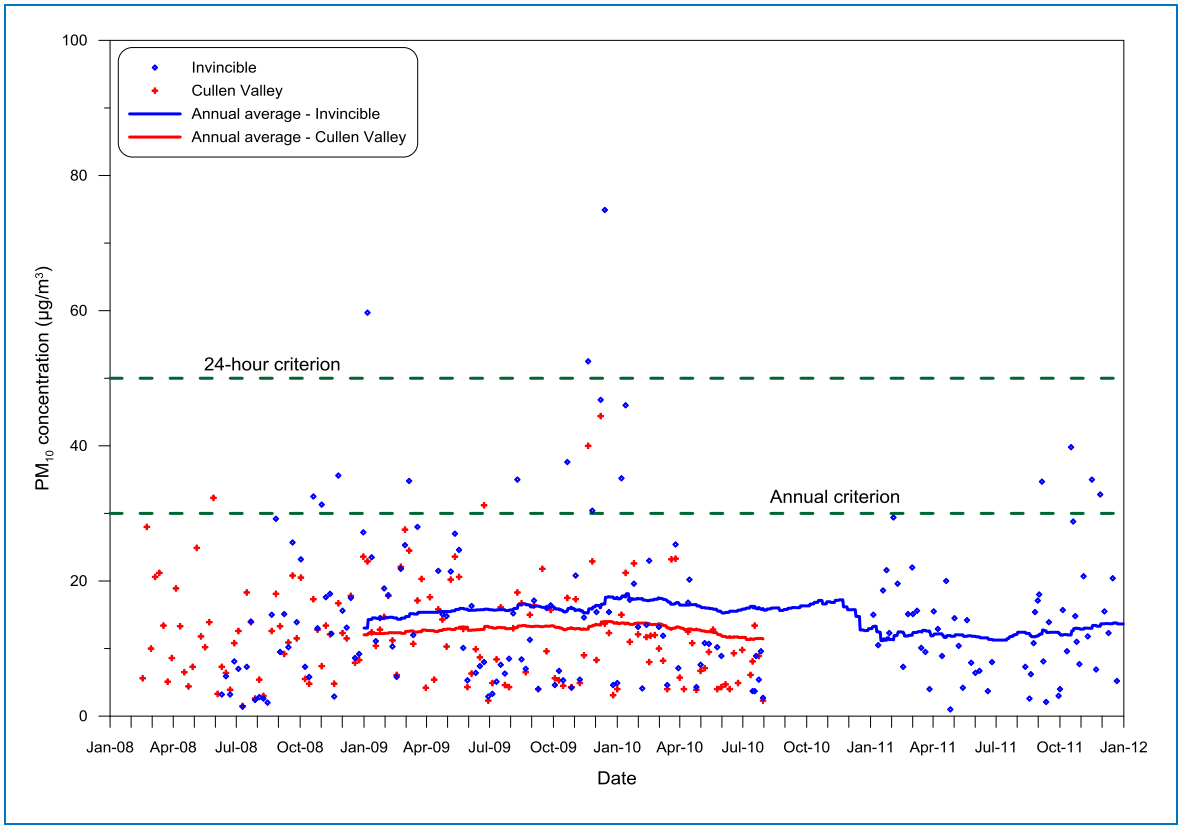


Figure 4.13: Measured PM_{10} concentrations from 2008 – 2011

Due to the difficulties outlined above, cumulative air quality impacts have been evaluated using a statistical approach (Monte Carlo Simulation). The cumulative assessment focuses on representative receptors in key areas in the vicinity of the mining areas. Residences 195 and 198 have not been included in this analysis as they lie well within the Project Boundary and are clearly impacted by mining operations alone (and therefore cumulatively as well), as shown in **Section 4.1**. The six residences selected for cumulative analysis with Monte Carlo are shown in **Figure 4.14**.

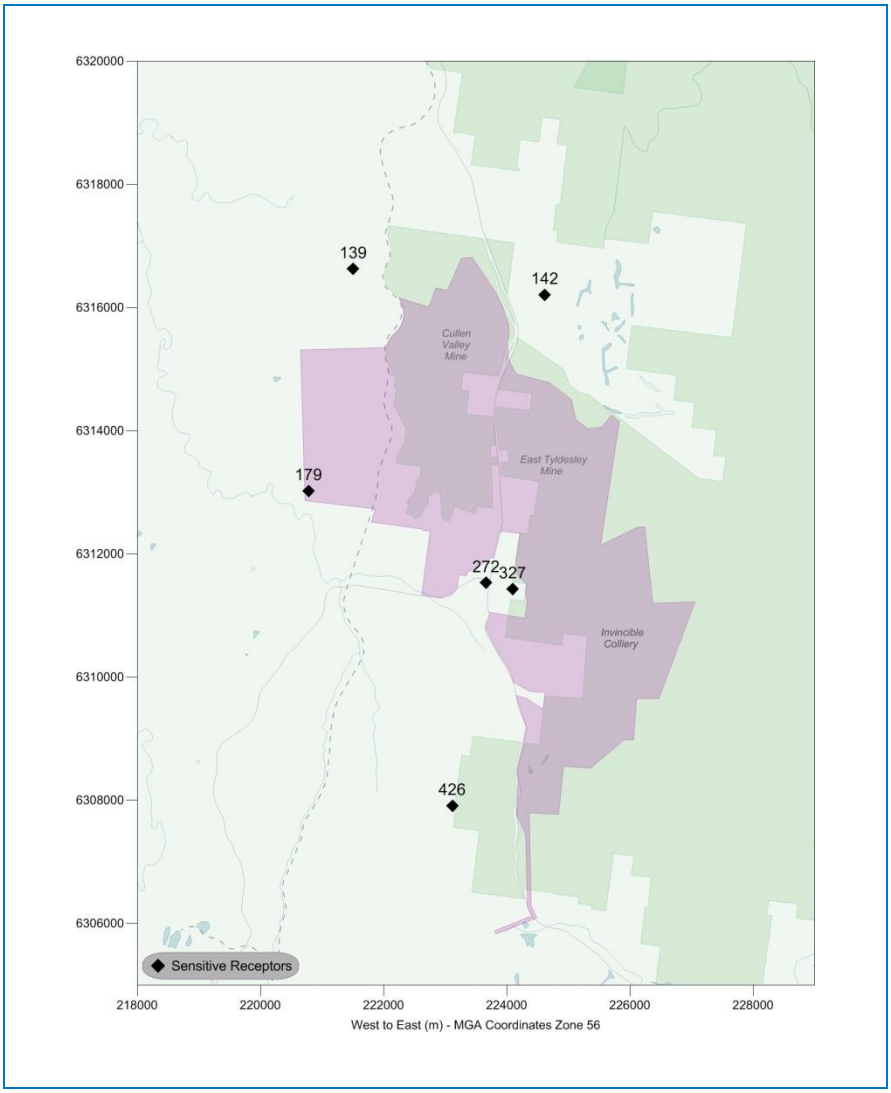


Figure 4.14: Selected residential receptors for Monte Carlo simulation

4.2.2 *Monte Carlo Simulation*

The Monte Carlo Simulation is a statistical approach that combines the frequency distribution of one data set (in this case background 24-hour average PM_{10} concentrations) with the frequency distribution of another data set (modelled impacts at a given residence). This is achieved by repeatedly randomly sampling and combining values within the two data sets to create a third, 'cumulative' data set and associated frequency distribution.

Residence numbers 139, 142, 179, 272, 327 and 426 were chosen to represent private residences (non-Coalpac owned), and the local school (272). PM_{10} data from the two HVAS monitors near the existing operations were used to represent possible background values for each of the six residences.

Individual 24-hour average predictions for the Contracted Project in each of the four modelling years are added to a random value from the above data sets. This process is repeated many thousands of times yielding the 'cumulative' data set, which is then presented as a frequency distribution.

The process assumes that a randomly selected background value would have a chance equal to that of any other background value from the data set of occurring on the given 'modelled day'. Over sufficient repetitions, this yields a good statistical estimate of the combined and independent effects of varying background and Contracted Project contributions to total PM_{10}.

To generate greater confidence in the statistical robustness of the results, the Monte Carlo Simulation was repeated 250,000 times for each receptor in each modelling year. In other words, the same 1-year set of predicted (modelled) 24-hour average PM_{10} concentrations due to the Contracted Project were added to 250,000 variations of the randomly selected background concentrations at each residence (a different random background concentration is selected each time).

The results of this analysis are presented graphically in **Figure 4.15** to **Figure 4.18**. The plots show the statistically estimated number of days that 24-hour average PM_{10} concentrations might exceed 50 µg/m^3 and also compares the cumulative probability with the measured background. The closer the estimated cumulative line is to the background line, the less the contribution from the contracted project and the higher the contribution from the existing background levels.

The results show that the background is estimated to exceed 50 µg/m^3 on approximately 3 days per year. These exceedances will be due, in part, to existing mining operations in the region, but also other sources such as farming and regional dust events all of which are captured in HVAS monitoring data shown in **Figure 4.13**. The Monte Carlo analysis has shown that due to the contracted project in Year 2, there may be up to 4 additional days at the most affected private residence (426) when 50 µg/m^3 is exceeded. In Year 8, Residences 327 and 426 may experience an additional 1 day above the criterion. In Year 14 Residence 327 may exceed 50 µg/m^3 on 2 additional days and in Year 21 there may be 2 additional days of exceedance at both Residences 327 amd 426.

Another way of looking at these results is to say that the probability of the background (monitoring) levels exceeding 50 µg/m^3 is approximately 1%, and the maximum cumulative effect of the contracted project increases this probability to 2% for the worst-case year (Year 2).

As the cumulative results are created from random pairings of background and modelled concentrations, it is not possible to determine meteorological conditions on particular days of exceedance.

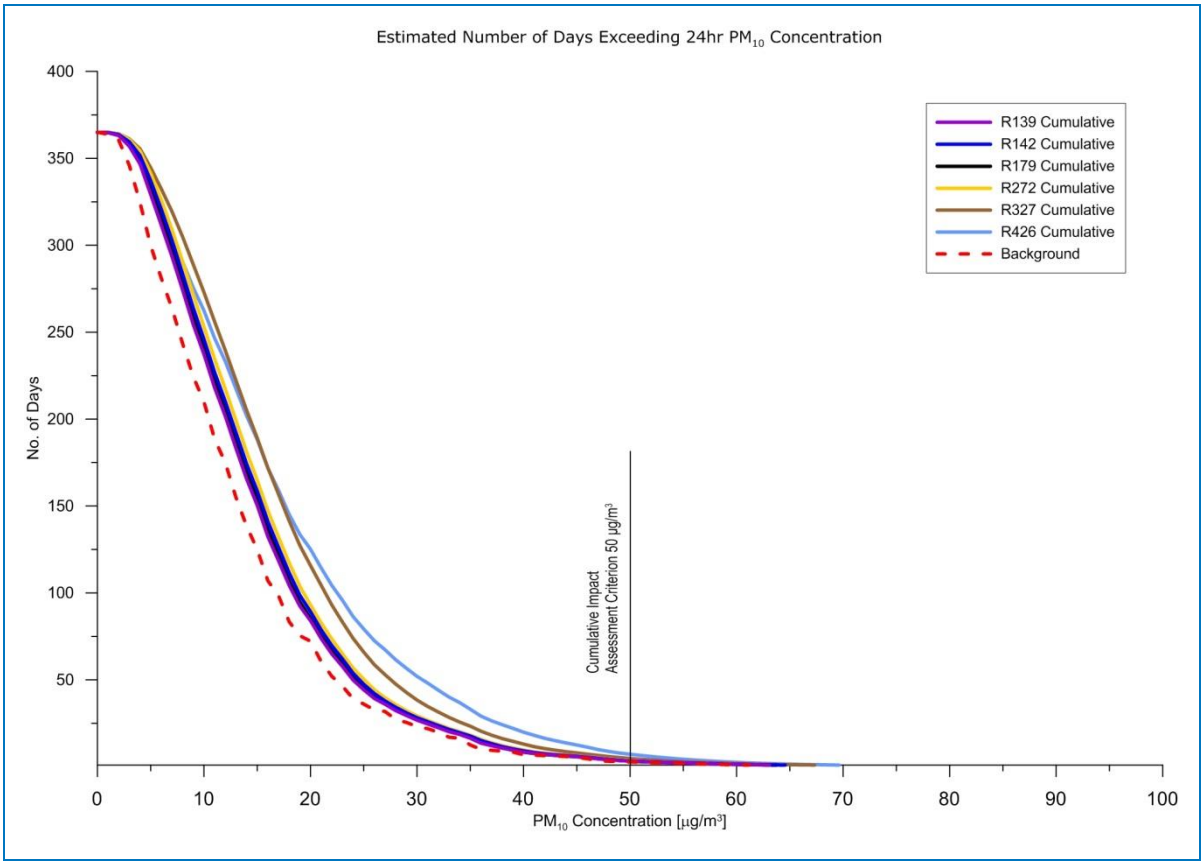


Figure 4.15: Statistical estimate of number of days exceeding the 24-hour PM_{10} average concentrations following Monte Carlo simulation – Year 2

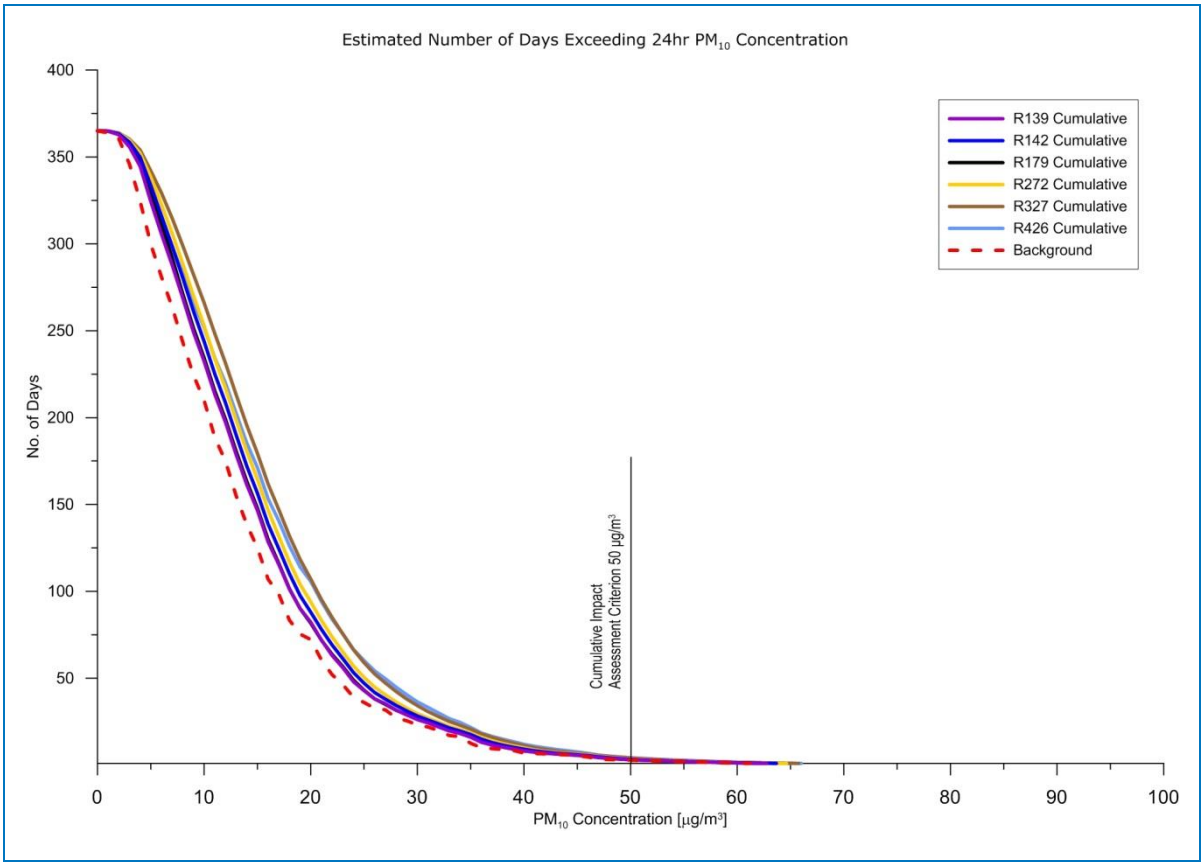


Figure 4.16: Statistical estimate of number of days exceeding the 24-hour PM_{10} average concentrations following Monte Carlo simulation – Year 8

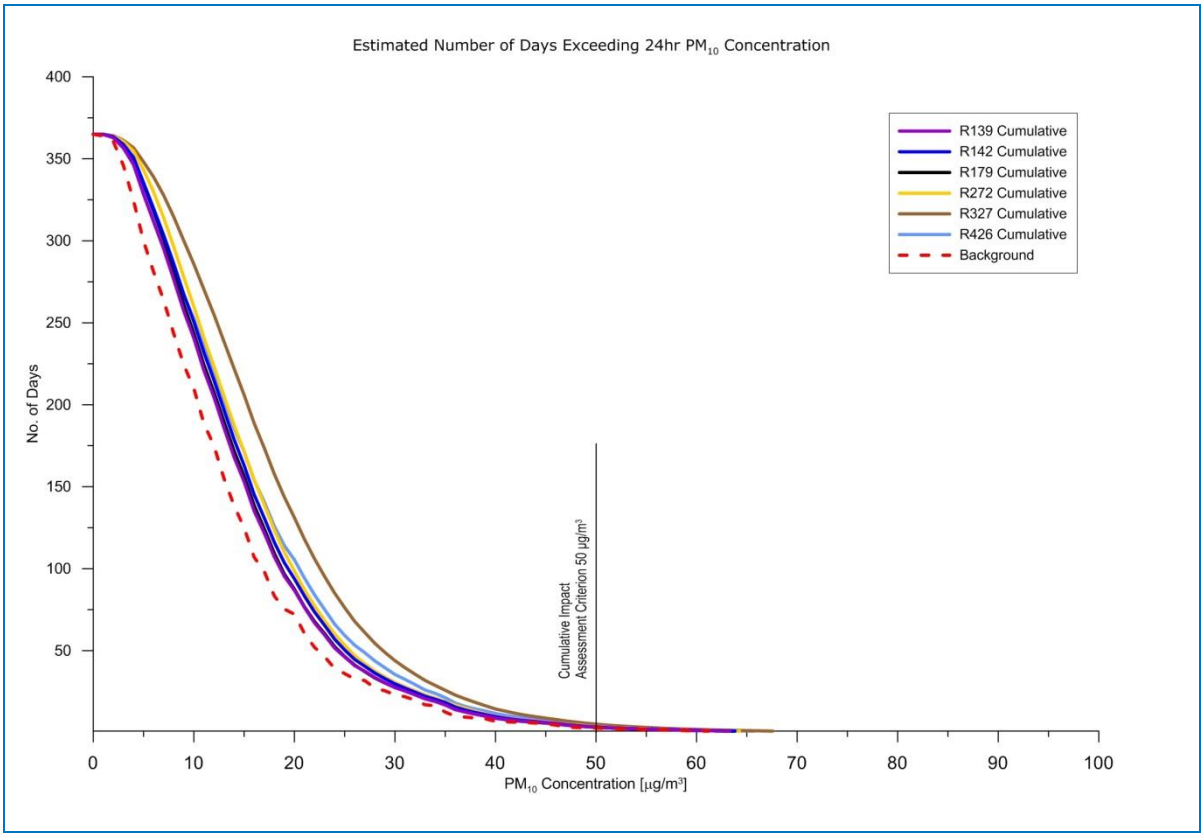


Figure 4.17: Statistical estimate of number of days exceeding the 24-hour PM_{10} average concentrations following Monte Carlo simulation – Year 14

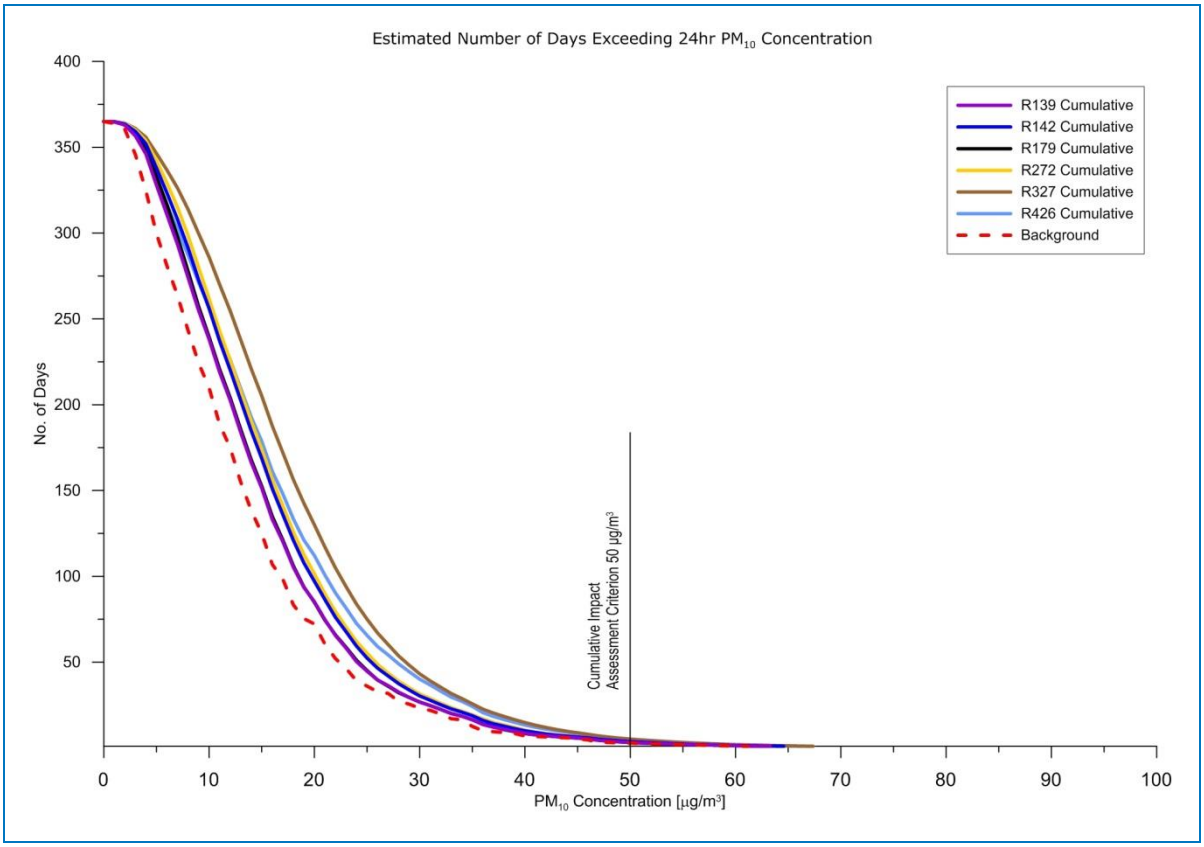


Figure 4.18: Statistical estimate of number of days exceeding the 24-hour PM_{10} average concentrations following Monte Carlo simulation – Year 20

4.3 Assessment of Impacts on Privately Owned Land

This section provides a summary of sensitive receptors predicted to exceed the assessment criteria on more than 25 percent of privately owned land, including vacant land. **Table 4.13** describes in detail the predicted impacts at individual residences.

An additional assessment has been conducted to identify privately-owned land, including vacant land, where more than 25% of the land is predicted to experience dust levels above the relevant EPA criteria. Blocks of land that have the same owner and are contiguous have been considered as a single area. For reference, the block numbers associated with each owner are provided in **Appendix C**.

The privately-owned land that is predicted to experience dust levels above the EPA criteria is presented in **Table 4.13**. A '**Y**' represents land that is predicted to exceed the assessment criteria on more than 25 % of land.

Table 4.13: 25% of more of privately-owned land area predicted to exceed criteria

Receptor Name	Block ID	Year 2	Year 8	Year 14	Year 20
Cumulative annual average PM_{10} concentration					
BE & CE Leisemann & IL & Kid Follington[bc]	197	**Y**	**Y**	**Y**	**Y**
B & E Nakhle[b]	170	N	**Y**	**Y**	**Y**
DA Tilley[cd]	198	**Y**	N	N	N
JGQ Nominees[d]	194	**Y**	**Y**	**Y**	**Y**
KJ Blackley[cd]	195	**Y**	**Y**	**Y**	**Y**
Portland Road Pastoral Co Pty Ltd[b]	188	**Y**	N	N	N
BE & CE Leisemann & IL & Kid Follington[bc]	200	**Y**	N	N	**Y**
State of NSW (Crown)[a]	187	**Y**	**Y**	**Y**	**Y**
State of NSW (Crown)[a]	192	N	N	**Y**	N
State of NSW (Crown)[a]	193	N	**Y**	N	**Y**
State of NSW (Crown)[a]	196	**Y**	N	N	**Y**
Maximum 24-hour average PM_{10} concentration					
BE & CE Leisemann & IL & Kid Follington[bc]	197	**Y**	**Y**	**Y**	**Y**
B & E Nakhle[b]	170	N	**Y**	**Y**	**Y**
DA Tilley[cd]	198	**Y**	**Y**	N	**Y**
DA Tilley[cd]	199	**Y**	N	N	**Y**
JGQ Nominees[d]	394	**Y**	**Y**	**Y**	**Y**
Hyrock NSW Pty Ltd (Industrial)	395	**Y**	**Y**	**Y**	**Y**
JGQ Nominees[d]	194	**Y**	**Y**	**Y**	**Y**
KJ Blackley[cd]	195	**Y**	**Y**	**Y**	**Y**
Portland Road Pastoral Co Pty Ltd[b]	188	**Y**	N	N	N
Portland Road Pastoral Co Pty Ltd[b]	190	**Y**	N	N	N
BE & CE Leisemann & IL & Kid Follington[bc]	200	**Y**	**Y**	**Y**	**Y**
State of NSW (Crown) [a]	187, 192, 193, 196	**Y**	**Y**	**Y**	**Y**
State of NSW (Crown) [a]	377	N	N	**Y**	**Y**
State of NSW (Crown) [a]	168	N	N	**Y**	N
State of NSW (Crown) [a]	217	**Y**	N	N	**Y**

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary, [d] Under agreement

It can be seen from **Table 4.13** that there are 18 properties that are predicted to experience dust impacts on more than 25% of their land area for the maximum 24-hour average PM_{10} concentration (project alone) and 11 for the cumulative annual average PM_{10} concentration.

5 DUST MANAGEMENT AND MITIGATION MEASURES

The Project has the potential to generate dust. It is therefore necessary to take reasonable and practicable measures to prevent or minimise dust impacts at sensitive receptors.

In addition to current dust suppression measures such as the watering of haul roads which have been included in the modelling outlined in this report, Coalpac is committed to leading practice dust management for the Contracted Project through the use of a real-time air quality management system (RTAQMS). This would enable Coalpac to proactively manage the short-term impacts, by reducing emissions at the source, and prevent or minimise dust impacts at sensitive receptors to the greatest practical extent. The improvements to short term impacts delivered by the RTAQMS will further approve outcomes for receptors over and above the modelled levels shown in the report. Full details of the dust management measures would be outlined in an Air Quality Management Plan and Air Quality Environmental Monitoring Program, which would be consolidated and updated prior to the commencement of the Contracted Project activities.

An outline of this RTAQMS is given in **Section 5.1**. This system will also be used to mitigate impacts from blasting, by identifying unfavourable meteorological conditions under which blasting cannot take place.

5.1 Real-time air quality management plan

Coalpac proposes to implement a system that includes the following components:

- Meteorological forecasting data.
- Real-time air quality management system.
- Reactive and proactive mitigation measures.

Each of the components proposed for the Contracted Project air quality management system is discussed further below.

5.1.1 Meteorological Forecasting Data

Coalpac proposes to implement a predictive meteorology capability, where an hourly weather forecast is generated every day for a period of two days ahead to identify weather conditions with high dust risks before they occur.

Weather forecast models are available that can be set up specifically for the region and include detail for the local area around the Project. These models can operate in a system to provide hourly forecasted weather predictions, two days in advance, and an automated report can be regularly delivered to the operations.

5.1.2 Real-time Air Quality Management System

Real-time monitors will be set up at locations between open cut / surface operations and the nearest private receivers, specifically for the purpose of day to day dust management.

Coalpac will install up to six real-time PM_{10} monitors (such as E-Samplers or BAM1020) at suitable locations between operations and nearest receptors. The sites of all air quality monitoring instruments would comply with Standards Australia AS3580.1.1:2007: *Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment* and be sited by a suitably qualified air quality professional to ensure that sites comply with the EPA's requirements.

Particular note will be made to ensure that there are no extraneous sources of dust within the vicinity of the instruments, including possible vehicle generated dust from private dirt roads. Proximity of monitoring instruments to buildings and trees should follow those guidelines described in AS 3580.1.1:2007.

Some of the real-time monitors will also be suitable to be used for compliance monitoring, one of which would be placed in the township of Cullen Bullen. Others may be mobile units to enable relocation as the Project proceeds.

5.1.3 Reactive and Proactive Mitigation Measures

Real-time monitoring data and predictive meteorology data will be transmitted to a central data repository and analysed. The analysis will inform the Triggered Action Response Plan (TARP), set up with pre-defined triggers, and send notifications to alert operations personnel when a dust risk is predicted.

The system will also recommend dust control options for consideration depending on the data analysis. The TARP will be updated as the system implementation progresses and adverse conditions for various operations and mining areas are identified.

6 CONCLUSION

The Contracted Project results in significant reductions for all modelled years in comparison to the Exhibited Project EA, in both 24-hour and annual average predicted ground level PM_{10} concentrations. These reductions are a result of mine plan changes and the use of site specific measurements of parameters in the calculation of total emissions from Contracted Project mining activities.

Predicted concentrations of PM_{10} in Cullen Bullen (for the Contracted Project) are below 20 µg/m^3 in all years, well below the NSW EPA annual criterion of 30 µg/m^3.

The model predictions in this report and the Exhibited Project AQIA do not assume or include any further reductions in emissions which may be achieved either by additional mitigation and controls on emission sources (other than those modelled), or by the implementation of the RTAQMS. Any reductions in emissions from individual sources from such control measures would be expected to further reduce predicted concentrations, particularly for 24-hour PM_{10}.

7 REFERENCES

PAEHolmes (2011)
"Air Quality and Greenhouse Gas Assessment for the Coalpac Consolidation Project", prepared for Hansen Bailey, December 2011.

US EPA (2006)
"Compilation of Air Pollutant Emission Factors", AP-42, United States Environmental Protection Agency, Office of Air and Radiation Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina 27711.

SPCC (1983)
Air Pollution from Coal Mining and Related Developments, State Pollution Control Commission.

APPENDIX A: Monitoring reports for site specific measurements made for the Contracted Project

Environmental - Dust Emissions

Client Coalpac Invincible
Job No 13-001
Report number 1597
Sample point Invincible

Date sampled 25/01/2013
Date sample received 25/01/2013
Sampled in accordance with AS4264.1 NA
Sampled by: *** Macgeo

Sample date	Client Sample Identification	Moisture In Analysis* % EPA AP42 C2	Silt Content* % EPA AP42 C2	Velocity* cm/s EPA AP 42 13.2.5			Macgeo sample no.
25/01/2013	ROM COAL A	20.3	4.7	<43			L13-5886
25/01/2013	PRODUCT COAL STOCKPILE A	5.2	15.1	100			L13-5887
25/01/2013	ROM COAL INPIT A	10.0	2.9	100			L13-5888
25/01/2013	ROM COAL B	6.1	1.9	100			L13-5889
25/01/2013	PRODUCT COAL STOCKPILE B	5.3	3.2	100			L13-5890
25/01/2013	ROM COAL INPIT B	7.8	2.7	76			L13-5891
25/01/2013	WASTE INPIT A	3.2	5.2	<43			L13-5892
25/01/2013	WASTE INPIT B	7.2	3.8	76			L13-5893
25/01/2013	OVERBURDEN CURRENT DUMP NORTH	6.2	5.5	<43			L13-5894
25/01/2013	OVERBURDEN CURRENT DUMPING SOUTH	4.6	2.1	100			L13-5895
25/01/2013	TOP SOIL NORTH PIT 203	6.5	6.4	<43			L13-5896
25/01/2013	TOP SOIL PIT 203	8.3	4.3	<43			L13-5897
25/01/2013	HAUL ROAD @ OVERBURDEN DUMP	0.7	4.7	76			L13-5898
25/01/2013	HAUL ROAD @ CRIB HUT	1.1	4.4	<43			L13-5899
25/01/2013	HAUL ROAD @ OFFICE	0.9	2.7	100			L13-5900

* Non accredited tests
*** MacQuarie Geotech takes no responsibility for correctness of sampling if sampled by client

Authorised signatory _____
R. Cox
Date 31/01/2013

NATA Accredited Laboratory Number: 14874

MACQUARIE GEOTECH

Macquarie Geotechnical
Unit 5/1 Castlereagh Hwy
Lidsdale NSW 2790
phone 02 6355 7991
mobile 0400 642 966

Issue 1 revision D 16/06/09

Environmental - Dust Emissions

Client Coalpac Cullen Valley
Job No 13-001
Report number 1598
Sample point Cullen Valley

Date sampled 25/01/2013
Date sample received 25/01/2013
Sampled in accordance with AS4264.1 NA
Sampled by: *** Macgeo

Sample date	Client Sample Identification	Moisture in Analysis* % US EPA AP42 C2	Silt Content* % US EPA AP42 C2	Velocity* cm/s EPA AP 42 13.2.5			Macgeo sample no.
25/01/2013	CV ROMCOAL STOCKPILE WESTERN	6.8	3.0	100			L13-5901
25/01/2013	CV ROMCOAL STOCKPILE NORTHERN	6.6	3.8	100			L13-5902
25/01/2013	WASTE INPIT WEST SIDE	4.8	4.4	76			L13-5903
25/01/2013	WASTE INPIT EAST SIDE	6.9	5.2	100			L13-5904
25/01/2013	OVERBURDEN DUMP PIT 105	3.9	3.6	100			L13-5905
25/01/2013	OVERBURDEN DUMP PIT 106	4.0	3.8	100			L13-5906
25/01/2013	TOPSOIL NOISE BUND	5.8	3	100			L13-5907
25/01/2013	TOPSOIL NEW REHAB EASTERN SIDE	5.3	9.6	<43			L13-5908
25/01/2013	HAUL ROAD 0.7km FROM W/SHOP	0.8	1.9	76			L13-5909
25/01/2013	HAUL ROAD 1.5km FROM W/SHOP	1.0	3.3	>100			L13-5910
25/01/2013	HAUL ROAD 2.3km FROM W/SHOP	0.8	3.1	76			L13-5911

* Non accredited tests
*** MacQuarie Geotech takes no responsibility for correctness of sampling if sampled by client

Authorised signatory _____
R. Cox
Date 31/01/2013

NATA Accredited Laboratory Number: 14874

MACQUARIE GEOTECH

Issue 1 revision D 16/06/09

Macquarie Geotechnical
Unit 5/1 Castlereagh Hwy
Lidsdale NSW 2790
phone 02 6355 7991
mobile 0400 642 966

APPENDIX B: Predicted PM_{10} concentrations for all residential receptors for both the Contracted and Exhibited Project

Table B1: Predicted Ground Level PM_{10} Concentrations from the Exhibited Project compared to the Contracted Project (Year 2)

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
81	THE MINISTER FOR EDUCATION & TRAINING	9	7	13	13
86[a]	CROWN	11	10	14	13
87	BK ABRAHAMS	9	7	13	13
103	JR & DM CRAM	16	11	14	14
104	KA THOMAS	21	13	15	14
106	A & M ABOU-TOUMA	23	15	15	14
107	G & M GEBRAEL	23	15	15	14
108	PJ & CI DI MAURO	24	16	15	14
109	J , P , GG & CG PICCIONE	21	15	15	14
111A	A & R SALMAN	9	7	13	13
111B	A & R SALMAN	9	7	13	13
112	J HANNOUCHE	12	10	14	14
113	MB & AM RINGIN	16	12	15	14
114	PJ & EJ ISAACSON	17	14	15	14
119	LN GOLDSPINK	12	8	14	14
123	TW & JA NOLAN	18	13	15	14
139	RI & GM LARKIN	19	13	15	14
142	PG DESCH & KC FARRUGIA	18	14	16	15
143	DB SPEIRS	15	12	16	15
144	DA & DM MULDOON	14	10	16	14
169[b]	PORTLAND ROAD PASTORAL CO PTY LTD	**62**	36	27	19
171[b]	PORTLAND ROAD PASTORAL CO PTY LTD	**64**	30	27	18
179[c]	RK DICKENS	23	9	16	15
195[c]	KJ BLACKLEY	**191**	**100**	**49**	**33**
196[ac]	CROWN (THE STATE OF NSW)	**173**	**92**	**45**	30
197[c]	BE & CE LEISMANN & IL &KID FOLLINGTON	**402**	**86**	**90**	**62**
198[c]	DA TILLEY	**199**	**59**	**49**	**35**
199[c]	DA TILLEY	**136**	**62**	**40**	29
205	D DINO & J SERAGLIO	11	16	16	14
209	DJ RYAN	13	17	15	14
210	FC & K TILLEY	13	18	15	14
211	BJ & JM FITZGERALD	14	28	15	15
216	BM EMMOTT	42	**65**	23	19
217a[a]	CROWN	46	**58**	21	18
217b[a]	CROWN	**52**	44	21	17
220	KL BUNYON	21	34	17	15
223	RJ WHITTAKER & SR BURROWS	23	29	17	15
225	JR TILLEY	23	30	17	15
227	RG WRIGHT & KL NORRIS	23	32	17	15
228	AA WOODS , EJ NICHOLLS & LH FIELD	23	32	17	15
229	AA WOODS , EJ NICHOLLS & LH FIELD	23	33	17	15
230	CM & BA GILBERT	23	34	17	15
231	J FULLER	24	34	17	16
232	RM PYNE	24	34	18	16
235	RK & SM LANE	28	37	18	16

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
235	RK & SM LANE	30	38	18	16
236	TJ & KO TILLEY	33	39	18	16
237	MC CRANE	28	38	18	16
238	DP ROCHESTER	29	39	18	16
238	DP ROCHESTER	32	40	18	16
239	SG TWEEDIE	29	39	18	16
240	DW & GJ McCANN	31	40	18	16
242	WF FITZGERALD	31	40	19	16
243	UNKNOWN	31	40	19	16
245	M BOTFIELD	34	42	19	16
247	KO & SL ROCHESTER	26	31	18	16
248	PB DRAPER	27	32	18	16
250	GER YOUNG	28	34	18	16
251	GER YOUNG	26	34	18	16
253	M PASZTOR	26	34	18	16
254	RW SELMES	27	34	18	16
254	RW SELMES	29	35	18	16
255	GE LANE	29	34	18	16
256	GE LANE	32	37	18	16
257	DJ TILLEY	34	35	18	16
258	S & H FILLA	49	41	20	17
262[a]	CROWN	18	18	17	15
263	M STONE	19	19	17	15
264	RD & DJ BLACKLEY	19	18	17	15
267	AW GLEESON & SA MULDOON	20	20	17	15
268	EA & DM LANE	21	21	17	15
270	RD BLACKLEY	19	17	17	15
270	RD BLACKLEY	19	17	17	15
271	CD & JD McCANN	21	19	17	15
272[a]	CROWN	23	23	17	15
272[a]	CROWN	24	22	17	15
272[a]	CROWN	24	24	17	15
272[a]	CROWN	24	27	17	15
273	GJ & TA HUTCHISON	15	17	16	15
273	GJ & TA HUTCHISON	15	18	16	15
275	JL & MB HOWDEN	15	17	16	15
276	KJ BLACKLEY (PERPETUAL LEASE)	16	18	16	15
276	KJ BLACKLEY (PERPETUAL LEASE)	16	17	16	15
277	RJ TILLEY	16	17	16	15
278	FS GILSON	16	16	16	15
279	N & JA ANDERSON	17	15	16	15
280	SR WILLIAMS	17	15	16	15
281	SJ BROOKS	17	15	16	15
283	MW MERCER	19	15	17	15
284	VN & E DEVEIGNE	20	16	17	15
285	E BANKS	21	18	17	15
288	MB BANKS	22	19	17	15

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
289	NG HARRADINE	23	20	17	15
291	A & R INZITARI	27	29	18	15
296	PF KENDALL	30	31	18	16
297	PF & DM TONER	30	32	18	16
298	BJ SCOTT	30	33	18	16
301	CM O'NEILL	33	33	18	16
302	CJ CONROY	33	31	18	16
304	AI MILLER & BS WILSON	33	31	18	16
305	AI MILLER & BS WILSON	34	31	18	16
306	AI MILLER & BS WILSON	36	32	18	16
308	T BATES	36	34	19	16
309	ME STEWART	36	35	19	16
311	WG BROWN	42	37	19	16
312	LM McDONALD	42	36	19	16
313	N VIAPHAY	41	34	19	16
314	KR WATERS	43	35	19	16
315	KL GODDEN	28	25	18	15
315	KL GODDEN	30	27	18	16
316	CE & SM DAVIS	27	23	17	15
317	CE & SM DAVIS	26	23	17	15
318	AW HALL	27	23	17	15
321	N THORNE	33	29	18	16
325	SP & SA DUGGAN	44	36	19	16
326	THE MINISTER FOR ENERGY & UTILITIES	49	35	20	16
327	J PLAYFORD	**54**	35	21	17
328	RP HARRIS	14	21	16	15
329	R BAILEY	14	20	16	15
330	DJ ANNESLEY	13	19	15	14
331	GJ & VC WALSH	12	18	15	14
332	BN ROCHESTER	12	17	15	14
333	RP DOYLE	12	17	15	14
335	P WARNER & YA HARRIS	12	17	15	14
342	GJ WILLIAMS	12	17	15	14
343	AG & RL WILLIAMS	12	17	15	14
344	RT & VE DOBSON	12	18	15	14
345	DK & K NORTHEY	13	18	15	14
347	DJ ANNESLEY	13	19	15	14
349	RM CRANE	19	18	16	15
350	TANWIND PTY LTD	14	14	16	15
350	TANWIND PTY LTD	15	14	16	15
350	TANWIND PTY LTD	15	14	16	15
350	TANWIND PTY LTD	16	14	16	15
350	TANWIND PTY LTD	16	14	16	15
352	RS SPEIRS	17	14	16	15
352	RS SPEIRS	19	14	16	15
353	RJ DUNCAN	17	13	16	15
354	ST & CP WILSON	17	13	16	15

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
355	DC & KT CLAYDON & JD GARRETT	17	13	16	15
356	MS IVEY	17	13	16	15
357	E FABITS	16	13	16	15
358	JM ELLIS	16	13	16	15
360[a]	CROWN	28	18	17	15
364	JR GRACEY	21	13	18	15
367	JR GRACEY	17	14	16	15
368	RA FULLER	28	13	18	15
372	RE GILMORE	14	13	16	14
373	WF FITZGERALD	17	14	15	15
383	BS BRETHERTON & B CHADWICK	24	15	17	15
384	A TABONE	22	13	17	15
385	CEEDIVE PTY LTD	22	13	17	15
386	TJ GRIFFITHS	26	15	17	15
388	VA McFADDEN	14	9	15	14
391	MG BULKELEY	15	9	16	15
392	IG PALMER	22	17	18	16
393[b]	COALPAC PTY LTD	35	20	19	17
394[b]	COALPAC PTY LTD	**79**	**58**	25	21
396[b]	COALPAC PTY LTD	**90**	**71**	30	26
401	KG & DA NEAVES	22	13	17	15
403	BR & E BROWN	21	13	17	15
404	BR & E BROWN	20	12	16	15
405	BR & E BROWN	20	11	17	14
406	PW GRIFFITHS	15	10	16	14
407	TJ & SM GRIFFITHS	16	10	16	14
408	RH GRIFFITHS	15	10	16	14
410	V & F FAVA , C ROSITANO , F TEDESCO & E TODORELLO	20	13	17	15
419	AP & KA BROWN	24	15	17	15
419	AP & KA BROWN	23	15	17	15
421	SJ & DS TAYLOR	24	16	17	15
426	JWJ & SM TAYLOR	**62**	**51**	20	17

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary

* 50 $\mu g/m^3$ refers to the cumulative criterion and should not be applied to Project alone results. This is shown here for reference only. A bolded result indicates a prediction over 50 $\mu g/m^3$ and by default, exceeding the cumulative criterion.

Table B2: Predicted Ground Level PM_{10} Concentrations from the Exhibited Project compared to the Contracted Project (Year 8)

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
81	THE MINISTER FOR EDUCATION & TRAINING	10	5	13	13
86[a]	CROWN	11	6	13	13
87	BK ABRAHAMS	9	5	13	13
103	JR & DM CRAM	17	8	14	14
104	KA THOMAS	18	9	14	14
106	A & M ABOU-TOUMA	20	10	15	14
107	G & M GEBRAEL	19	10	15	14
108	PJ & CI DI MAURO	19	10	15	14
109	J , P , GG & CG PICCIONE	18	9	15	14
111A	A & R SALMAN	10	5	13	13
111B	A & R SALMAN	10	5	13	13
112	J HANNOUCHE	13	7	14	14
113	MB & AM RINGIN	14	7	14	14
114	PJ & EJ ISAACSON	15	8	15	14
119	LN GOLDSPINK	11	5	14	14
123	TW & JA NOLAN	18	8	15	14
139	RI & GM LARKIN	19	9	15	14
142	PG DESCH & KC FARRUGIA	19	11	16	15
143	DB SPEIRS	18	10	16	15
144	DA & DM MULDOON	19	10	16	15
169[b]	PORTLAND ROAD PASTORAL CO PTY LTD	**88**	46	**33**	23
171[b]	PORTLAND ROAD PASTORAL CO PTY LTD	**65**	46	**33**	23
179[c]	RK DICKENS	12	6	15	14
195[c]	KJ BLACKLEY	**141**	**98**	**48**	**36**
196[ac]	CROWN (THE STATE OF NSW)	**160**	**66**	**49**	30
197[c]	BE & CE LEISMANN & IL &KID FOLLINGTON	**64**	34	**31**	21
198[c]	DA TILLEY	**56**	30	27	20
199[c]	DA TILLEY	**53**	29	26	20
205	D DINO & J SERAGLIO	12	6	16	14
209	DJ RYAN	14	7	15	14
210	FC & K TILLEY	13	7	15	14
211	BJ & JM FITZGERALD	16	8	15	15
216	BM EMMOTT	38	22	21	17
217a[a]	CROWN	37	20	20	17
217b[a]	CROWN	35	18	19	16
220	KL BUNYON	27	14	17	15
223	RJ WHITTAKER & SR BURROWS	25	13	17	15
225	JR TILLEY	25	13	17	15
227	RG WRIGHT & KL NORRIS	25	13	17	15
228	AA WOODS , EJ NICHOLLS & LH FIELD	25	14	17	15
229	AA WOODS , EJ NICHOLLS & LH FIELD	26	14	17	15
230	CM & BA GILBERT	26	14	17	15
231	J FULLER	26	14	17	15
232	RM PYNE	26	14	17	15
235	RK & SM LANE	28	15	17	16
235	RK & SM LANE	28	15	17	16
236	TJ & KO TILLEY	29	15	18	16
237	MC CRANE	28	15	17	16
238	DP ROCHESTER	28	15	17	16
238	DP ROCHESTER	29	15	18	16
239	SG TWEEDIE	29	15	18	16
240	DW & GJ McCANN	29	15	18	16
242	WF FITZGERALD	29	16	18	16

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
243	UNKNOWN	30	16	18	16
245	M BOTFIELD	31	16	18	16
247	KO & SL ROCHESTER	26	14	17	15
248	PB DRAPER	26	14	17	15
250	GER YOUNG	27	14	17	15
251	GER YOUNG	26	14	17	15
253	M PASZTOR	27	14	17	15
254	RW SELMES	27	14	17	15
254	RW SELMES	27	14	17	15
255	GE LANE	27	14	17	15
256	GE LANE	29	15	17	16
257	DJ TILLEY	29	15	17	16
258	S & H FILLA	36	18	18	16
262[a]	CROWN	23	12	16	15
263	M STONE	23	12	16	15
264	RD & DJ BLACKLEY	23	12	16	15
267	AW GLEESON & SA MULDOON	24	13	17	15
268	EA & DM LANE	24	13	17	15
270	RD BLACKLEY	23	12	16	15
270	RD BLACKLEY	23	12	16	15
271	CD & JD McCANN	24	13	16	15
272[a]	CROWN	25	13	17	15
272[a]	CROWN	25	13	17	15
272[a]	CROWN	25	13	17	15
272[a]	CROWN	25	13	17	15
273	GJ & TA HUTCHISON	20	11	16	15
273	GJ & TA HUTCHISON	20	11	16	15
275	JL & MB HOWDEN	20	11	16	15
276	KJ BLACKLEY (PERPETUAL LEASE)	21	11	16	15
276	KJ BLACKLEY (PERPETUAL LEASE)	21	11	16	15
277	RJ TILLEY	21	11	16	15
278	FS GILSON	21	11	16	15
279	N & JA ANDERSON	21	11	16	15
280	SR WILLIAMS	21	11	16	15
281	SJ BROOKS	21	11	16	15
283	MW MERCER	22	12	16	15
284	VN & E DEVEIGNE	23	12	16	15
285	E BANKS	23	12	16	15
288	MB BANKS	24	12	16	15
289	NG HARRADINE	25	13	17	15
291	A & R INZITARI	26	14	17	15
296	PF KENDALL	28	14	17	15
297	PF & DM TONER	28	14	17	15
298	BJ SCOTT	28	14	17	15
301	CM O'NEILL	28	15	17	15
302	CJ CONROY	29	15	17	15
304	AI MILLER & BS WILSON	29	15	17	15
305	AI MILLER & BS WILSON	29	15	17	15
306	AI MILLER & BS WILSON	30	15	17	16
308	T BATES	30	15	17	16
309	ME STEWART	30	15	17	16
311	WG BROWN	33	17	18	16
312	LM McDONALD	33	17	18	16
313	N VIAPHAY	33	17	18	16
314	KR WATERS	34	17	18	16

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
315	KL GODDEN	27	14	17	15
315	KL GODDEN	28	14	17	15
316	CE & SM DAVIS	26	13	17	15
317	CE & SM DAVIS	26	13	17	15
318	AW HALL	26	13	17	15
321	N THORNE	29	15	17	15
325	SP & SA DUGGAN	35	18	18	16
326	THE MINISTER FOR ENERGY & UTILITIES	40	20	18	16
327	J PLAYFORD	45	21	19	16
328	RP HARRIS	20	10	16	15
329	R BAILEY	19	10	16	15
330	DJ ANNESLEY	18	10	15	15
331	GJ & VC WALSH	17	9	15	15
332	BN ROCHESTER	17	9	15	14
333	RP DOYLE	17	9	15	14
335	P WARNER & YA HARRIS	16	9	15	14
342	GJ WILLIAMS	17	9	15	14
343	AG & RL WILLIAMS	17	9	15	14
344	RT & VE DOBSON	17	9	15	14
345	DK & K NORTHEY	18	9	15	15
347	DJ ANNESLEY	19	10	15	15
349	RM CRANE	20	10	16	15
350	TANWIND PTY LTD	19	10	16	15
350	TANWIND PTY LTD	19	10	16	15
350	TANWIND PTY LTD	19	10	16	15
350	TANWIND PTY LTD	20	10	16	15
350	TANWIND PTY LTD	20	10	16	15
352	RS SPEIRS	21	11	16	15
352	RS SPEIRS	22	11	16	15
353	RJ DUNCAN	20	10	16	15
354	ST & CP WILSON	20	10	16	15
355	DC & KT CLAYDON & JD GARRETT	20	10	16	15
356	MS IVEY	20	10	16	15
357	E FABITS	19	10	16	15
358	JM ELLIS	13	10	16	15
360[a]	CROWN	12	14	16	15
364	JR GRACEY	16	6	17	14
367	JR GRACEY	13	6	16	14
368	RA FULLER	14	7	16	14
372	RE GILMORE	15	6	16	14
373	WF FITZGERALD	15	8	16	14
383	BS BRETHERTON & B CHADWICK	15	7	16	14
384	A TABONE	19	7	16	14
385	CEEDIVE PTY LTD	26	7	17	14
386	TJ GRIFFITHS	17	7	15	14
388	VA McFADDEN	12	6	15	14
391	MG BULKELEY	14	6	16	14
392	IG PALMER	21	11	17	16
393[b]	COALPAC PTY LTD	31	16	19	17
394[b]	COALPAC PTY LTD	**64**	41	25	21
396[b]	COALPAC PTY LTD	**74**	48	30	25
401	KG & DA NEAVES	17	8	17	14
403	BR & E BROWN	14	8	16	14
404	BR & E BROWN	14	8	16	14
405	BR & E BROWN	15	8	16	14

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
406	PW GRIFFITHS	13	7	16	14
407	TJ & SM GRIFFITHS	13	7	16	14
408	RH GRIFFITHS	12	7	16	14
410	V & F FAVA , C ROSITANO , F TEDESCO & E TODORELLO	18	9	17	15
419	AP & KA BROWN	20	11	16	15
419	AP & KA BROWN	21	11	16	15
421	SJ & DS TAYLOR	22	12	17	15
426	JWJ & SM TAYLOR	**53**	31	17	16

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary

* 50 $\mu g/m^3$ refers to the cumulative criterion and should not be applied to Project alone results. This is shown here for reference only. A bolded result indicates a prediction over 50 $\mu g/m^3$ and by default, exceeding the cumulative criterion.

Table B3: Predicted Ground Level PM_{10} Concentrations from the Exhibited Project compared to the Contracted Project (Year 14)

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
81	THE MINISTER FOR EDUCATION & TRAINING	12	6	13	14
86[a]	CROWN	15	7	14	14
87	BK ABRAHAMS	12	6	14	14
103	JR & DM CRAM	21	10	14	14
104	KA THOMAS	23	11	15	15
106	A & M ABOU-TOUMA	26	12	15	15
107	G & M GEBRAEL	25	12	15	15
108	PJ & CI DI MAURO	25	12	15	15
109	J , P , GG & CG PICCIONE	23	11	15	15
111A	A & R SALMAN	16	6	14	14
111B	A & R SALMAN	18	6	15	14
112	J HANNOUCHE	12	8	14	15
113	MB & AM RINGIN	12	9	13	15
114	PJ & EJ ISAACSON	19	10	15	15
119	LN GOLDSPINK	15	8	14	15
123	TW & JA NOLAN	21	11	15	16
139	RI & GM LARKIN	21	11	16	16
142	PG DESCH & KC FARRUGIA	24	13	17	18
143	DB SPEIRS	22	12	17	18
144	DA & DM MULDOON	21	12	17	18
169[b]	PORTLAND ROAD PASTORAL CO PTY LTD	**119**	**63**	**42**	**30**
171[b]	PORTLAND ROAD PASTORAL CO PTY LTD	**120**	**74**	**45**	**35**
179[c]	RK DICKENS	16	8	16	16
195[c]	KJ BLACKLEY	**160**	**95**	**56**	**42**
196[ac]	CROWN (THE STATE OF NSW)	**150**	**82**	**52**	**38**
197[c]	BE & CE LEISMANN & IL &KID FOLLINGTON	**65**	35	27	29
198[c]	DA TILLEY	**59**	31	25	27
199[c]	DA TILLEY	**60**	31	25	27
205	D DINO & J SERAGLIO	16	6	16	16
209	DJ RYAN	14	7	15	17
210	FC & K TILLEY	14	7	15	17
211	BJ & JM FITZGERALD	17	9	16	17
216	BM EMMOTT	46	25	21	22
217a[a]	CROWN	46	24	20	22
217b[a]	CROWN	46	24	20	21
220	KL BUNYON	33	16	18	19
223	RJ WHITTAKER & SR BURROWS	32	16	17	19
225	JR TILLEY	32	16	17	19
227	RG WRIGHT & KL NORRIS	32	16	17	19
228	AA WOODS , EJ NICHOLLS & LH FIELD	32	16	18	19
229	AA WOODS , EJ NICHOLLS & LH FIELD	32	16	18	19
230	CM & BA GILBERT	33	16	18	19
231	J FULLER	33	16	18	19
232	RM PYNE	33	16	18	19
235	RK & SM LANE	36	18	18	20
235	RK & SM LANE	36	18	18	20
236	TJ & KO TILLEY	37	19	18	20
237	MC CRANE	36	18	18	20
238	DP ROCHESTER	36	18	18	20
238	DP ROCHESTER	37	19	18	20
239	SG TWEEDIE	36	18	18	20
240	DW & GJ McCANN	37	19	18	20
242	WF FITZGERALD	37	19	18	20

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
243	UNKNOWN	38	19	18	20
245	M BOTFIELD	39	20	19	20
247	KO & SL ROCHESTER	34	17	18	19
248	PB DRAPER	34	17	18	19
250	GER YOUNG	35	17	18	19
251	GER YOUNG	34	17	18	19
253	M PASZTOR	34	17	18	19
254	RW SELMES	34	17	18	19
254	RW SELMES	35	18	18	19
255	GE LANE	35	18	18	19
256	GE LANE	37	19	18	20
257	DJ TILLEY	37	19	18	19
258	S & H FILLA	45	23	20	20
262[a]	CROWN	28	13	17	19
263	M STONE	29	14	17	19
264	RD & DJ BLACKLEY	29	14	17	19
267	AW GLEESON & SA MULDOON	30	14	17	19
268	EA & DM LANE	30	15	17	19
270	RD BLACKLEY	29	14	17	18
270	RD BLACKLEY	29	14	17	19
271	CD & JD McCANN	30	15	17	19
272[a]	CROWN	32	15	17	19
272[a]	CROWN	32	16	17	19
272[a]	CROWN	32	16	17	19
272[a]	CROWN	32	16	17	19
273	GJ & TA HUTCHISON	24	11	16	18
273	GJ & TA HUTCHISON	25	11	16	18
275	JL & MB HOWDEN	25	12	16	18
276	KJ BLACKLEY (PERPETUAL LEASE)	26	12	16	18
276	KJ BLACKLEY (PERPETUAL LEASE)	26	12	16	18
277	RJ TILLEY	26	12	16	18
278	FS GILSON	26	12	16	18
279	N & JA ANDERSON	26	12	16	18
280	SR WILLIAMS	26	12	17	18
281	SJ BROOKS	27	13	17	18
283	MW MERCER	28	14	17	18
284	VN & E DEVEIGNE	29	14	17	19
285	E BANKS	30	14	17	19
288	MB BANKS	31	15	17	19
289	NG HARRADINE	32	15	17	19
291	A & R INZITARI	34	17	18	19
296	PF KENDALL	35	18	18	19
297	PF & DM TONER	36	18	18	19
298	BJ SCOTT	36	18	18	19
301	CM O'NEILL	37	19	18	19
302	CJ CONROY	37	19	18	19
304	AI MILLER & BS WILSON	37	19	18	19
305	AI MILLER & BS WILSON	37	19	18	19
306	AI MILLER & BS WILSON	38	19	19	19
308	T BATES	38	20	19	19
309	ME STEWART	38	20	19	19
311	WG BROWN	42	21	19	20
312	LM McDONALD	42	21	19	20
313	N VIAPHAY	41	21	19	19
314	KR WATERS	42	22	19	19

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
315	KL GODDEN	34	17	18	19
315	KL GODDEN	36	18	18	19
316	CE & SM DAVIS	34	16	18	19
317	CE & SM DAVIS	33	16	18	19
318	AW HALL	34	17	18	19
321	N THORNE	37	18	18	19
325	SP & SA DUGGAN	43	22	20	19
326	THE MINISTER FOR ENERGY & UTILITIES	47	24	20	19
327	J PLAYFORD	50	26	21	20
328	RP HARRIS	23	11	16	18
329	R BAILEY	22	10	16	18
330	DJ ANNESLEY	21	10	16	18
331	GJ & VC WALSH	20	10	16	18
332	BN ROCHESTER	20	9	16	18
333	RP DOYLE	20	9	16	18
335	P WARNER & YA HARRIS	20	9	16	17
342	GJ WILLIAMS	19	9	16	17
343	AG & RL WILLIAMS	19	9	16	17
344	RT & VE DOBSON	20	9	16	17
345	DK & K NORTHEY	21	10	16	18
347	DJ ANNESLEY	22	10	16	18
349	RM CRANE	25	12	16	17
350	TANWIND PTY LTD	23	11	16	18
350	TANWIND PTY LTD	23	11	16	18
350	TANWIND PTY LTD	24	11	16	18
350	TANWIND PTY LTD	24	12	16	18
350	TANWIND PTY LTD	25	12	16	18
352	RS SPEIRS	26	12	17	18
352	RS SPEIRS	28	13	17	18
353	RJ DUNCAN	25	12	16	18
354	ST & CP WILSON	25	12	16	18
355	DC & KT CLAYDON & JD GARRETT	25	12	16	18
356	MS IVEY	25	12	16	18
357	E FABITS	24	12	16	18
358	JM ELLIS	24	12	16	18
360[a]	CROWN	33	17	18	18
364	JR GRACEY	19	8	17	15
367	JR GRACEY	15	6	16	16
368	RA FULLER	20	8	17	15
372	RE GILMORE	13	6	16	16
373	WF FITZGERALD	19	9	16	16
383	BS BRETHERTON & B CHADWICK	17	8	17	15
384	A TABONE	17	8	17	15
385	CEEDIVE PTY LTD	18	8	17	15
386	TJ GRIFFITHS	17	8	17	16
388	VA McFADDEN	14	7	15	16
391	MG BULKELEY	16	7	16	16
392	IG PALMER	24	12	17	18
393[b]	COALPAC PTY LTD	35	18	19	19
394[b]	COALPAC PTY LTD	**63**	40	23	22
396[b]	COALPAC PTY LTD	**58**	40	27	30
401	KG & DA NEAVES	22	10	17	15
403	BR & E BROWN	16	8	16	15
404	BR & E BROWN	15	7	16	15
405	BR & E BROWN	17	8	16	15

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
406	PW GRIFFITHS	14	7	16	15
407	TJ & SM GRIFFITHS	14	7	16	14
408	RH GRIFFITHS	14	7	16	14
410	V & F FAVA , C ROSITANO , F TEDESCO & E TODORELLO	18	9	17	16
419	AP & KA BROWN	19	11	16	15
419	AP & KA BROWN	18	10	16	15
421	SJ & DS TAYLOR	19	11	16	15
426	JWJ & SM TAYLOR	45	27	18	16

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary

* 50 $\mu g/m^3$ refers to the cumulative criterion and should not be applied to Project alone results. This is shown here for reference only. A bolded result indicates a prediction over 50 $\mu g/m^3$ and by default, exceeding the cumulative criterion.

Table B4: Predicted Ground Level PM_{10} Concentrations from the Exhibited Project compared to the Contracted Project (Year 20)

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
81	THE MINISTER FOR EDUCATION & TRAINING	10	6	14	13
86[a]	CROWN	11	7	14	14
87	BK ABRAHAMS	10	6	14	13
103	JR & DM CRAM	17	11	15	14
104	KA THOMAS	18	11	15	14
106	A & M ABOU-TOUMA	20	13	15	14
107	G & M GEBRAEL	19	12	15	14
108	PJ & CI DI MAURO	20	12	15	14
109	J , P , GG & CG PICCIONE	18	12	15	14
111A	A & R SALMAN	10	6	14	13
111B	A & R SALMAN	10	6	14	13
112	J HANNOUCHE	13	8	14	14
113	MB & AM RINGIN	14	9	15	14
114	PJ & EJ ISAACSON	15	10	15	14
119	LN GOLDSPINK	11	7	14	14
123	TW & JA NOLAN	17	13	15	14
139	RI & GM LARKIN	19	10	15	14
142	PG DESCH & KC FARRUGIA	22	15	16	15
143	DB SPEIRS	20	13	16	15
144	DA & DM MULDOON	19	11	16	15
169[b]	PORTLAND ROAD PASTORAL CO PTY LTD	**127**	**65**	**39**	27
171[b]	PORTLAND ROAD PASTORAL CO PTY LTD	**90**	**51**	**35**	24
179[c]	RK DICKENS	15	8	16	15
195[c]	KJ BLACKLEY	**667**	**316**	**157**	**84**
196[ac]	CROWN (THE STATE OF NSW)	**366**	**204**	**99**	**58**
197[c]	BE & CE LEISMANN & IL &KID FOLLINGTON	**118**	**72**	**34**	25
198[c]	DA TILLEY	**90**	**55**	30	22
199[c]	DA TILLEY	**89**	**54**	29	22
205	D DINO & J SERAGLIO	12	7	16	14
209	DJ RYAN	13	7	16	14
210	FC & K TILLEY	13	7	16	14
211	BJ & JM FITZGERALD	15	8	16	15
216	BM EMMOTT	**56**	39	23	18
217a[a]	CROWN	**57**	35	22	18
217b[a]	CROWN	**58**	35	22	18
220	KL BUNYON	31	18	18	16
223	RJ WHITTAKER & SR BURROWS	33	19	19	16
225	JR TILLEY	33	19	19	16
227	RG WRIGHT & KL NORRIS	33	19	19	16
228	AA WOODS , EJ NICHOLLS & LH FIELD	33	19	19	16
229	AA WOODS , EJ NICHOLLS & LH FIELD	33	20	19	16
230	CM & BA GILBERT	34	20	19	16
231	J FULLER	34	20	19	16
232	RM PYNE	35	21	19	16
235	RK & SM LANE	39	23	19	16
235	RK & SM LANE	41	24	20	17
236	TJ & KO TILLEY	43	26	20	17
237	MC CRANE	39	24	20	16
238	DP ROCHESTER	40	24	20	17
238	DP ROCHESTER	43	26	20	17
239	SG TWEEDIE	41	24	20	17
240	DW & GJ McCANN	42	25	20	17
242	WF FITZGERALD	42	26	20	17

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
243	UNKNOWN	42	25	20	17
245	M BOTFIELD	45	27	20	17
247	KO & SL ROCHESTER	36	21	19	16
248	PB DRAPER	37	22	19	16
250	GER YOUNG	38	23	19	16
251	GER YOUNG	37	22	19	16
253	M PASZTOR	37	22	19	16
254	RW SELMES	37	22	19	16
254	RW SELMES	39	23	19	16
255	GE LANE	39	23	19	16
256	GE LANE	42	25	20	17
257	DJ TILLEY	43	25	20	17
258	S & H FILLA	**56**	33	21	17
262[a]	CROWN	26	15	18	15
263	M STONE	27	15	18	16
264	RD & DJ BLACKLEY	27	16	18	16
267	AW GLEESON & SA MULDOON	29	17	18	16
268	EA & DM LANE	30	17	18	16
270	RD BLACKLEY	27	15	18	15
270	RD BLACKLEY	28	16	18	15
271	CD & JD McCANN	30	17	18	16
272[a]	CROWN	32	19	18	16
272[a]	CROWN	33	19	18	16
272[a]	CROWN	33	19	18	16
272[a]	CROWN	33	19	18	16
273	GJ & TA HUTCHISON	21	12	17	15
273	GJ & TA HUTCHISON	21	12	17	15
275	JL & MB HOWDEN	22	12	17	15
276	KJ BLACKLEY (PERPETUAL LEASE)	23	13	17	15
276	KJ BLACKLEY (PERPETUAL LEASE)	23	13	17	15
277	RJ TILLEY	23	13	17	15
278	FS GILSON	23	13	17	15
279	N & JA ANDERSON	24	13	17	15
280	SR WILLIAMS	24	14	17	15
281	SJ BROOKS	25	14	17	15
283	MW MERCER	27	16	18	15
284	VN & E DEVEIGNE	28	16	18	15
285	E BANKS	29	17	18	16
288	MB BANKS	31	18	18	16
289	NG HARRADINE	32	19	18	16
291	A & R INZITARI	36	21	19	16
296	PF KENDALL	39	23	19	16
297	PF & DM TONER	40	23	19	16
298	BJ SCOTT	40	23	19	16
301	CM O'NEILL	42	24	19	16
302	CJ CONROY	41	24	19	16
304	AI MILLER & BS WILSON	42	25	19	16
305	AI MILLER & BS WILSON	42	25	19	16
306	AI MILLER & BS WILSON	44	26	20	16
308	T BATES	45	26	20	17
309	ME STEWART	45	26	20	17
311	WG BROWN	50	29	20	17
312	LM McDONALD	49	29	20	17
313	N VIAPHAY	48	28	20	17
314	KR WATERS	50	29	20	17

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
315	KL GODDEN	37	22	19	16
315	KL GODDEN	39	23	19	16
316	CE & SM DAVIS	35	21	18	16
317	CE & SM DAVIS	35	20	18	16
318	AW HALL	35	21	18	16
321	N THORNE	41	24	19	16
325	SP & SA DUGGAN	**51**	29	20	17
326	THE MINISTER FOR ENERGY & UTILITIES	**54**	31	21	17
327	J PLAYFORD	**58**	33	22	18
328	RP HARRIS	20	11	17	15
329	R BAILEY	19	10	16	15
330	DJ ANNESLEY	19	10	16	15
331	GJ & VC WALSH	18	9	16	15
332	BN ROCHESTER	17	9	16	15
333	RP DOYLE	17	9	16	15
335	P WARNER & YA HARRIS	17	9	16	15
342	GJ WILLIAMS	17	9	16	15
343	AG & RL WILLIAMS	17	9	16	15
344	RT & VE DOBSON	17	9	16	15
345	DK & K NORTHEY	18	9	16	15
347	DJ ANNESLEY	19	10	16	15
349	RM CRANE	23	12	16	15
350	TANWIND PTY LTD	21	12	17	15
350	TANWIND PTY LTD	21	12	17	15
350	TANWIND PTY LTD	22	12	17	15
350	TANWIND PTY LTD	22	12	17	15
350	TANWIND PTY LTD	23	13	17	15
352	RS SPEIRS	25	14	17	15
352	RS SPEIRS	27	15	17	15
353	RJ DUNCAN	24	14	17	15
354	ST & CP WILSON	24	13	17	15
355	DC & KT CLAYDON & JD GARRETT	23	13	17	15
356	MS IVEY	23	13	17	15
357	E FABITS	23	13	17	15
358	JM ELLIS	23	13	17	15
360[a]	CROWN	34	20	18	16
364	JR GRACEY	16	8	17	15
367	JR GRACEY	14	7	16	14
368	RA FULLER	18	8	17	15
372	RE GILMORE	12	6	16	14
373	WF FITZGERALD	16	8	16	15
383	BS BRETHERTON & B CHADWICK	17	8	16	15
384	A TABONE	17	8	16	15
385	CEEDIVE PTY LTD	17	8	16	15
386	TJ GRIFFITHS	17	8	16	15
388	VA McFADDEN	12	6	15	14
391	MG BULKELEY	13	7	16	14
392	IG PALMER	22	12	17	15
393[b]	COALPAC PTY LTD	32	19	18	16
394[b]	COALPAC PTY LTD	**53**	39	22	20
396[b]	COALPAC PTY LTD	47	42	25	22
401	KG & DA NEAVES	20	10	17	15
403	BR & E BROWN	16	8	16	14
404	BR & E BROWN	15	8	16	14
405	BR & E BROWN	17	9	16	14

ID	Ownership Details	Max 24-hour Average PM_{10} Project Alone		Annual Average PM_{10} Mine & Other Sources ($\mu g/m^3$)	
		Exhibited Project	Contracted Project	Exhibited Project	Contracted Project
		Assessment criteria			
		*50**		*30*	
406	PW GRIFFITHS	14	8	15	14
407	TJ & SM GRIFFITHS	14	7	15	14
408	RH GRIFFITHS	14	7	15	14
410	V & F FAVA , C ROSITANO , F TEDESCO & E TODORELLO	15	8	16	15
419	AP & KA BROWN	16	10	16	15
419	AP & KA BROWN	16	10	16	15
421	SJ & DS TAYLOR	17	10	16	15
426	JWJ & SM TAYLOR	41	31	18	16

[a] Crown-owned, [b] Coalpac-owned, [c] Located within Project boundary

* 50 $\mu g/m^3$ refers to the cumulative criterion and should not be applied to Project alone results. This is shown here for reference only. A bolded result indicates a prediction over 50 $\mu g/m^3$ and by default, exceeding the cumulative criterion.

APPENDIX C: Land Ownership Details

Table C1: Land Ownership Details

BLOCK ID	LOT	DP	OWNER ID	OWNER
1	120	704711	179	JR TILLEY & DG McGRATH
2	122	704711	2	CROWN
3	82	621620	180	DESTANAG PTY LTD
4	2	748283	181	WDD & AM CLARK
5	84	755759	182	RJ ALLEN
6	2	1083114	182	RJ ALLEN
7	20	755759	183	BJ & LL SKEEN
8	77	755759	184	B & F KUHNER
9	26	755759	185	JK HUTCHISON
10	73	755759	185	JK HUTCHISON
11	13	755766	186	RS HUTCHISON
12	76	755795		NATIONAL PARKS & WILDLIFE SERVICE
13	107	755767		NATIONAL PARKS & WILDLIFE SERVICE
14	7301	1131637	2	CROWN
15	7302	1137845	2	CROWN
16	38	755759	179	JR TILLEY & DG McGRATH
17	64	661880	180	DESTANAG PTY LTD
18	7300	1131637	2	CROWN
19	11	755759	180	DESTANAG PTY LTD
20	12	755759	180	DESTANAG PTY LTD
21	59	755759	180	DESTANAG PTY LTD
22	13	755759	180	DESTANAG PTY LTD
23	56	755759	180	DESTANAG PTY LTD
24	14	755759	180	DESTANAG PTY LTD
25	7	1035759	187	O'FARRELL PASTORAL COMPANY PTY LTD
26	68	755759	188	GJ & TJ MORRIS
27	4	1035759	187	O'FARRELL PASTORAL COMPANY PTY LTD
28	5	1035759	189	PJ PERROTT
29	97	755759	190	RL KELLAM
30	98	755759	2	CROWN
31	7001	1026563	2	CROWN
32	6	1035759	187	O'FARRELL PASTORAL COMPANY PTY LTD
33	8	1035759	187	O'FARRELL PASTORAL COMPANY PTY LTD
34	100	1028251	191	RF & RA CARTER
35	18	7881	191	RF & RA CARTER
36	1	385225	5	RI & GM LARKIN
37	26	7881	5	RI & GM LARKIN
38	27	7881	192	PMG & CE PARR
39	72	755759	2	CROWN
40	54	755767	193	VA , CA , SL & JA HANTOS
41	76	755759	3	PR & KA HALL
42	A	391695	4	LARKIN PASTORAL CO PTY LTD
43	58	755759	180	DESTANAG PTY LTD
44	55	755759	180	DESTANAG PTY LTD
45	57	755759	180	DESTANAG PTY LTD
46	47	755759	2	CROWN
47	46	755759	2	CROWN
48	45	755759	2	CROWN
49	54	755759	4	LARKIN PASTORAL CO PTY LTD
50	1	951805	4	LARKIN PASTORAL CO PTY LTD
51	48	755759	2	CROWN
52	49	1094781	4	LARKIN PASTORAL CO PTY LTD
53	7	1035759	187	O'FARRELL PASTORAL COMPANY PTY LTD
54	8	1035759	187	O'FARRELL PASTORAL COMPANY PTY LTD
55	1	834137	194	CJ & MH O'FARRELL PTY LTD
56	101	1028251	195	AP & MA CONSTANTINIDES & DR GAZZARD
57	1	382576	2	CROWN (THE COUNCIL OF THE SHIRE OF BLAXLAND)
58	A	380377	196	KA & MJ KIRK
59	B	380377	196	KA & MJ KIRK
60	1	204931	197	TJ & BN GILSHENAN
61	2	204931	198	KM PRICE
62	1	735808	2	CROWN (RTA)
63	1	633720	200	RN HARRIS
64	7	755759	3	PR & KA HALL
65	10	755759	3	PR & KA HALL
66	8	755759	3	PR & KA HALL
67	9	755759	3	PR & KA HALL
68	53	755759	4	LARKIN PASTORAL CO PTY LTD
69	74	755759	4	LARKIN PASTORAL CO PTY LTD
70	11	1125934	4	LARKIN PASTORAL CO PTY LTD
71	12	1125934	4	LARKIN PASTORAL CO PTY LTD
72	1	770408	195	AP & MA CONSTANTINIDES & DR GAZZARD

73	3	755759	187	O'FARRELL PASTORAL COMPANY PTY LTD
74	94	755759	43	JC MURRAY & KL MCFARLANE
75	37	755759	43	JC MURRAY & KL MCFARLANE
76	40	755759	43	JC MURRAY & KL MCFARLANE
77	41	755759	43	JC MURRAY & KL MCFARLANE
78	112	751640		NATIONAL PARKS & WILDLIFE SERVICE
79	33	1125887	46	RI , AM & GM LARKIN
80	31	572044	44	AG DICKSON
81	32	1125887	45	THE MINISTER FOR EDUCATION & TRAINING
82	66	755759	2	CROWN
83	62	755759	2	CROWN
84	61	755759	2	CROWN
85	1	744575	48	A & L TETTE
86	60	755759	2	CROWN
87	3	737188	49	BK ABRAHAMS
88	15	755767	3	PR & KA HALL
89	100	755769	3	PR & KA HALL
90	7302	1131637	2	CROWN
91	99	755769	3	PR & KA HALL
92	77	755769	3	PR & KA HALL
93	25	755769	3	PR & KA HALL
94	24	755769	3	PR & KA HALL
95	36	755759	4	LARKIN PASTORAL CO PTY LTD
96	26	755769	4	LARKIN PASTORAL CO PTY LTD
97	1	1148995	5	RI & GM LARKIN
98	87	755759	5	RI & GM LARKIN
99	88	755759	5	RI & GM LARKIN
100	99	755759	5	RI & GM LARKIN
101	4	114337	5	RI & GM LARKIN
102	5	114337	5	RI & GM LARKIN
103	10	245921	57	JR & DM CRAM
104	11	245921	47	KA THOMAS
105	9	245921	56	A & M ABOU-TOUMA
106	8	245921	56	A & M ABOU-TOUMA
107	7	245921	55	G & M GEBRAEL
108	6	245921	54	PJ & CI DI MAURO
109	5	245921	53	J , P , GG & CG PICCIONE
110	4	245921	52	J HANNOUCHE
111	23	1065421	58	A & R SALMAN
112	3	245921	52	J HANNOUCHE
113	2	245921	51	MB & AM RINGIN
114	1	245921	50	PJ & EJ ISAACSON
115	24	755759	59	GA & BS JESSEP
116	44	755759	59	GA & BS JESSEP
117	34	755759	60	P & WE TILLEY
118	1	114337	59	GA & BS JESSEP
119	10	812300	61	LN GOLDSPINK
120	11	812300	59	GA & BS JESSEP
121	86	755759	59	GA & BS JESSEP
122	1	734531	62	JL MACPHEE
123	22	1103948	64	TW & JA NOLAN
124	21	1103948	63	DW MACPHEE
125	93	755759		NATIONAL PARKS & WILDLIFE SERVICE
126	39	755759		STATE FORESTS OF NSW
127	53	755767	3	PR & KA HALL
128	1	130047	3	PR & KA HALL
129	2	130047	3	PR & KA HALL
130	77	755767	199	D BARBER
131	76	755767	199	D BARBER
132	43	755767	199	D BARBER
133	119	755769	3	PR & KA HALL
134	2	502588	3	PR & KA HALL
135	119	755769	3	PR & KA HALL
136	2	502588	3	PR & KA HALL
137	105	755769	4	LARKIN PASTORAL CO PTY LTD
138	85	755769	5	RI &GM LARKIN
139	27	755769	5	RI & GM LARKIN
140	81	755769	5	RI & GM LARKIN
141	41	755769	5	RI &GM LARKIN
142	3	734531	65	PG DESCH & KC FARRUGIA
143	4	734531	66	DB SPEIRS
144	95	755759	67	DA & DM MULDOON
145	29	755759	42	WALLERWANG COLLIERIES
146	33	664527	42	WALLERWANG COLLIERIES

147	1	796723	42	WALLERWANG COLLIERIES
148	78	755759	42	WALLERWANG COLLIERIES
149	A	421385	42	WALLERWANG COLLIERIES
150	2	235194	42	WALLERWANG COLLIERIES
151	30	755759	42	WALLERWANG COLLIERIES
152	43	755759	42	WALLERWANG COLLIERIES
153	28	755759	42	WALLERWANG COLLIERIES
154	B	421385	42	WALLERWANG COLLIERIES
155	31	755759	42	WALLERWANG COLLIERIES
156	89	755759	42	WALLERWANG COLLIERIES
157	101	723771	42	WALLERWANG COLLIERIES
158	C	421385	42	WALLERWANG COLLIERIES
159	3	235194	42	WALLERWANG COLLIERIES
160	102	723771	42	WALLERWANG COLLIERIES
161	83	755759	42	WALLERWANG COLLIERIES
162	50	755759	42	WALLERWANG COLLIERIES
163	51	755759	42	WALLERWANG COLLIERIES
164	1	620791	42	WALLERWANG COLLIERIES
165	91	755759	42	WALLERWANG COLLIERIES
166	2	620791	42	WALLERWANG COLLIERIES
167	35	755759	42	WALLERWANG COLLIERIES
168	92	755759		STATE FORESTS OF NSW
169	17	755769	27	PORTLAND ROAD PASTORAL CO PTY LTD
170	59	755769	29	BE NAKHLE
171	164	755759	27	PORTLAND ROAD PASTORAL CO PTY LTD
172	96	755759		STATE FORESTS OF NSW
173	35	755769	6	RK DICKENS (PERPETUAL LEASE)
174	1	502588	6	RK DICKENS
175	126	755769	6	RK DICKENS
176	261	755769	7	GE ORELLANA
177	7301	1131640	2	CROWN
178	330	755769	6	RK DICKENS
179	1	220269	6	RK DICKENS
180	20	870537	6	RK DICKENS
181	125	755769	6	RK DICKENS
182	62	755769	6	RK DICKENS
183	49	755769	6	RK DICKENS
184	3	220269	6	RK DICKENS
185	42	755769	6	RK DICKENS
186	1	870538	6	RK DICKENS
187	7316	1142025	2	CROWN (THE STATE OF NSW)
188	36	755769	27	PORTLAND ROAD PASTORAL CO PTY LTD
189	331	46518	27	PORTLAND ROAD PASTORAL CO PTY LTD
190	332	46518	27	PORTLAND ROAD PASTORAL CO PTY LTD
191	1	1025909	27	PORTLAND ROAD PASTORAL CO PTY LTD
192	63	755769	2	CROWN (THE STATE OF NSW)
193	7005	1026565	2	CROWN (THE STATE OF NSW)
194	333	41170	34	J KNOX
195	345	720602	33	KJ BLACKLEY
196	7315	1142024	2	CROWN (THE STATE OF NSW)
197	74	755769	31	BE & CE LEISEMANN & IL &KID FOLLINGTON
198	57	744769	30	DA TILLEY
199	1	376417	30	DA TILLEY
200	3	1148418	35	R TILLEY
201	1	160808	32	KD & RL KELLAM
202	11	1093481	36	GJ KEIGHTLEY
203	2	857736	8	JR GRACEY
204	12	1093481	8	JR GRACEY
205	2	870538	9	D DINO & J SERAGLIO
206	2	870538	9	D DINO & J SERAGLIO
207	7344	1154791	2	CROWN
208	326	755769	2	CROWN
209	1	249955	68	DJ RYAN
210	2	249955	69	FC & K TILLEY
211	3	249955	70	BJ & JM FITZGERALD
212	4	249955	27	PORTLAND ROAD PASTORAL CO PTY LTD
213	5	249955	28	LITHGOW COAL CO PTY LTD
214	1	48808	28	LITHGOW COAL CO PTY LTD
215	1	528538	27	PORTLAND ROAD PASTORAL CO PTY LTD
216	348	722331	137	BM EMMOTT
217	7312	1142022	2	CROWN
218	101	1106315	98	G & BA TILLEY
219	102	1106315	99	JR TILLEY
220	3	528538	97	KL BUNYON

221	1	218896	45	THE MINISTER FOR EDUCATION & TRAINING
222	1	973647	108	CP BAINY
223	1	315600	107	RJ WHITTAKER & SR BURROWS
224	2	315600	99	JR TILLEY
225	4	980222	99	JR TILLEY
226	1	944003	99	JR TILLEY
227	1	305258	106	RG WRIGHT & KL NORRIS
228	1	944657	105	AA WOODS , EJ NICHOLLS & LH FIELD
229	1	302241	105	AA WOODS , EJ NICHOLLS & LH FIELD
230	1	302242	104	CM & BA GILBERT
231	2	302240	103	J FULLER
232	1	302239	102	RM PYNE
233	1	958777	101	TE CADDIS & RM PYNE
234	1	1094180	100	S NAPOLI
235	1	626789	143	RK & SM LANE
236	2	626789	144	TJ & KO TILLEY
237	8	2284	142	MC CRANE
238	7	2284	141	DP ROCHESTER
239	6	2284	140	SG TWEEDIE
240	5	2284	139	DW & GJ McCANN
241	4	2284	77	WF FITZGERALD
242	3	2284	77	WF FITZGERALD
243	2	2284		UNREF
244	1	2284		UNREF
245	328	755769	138	M BOTFIELD
246	25	2284	139	DW & GJ McCANN
247	20	2284	157	KO & SL ROCHESTER
248	19	2284	156	PB DRAPER
249	18	2284	155	GER YOUNG
250	17	2284	155	GER YOUNG
251	16	2284	155	GER YOUNG
252	15	2284	155	GER YOUNG
253	14	2284	154	M PASZTOR
254	13	2284	153	RW SELMES
255	12	2284	152	GE LANE
256	11	2284	152	GE LANE
257	21	2284	145	DJ TILLEY
258	21	249955	146	S & H FILLA
259	20	755769	2	CROWN
260	7014	1067906	2	CROWN
261	323	755769	2	CROWN
262	142	755769	2	CROWN (THE COUNCIL OF THE CITY OF GREATER LITHGOW)
263	A	382206	109	M STONE
264	B	382206	110	RD & DJ BLACKLEY
265	144	755769	2	CROWN (THE COUNCIL OF THE SHIRE OF BLAXLAND)
266	145	755769	2	CROWN (THE COUNCIL OF THE SHIRE OF BLAXLAND)
267	150	755769	114	AW GLEESON & SA MULDOON
268	148	755769	112	EA & DM LANE
269	146	755769	111	RD BLACKLEY
270	147	755769	111	RD BLACKLEY
271	149	755769	113	CD & JD McCANN
272	82	755769	2	CROWN
273	84	755769	115	GJ & TA HUTCHISON
274	307	755769	116	JL & MB HOWDEN
275	308	755769	116	JL & MB HOWDEN
276	309	755769	33	KJ BLACKLEY (PERPETUAL LEASE)
277	310	755769	117	RJ TILLEY
278	311	755769	118	FS GILSON
279	312	755769	119	N & JA ANDERSON
280	313	755769	120	SR WILLIAMS
281	314	755769	121	SJ BROOKS
282	343	42953	122	MW MERCER
283	317	755769	122	MW MERCER
284	318	755769	123	VN & E DEVEIGNE
285	319	755769	124	E BANKS
286	320	755769	125	MB BANKS
287	321	755769	126	KD FRIPP
288	322	755769	125	MB BANKS
289	118	755769	127	NG HARRADINE
290	1	934774	177	SW HOBBY
291	1	925015	158	A & R INZITARI
292	3	925015	159	SP MAYBURY
293	1/A	13644	159	SP MAYBURY
294	2/A	13644	158	A & R INZITARI

295	3/A	13644	160	DR & JA BATTERSBY
296	4/A	13644	161	PF KENDALL
297	7	13644	162	BJ SCOTT
298	6	13644	163	PF & DM TONER
299	5/A	13644	161	PF KENDALL
300	8/A	13644	146	S & H FILLA
301	9/A	13644	164	CM O'NEILL
302	10/A	13644	165	CJ CONROY
303	11/A	13644	166	AI MILLER & BS WILSON
304	12/A	13644	166	AI MILLER & BS WILSON
305	13/A	13644	166	AI MILLER & BS WILSON
306	14/A	13644	166	AI MILLER & BS WILSON
307	15/A	13644	166	AI MILLER & BS WILSON
308	16/A	13644	167	T BATES
309	17	13644	178	ME STEWART
310	18/A	13644	147	SJ BANDIERA
311	19/A	13644	148	WG BROWN
312	20/A	13644	149	LM McDONALD
313	21/A	13644	150	N VIAPHAY
314	22/A	13644	151	KR WATERS
315	1	1004175	168	KL GODDEN
316	1/B	13644	169	CE & SM DAVIS
317	2/B	13644	169	CE & SM DAVIS
318	100	1050450	170	AW HALL
319	5/B	13644	170	AW HALL
320	6/B	13644	170	AW HALL
321	20	1013496	171	N THORNE
322	21	1013496	172	J & DLA MARKOWSKI
323	22	1013496	172	J & DLA MARKOWSKI
324	23	1013496	173	P REDDAN
325	24	1013496	174	SP & SA DUGGAN
326	1	1047161	175	THE MINISTER FOR ENERGY & UTILITIES
327	2	1047161	176	J PLAYFORD
328	1	10141	86	RP HARRIS
329	2	10141	87	R BAILEY
330	3	10141	88	DJ ANNESLEY
331	4	10141	89	GJ & VC WALSH
332	5	10141	90	BN ROCHESTER
333	6	10141	91	RP DOYLE
334	7	10141	92	P WARNER & YA HARRIS
335	8	10141	92	P WARNER & YA HARRIS
336	9	10141	92	P WARNER & YA HARRIS
337	10	10141	92	P WARNER & YA HARRIS
338	11	10141	93	GJ WILLIAMS
339	12	10141	93	GJ WILLIAMS
340	13	10141	93	GJ WILLIAMS
341	14	10141	93	GJ WILLIAMS
342	15	10141	93	GJ WILLIAMS
343	16	10141	94	AG & RL WILLIAMS
344	17	10141	95	RT & VE DOBSON
345	18	10141	96	DK & K NORTHEY
346	19	10141	89	GJ & VC WALSH
347	20	10141	88	DJ ANNESLEY
348	1	1008594	71	RE GILMORE & MG & PJ BULKELEY
349	2	1008594	72	RM CRANE
350	7	1017620	128	TANWIND PTY LTD
351	1	171665	2	CROWN
352	8	1017620	129	RS SPEIRS
353	1	24575	130	JM ELLIS
354	2	24575	131	E FABITS
355	3	24575	132	MS IVEY
356	4	24575	133	DC & KT CLAYDON & JD GARRETT
357	5	24575	134	ST & CP WILSON
358	6	24575	135	RJ DUNCAN
359	112	755769	2	CROWN
360	7314	1142023	2	CROWN
361	344	46506	136	RR COLE
362	3	1008594	71	RE GILMORE & MG & PJ BULKELEY
363	112	877190	1	COALPAC PTY LTD
364	1	556504	8	JR GRACEY
365	2	556504	8	JR GRACEY
366	65	755769	2	CROWN
367	1	872187	8	JR GRACEY
368	2	827480	10	RA FULLER

369	2	872187	10	RA FULLER
370	1	1038480	16	JA , SE BYROM & DC HUTTON
371	18	249955	15	MA & JL TAYLOR
372	15	249955	76	RE GILMORE
373	16	249955	77	WF FITZGERALD
374	14	249955	73	MG BULKELEY
375	13	249955	73	MG BULKELEY
376	4	1008594	73	MG BULKELEY
377	16	755769		STATE FORESTS OF NSW
378	113	877190	1	COALPAC PTY LTD
379	104	755767	39	VL CHADWICK
380	5	816995	37	LJ WALLWORK
381	4	816995	38	SG & DR BOLZAN
382	6	816995	12	DA & KL MITCHELL
383	1	620560	11	BS BRETHERTON & B CHANDWICK
384	21	633083	13	A TABONE
385	22	633083	14	CEEDIVE PTY LTD
386	3	727017	17	TJ GRIFFITHS
387	19	249955	18	JR EMBLETON KJ KELLY
388	17	249955	78	VA McFADDEN
389	7302	1142032	2	CROWN
390	12	249955	73	MG BULKELEY
391	11	249955	73	MG BULKELEY
392	10	249955	75	IG PALMER
393	8	249955	74	B & G MUENZER
394	1	860892	84	G MUENZER
395	11	614429	83	HYROCK NSW PTY LTD
396	1	180294	1	COALPAC PTY LTD
397	11	755767	40	J MENCHIN
398	50	755767	40	J MENCHIN
399	3	816995	19	PJ & TM McFADDEN
400	2	816995	20	D HART
401	1	816995	21	KG & DA NEAVES
402	7	816995	22	KJ & DK SHAW
403	1	717021	23	BR & E BROWN
404	2	717021	23	BR & E BROWN
405	3	717021	23	BR & E BROWN
406	4	717021	24	PW GRIFFITHS
407	5	717021	25	TJ & SM GRIFFITHS
408	6	717021	26	RH GRIFFITHS
409	1	728859	78	VA McFADDEN
410	7	717021	79	PJ & SL McFADDEN
411	179	755769	82	SJ & DS TAYLOR
412	177	755769	80	V & F FAVA , C ROSITANO , F TEDESCO & E TODORELLO
413	13	755769	80	V & F FAVA , C ROSITANO , F TEDESCO & E TODORELLO
414	71	755769	80	V & F FAVA , C ROSITANO , F TEDESCO & E TODORELLO
415	72	755769	82	SJ & DS TAYLOR
416	68	755769	82	SJ & DS TAYLOR
417	178	755769	81	AP & KA BROWN
418	14	755769	81	AP & KA BROWN
419	15	755769	81	AP & KA BROWN
420	281	755769	82	SJ & DS TAYLOR
421	280	755769	82	SJ & DS TAYLOR
422	38	755769	82	SJ & DS TAYLOR
423	76	755769	82	SJ & DS TAYLOR
424	73	755769	82	SJ & DS TAYLOR
425	69	755769	82	SJ & DS TAYLOR
426	186	755769	85	JWJ & SM TAYLOR
427	121	41586	40	J MENCHIN
428	100	755767	41	KJ TAYLOR
429	6	1127747	201	DELTA ELECTRICITY
430	18	751636	201	DELTA ELECTRICITY
431	52	827626	201	DELTA ELECTRICITY
432	51	827626	201	DELTA ELECTRICITY
433	50	827626	201	DELTA ELECTRICITY
434	49	827626	201	DELTA ELECTRICITY
435	18	755769	202	GW & JL & TJ & JA CLARK
435	1	248472		STATE FORESTS OF NSW
436	22	755769	202	GW & JL & TJ & JA CLARK
437	185	755769	202	GW & JL & TJ & JA CLARK
438	64	755769	202	GW & JL & TJ & JA CLARK
439	264	755769	85	JWJ & SM TAYLOR
440	263	755769	85	JWJ & SM TAYLOR
441	1	1016508	203	GW & JL CLARK

442	1	813288	201	DELTA ELECTRICITY
443	5	1127747	204	LITHGOW DISTRICT CAR CLUB INC.
444	366	740604	201	DELTA ELECTRICITY
445	362	740604	201	DELTA ELECTRICITY
446	59	751636	201	DELTA ELECTRICITY
447	5	1092737	201	DELTA ELECTRICITY
448	191	629212	201	DELTA ELECTRICITY
449	1	803655	201	DELTA ELECTRICITY
450	1	702619	201	DELTA ELECTRICITY
451	5	804929	201	DELTA ELECTRICITY
452	7	804292	201	DELTA ELECTRICITY
453	48	827626	201	DELTA ELECTRICITY
454	1	999329	201	DELTA ELECTRICITY
455	2	999329	201	DELTA ELECTRICITY
456	5	999329	201	DELTA ELECTRICITY
457	4	999329	201	DELTA ELECTRICITY
458	3	999329	201	DELTA ELECTRICITY
459	46	827626	201	DELTA ELECTRICITY
460	47	827626	201	DELTA ELECTRICITY
461	45	827626	205	CENTENNIAL FASSIFERN PTY LIMITED
462	44	827626	205	CENTENNIAL FASSIFERN PTY LIMITED
463	16	751636	205	CENTENNIAL FASSIFERN PTY LIMITED
464	343	751636	205	CENTENNIAL FASSIFERN PTY LIMITED
465	12	751636	205	CENTENNIAL FASSIFERN PTY LIMITED
466	342	751636	205	CENTENNIAL FASSIFERN PTY LIMITED
467	43	827626	205	CENTENNIAL FASSIFERN PTY LIMITED
468	20	877752	205	CENTENNIAL FASSIFERN PTY LIMITED
469	1	325532	201	DELTA ELECTRICITY
470	9	804929	206	CENTENNIAL SPRINGVALE PTY LIMITED & SPRINGVALE SK KORES PTY LIMITED
471	8	804929	201	DELTA ELECTRICITY
472	42	827626	201	DELTA ELECTRICITY
473	41	827626	201	DELTA ELECTRICITY
474	1	400022	201	DELTA ELECTRICITY
475	40	827626	201	DELTA ELECTRICITY
476	38	827626	207	EHANCE PLACE PTY LIMITED
477	363	740604	2	CROWN (THE COUNCIL OF THE CITY OF GREATER LITHGOW)
478	364	740604	2	CROWN
479	22	832446	208	TRANSGRID

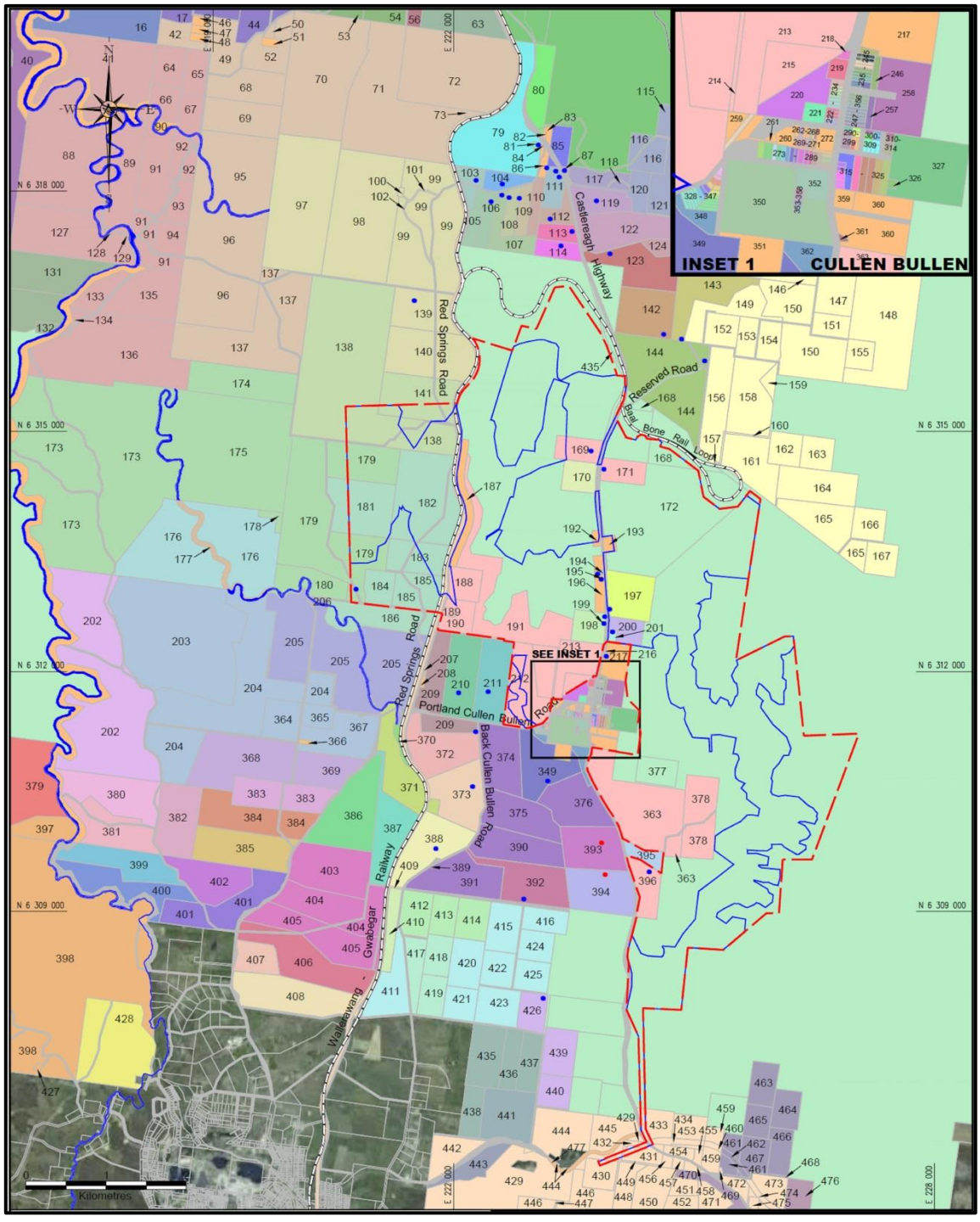


Figure C1: Land Ownership Details

APPENDIX C

NOISE MODELLING RESULTS,

CONTRACTED PROJECT COMPARISON

BRIDGES ACOUSTICS

ABN: 73 254 053 305

78 Woodglen Close
P.O. Box 61
PATERSON NSW 2421

Phone : (02) 4938 5866
Mobile: (0407) 38 5866
E-mail: bridgesacoustics@bigpond.com

23 May 2013
Ref: J0130-29-L6

Hansen Bailey Pty Ltd
P.O. Box 473
SINGLETON NSW 2330

Attn: Mr. Dorian Walsh

Dear Dorian,

RE: COALPAC CONSOLIDATION PROJECT -
CONTRACTED PROJECT REPORT - ACOUSTICS

1. INTRODUCTION

Bridges Acoustics has been commissioned by Hansen Bailey on behalf of Coalpac Pty Ltd (Coalpac) to present predicted noise levels for all assessed years for the Contracted Project. The Contracted Project differs from the Exhibited Project in the following significant respects:

1. Removal of the Hillcroft mining area and associated access infrastructure (including the Wallerawang-Gwabegar Rail Line overpass bridge and Red Springs Road crossing);
2. Removal of the sand extraction component of the Exhibited Project located in the Cullen Valley mining area, including the requirement for associated crushing and screening infrastructure and the transport of product sand by road from the site to market;
3. Reduction of the open cut mining footprint to avoid the area of Clandulla Geebung habitat previously located in the north western mining area at Cullen Valley Mine;
4. Reduction of the open cut mining footprint in relation to the Significant Pagoda Landforms (SPL) to improve ecological outcomes;
5. Reduction of the highwall mining footprint to avoid rock formations within the SPL to improve perceived ecological, heritage and geotechnical outcomes;
6. Implementation of a robust blast management system specifically tailored to further minimise the potential for blasting impacts to any SPL and Sandstone Outcrop;
7. Enhancement of the BOS proposed for any residual ecological impacts; and
8. Commitments with regard to the monitoring, management and operation of the Contracted Project.

This assessment quantifies the reduction in received noise levels that will be realised from the Contracted Project, including the changes listed above, compared to the Exhibited Project.

2. ASSESSMENT METHODOLOGY

Noise levels from the Contracted Project have been predicted using a modified version of the noise model used to calculate noise levels for the Exhibited Project, including the following changes:

- The terrain file has been changed by:

- Replacing the disturbed terrain within the Hillcroft mining area with the existing ground surface in this area; and
- Slightly reducing the northern Cullen Valley mining area to avoid an area of Clandulla Geebung habitat.

- The noise sources have been changed by:
  - Relocating the Highwall Miner from the Hillcroft mining area to the northern Cullen Valley mining area in Year 2, which affects noise levels in all time periods and weather conditions;
  - Removing all other mobile plant sources associated with the Hillcroft mining area in Year 2. As the Exhibited Project included mining within the Hillcroft mining area only during the day under neutral weather conditions, removal of this plant does not affect Project noise levels under day/evening prevailing or night prevailing conditions;
  - Adjusting the mining noise sources in the northern Cullen Valley mining area to suit the adjusted terrain in this area while maintaining the same or a similar elevation and level of acoustic shielding for all sources; and
  - Removing all sand extraction, processing and transportation equipment.

All other noise model parameters, including prevailing weather conditions in each time period, have not been changed.

3. ASSESSMENT RESULTS

Noise levels from the Contracted Project have been presented in the same format as noise levels from the Exhibited Project were presented in the Acoustic Impact Assessment (AIA) in the Environmental Assessment (EA). Table 1 shows noise levels from the Contracted Project for direct comparison with Exhibited Project noise levels in Table 21 in the AIA.

Table 1: Summary of Predicted Noise Levels at Residences and Properties, LAeq,15min.

Owner	Residence				25% of Property Area				Criteria
Ref	Lot Ref	Day Neutral	Day/ Evening	Night	Lot Reference	Day Neutral	Day/ Evening	Night	Day/ Evening/ Night
2	217N	31.1	36.1	37.2	217	36.7	41.1	41.5	37/35/35
5	139	31.3	31.3	37.7	97-102,138-141	30.5	33.2	37.1	35/35/35
6	179	28.7	36.6	38.5	173-175,178-186	23.7	31.3	33.8	35/35/35
7	-	-	-	-	176	20.5	30.5	32.6	35/35/35
8	364	24.8	35.7	37.6	203,204,364,365, 367	23.5	34.7	36.7	35/35/35
	367	25.7	35.6	37.9					
9	205	27.6	36.6	38.7	205,206	26.8	36.6	38.9	35/35/35
10	368	23.6	34.2	35.8	368,369	24.2	35.2	37.1	35/35/35
11	383	24.8	35.0	37.0	383	24.2	34.6	36.5	35/35/35
13	384	24.1	33.9	35.9	384	23.9	33.8	35.9	35/35/35
14	385	23.9	33.8	35.7	385	23.4	33.4	35.2	35/35/35
15	-	-	-	-	371	25.8	34.8	37.2	35/35/35
16	-	-	-	-	370	26.0	35.4	38.2	35/35/35
17	386	25.5	34.9	37.0	386	25.8	35.0	37.0	35/35/35
18	-	-	-	-	387	26.1	35.0	37.0	35/35/35
23	403	24.4	34.2	36.0	403-405	24.7	34.3	36.2	35/35/35
	404	23.6	34.0	35.6					
24	406	<35	<35	<35	406	23.4	34.4	36.0	35/35/35
26	408	<35	<35	<35	408	22.7	33.8	35.3	

Owner	Residence				25% of Property Area				Criteria
Ref	Lot Ref	Day Neutral	Day/ Evening	Night	Lot Reference	Day Neutral	Day/ Evening	Night	Day/ Evening/ Night
29	-	-	-	-	170	62.6	63.0	61.3	37/35/35
30	198	36.8	39.3	39.7	198, 199	38.1	45.6	46.6	37/35/35
	199	37.3	39.8	39.5					
31	197	37.7	40.1	40.4	197	67.6	68.1	67.2	37/35/35
32	-	-	-	-	201	35.2	38.9	39.4	37/35/35
33	195	41.2	42.5	43.8	195	41.2	42.5	43.8	37/35/35
34	194	41.5	43.5	45.3	194	42.8	45.2	46.7	37/35/35
35	-	-	-	-	200	46.0	48.6	49.1	37/35/35
50	114	27.6	32.2	36.0	114	28.1	34.1	35.7	37/35/35
51	113	26.8	32.4	36.5	113	27.1	32.0	36.2	37/35/35
52	112	25.9	29.1	35.9	110,112	26.0	29.5	35.9	37/35/35
53	109	25.4	26.1	35.2	109	26.5	27.4	36.0	35/35/35
54	108	25.4	25.8	35.2	108	27.0	27.3	36.5	35/35/35
55	107				107	28.0	28.7	36.9	35/35/35
56	106	25.5	25.7	35.2	105,106	26.9	27.0	35.8	35/35/35
58	111	<35	<35	<35	111	24.7	28.0	35.2	37/35/35
61	119	<35	<35	<35	119	24.6	30.7	35.3	37/35/35
62	-	-	-	-	122	25.6	33.3	35.1	37/35/35
65	142	33.4	35.7	38.1	142	31.8	34.4	37.0	35/35/35
66	143	33.7	36.5	37.9	143	30.7	35.1	35.8	35/35/35
67	144	34.6	37.9	38.7	144	38.3	39.5	39.0	35/35/35
68	209	27.3	35.0	35.4	209	28.7	34.4	36.7	35/35/35
69	210				210	28.2	33.1	35.2	35/35/35
71	-	-	-	-	348	28.9	33.6	35.3	37/35/35
					362	30.9	32.3	37.0	
72	349	33.5	36.8	38.4	349	32.2	36.3	37.8	37/35/35
73	391	26.7	35.0	37.0	374-376,390,391	31.9	37.8	39.0	35/35/35
75	392	30.1	38.2	39.5	392	31.2	39.0	39.5	35/35/35
76	372	26.2	35.6	38.5	372	27.5	35.1	37.5	35/35/35
77	373	29.0	35.5	37.1	373	28.9	35.3	36.9	35/35/35
78	388	27.0	34.5	35.6	388,409	27.4	34.9	36.7	35/35/35
79	-	-	-	-	410	25.5	34.5	36.1	35/35/35
80	412	26.2	36.0	38.3	412-414	27.4	36.5	38.3	35/35/35
81	419	<35	<35	<35	417-419	25.5	34.8	36.6	35/35/35
82	421	<35	<35	<35	411,415,416, 420-425	29.5	38.3	39.4	35/35/35
85	426	27.1	35.3	36.3	426,439,440	22.7	31.7	33.3	35/35/35
97	220	26.8	34.3	32.7	220	27.4	35.8	33.2	37/35/35
128	350	27.8	33.0	34.8	350	28.7	33.1	35.2	37/35/35
137	-	-	-	-	216	31.8	36.6	37.6	37/35/35
Total Affected Residences/ Properties		0	3	3	Significant	4	7	7	
		2	4	16	Moderate	2	5	14	
		2	12	17	Mild	1	10	30	

Red shading – a significant noise impact of 5 dBA or more above the intrusive criteria;
Blue shading – a moderate noise impact of less than 5 dBA above the intrusive criteria; and
Green shading – a mild noise impact of 2 dBA or less above the intrusive criteria.

Table 2 shows noise level differences between the Exhibited Project and the Contracted Project, where a negative noise level indicates the Contracted Project is quieter than the Exhibited Project. Cells have been shaded according to the noise level reduction from the Exhibited Project to the Contracted Project, with darker shading representing a greater noise reduction.

Table 2: Differences Between Exhibited and Contracted Project, LAeq,15min.

Owner	Residence				25% of Property Area				Criteria
Ref	Lot Ref	Day Neutral	Day/ Evening	Night	Lot Reference	Day Neutral	Day/ Evening	Night	Day/ Evening/ Night
2	217N	-0.1	0.0	0.0	217	-0.1	0.0	0.0	37/35/35
5	139	0.0	0.0	0.0	97-102,138-141	-2.2	-0.7	0.0	35/35/35
6	179	-8.7	-1.2	-1.2	173-175,178-186	-15.7	-9.4	-7.3	35/35/35
7	-	-	-	-	176	-13.9	-7.3	-7.4	35/35/35
8	364	-7.1	-0.7	-1.1	203,204,364,365, 367	-8.8	-1.7	-1.9	35/35/35
	367	-5.6	-1.0	-1.0					
9	205	-5.4	-1.8	-1.9	205,206	-10.2	-4.0	-4.0	35/35/35
10	368	-5.8	-0.5	-1.3	368,369	-5.8	-0.4	-0.7	35/35/35
11	383	-4.8	-0.5	-0.7	383	-4.9	-0.5	-0.8	35/35/35
13	384	-4.6	-0.5	-0.7	384	-4.8	-0.6	-0.7	35/35/35
14	385	-4.6	-0.4	-0.6	385	-4.2	-0.4	-0.5	35/35/35
15	-	-	-	-	371	-4.6	-0.9	-0.9	35/35/35
16	-	-	-	-	370	-5.6	-1.1	-0.9	35/35/35
17	386	-3.4	-0.6	-0.7	386	-3.1	-0.5	-0.7	35/35/35
18	-	-	-	-	387	-2.2	-0.1	-0.1	35/35/35
23	403	-2.7	-0.3	-0.4	403-405	-2.4	-0.3	-0.3	35/35/35
	404	-2.7	-0.3	-0.3					
24	406	0.0	0.0	0.0	406	-2.4	-0.2	-0.2	35/35/35
26	408	0.0	0.0	0.0	408	-2.1	-0.2	-0.1	
29	-	-	-	-	170	-0.1	-0.1	0.0	37/35/35
30	198	0.0	0.0	0.0	198, 199	0.0	0.0	0.0	37/35/35
	199	0.0	0.0	0.0					
31	197	0.0	0.0	0.0	197	0.0	0.0	0.0	37/35/35
32	-	-	-	-	201	-0.1	0.0	0.0	37/35/35
33	195	0.0	0.0	0.0	195	0.0	0.0	0.0	37/35/35
34	194	0.0	0.0	0.0	194	0.0	0.0	0.0	37/35/35
35	-	-	-	-	200	0.0	-1.0	0.0	37/35/35
50	114	-0.2	0.0	0.0	114	-0.1	0.0	0.0	37/35/35
51	113	-0.2	-0.1	0.0	113	-0.2	0.0	0.0	37/35/35
52	112	-0.2	0.0	0.0	110,112	-0.2	0.0	0.0	37/35/35
53	109	-0.2	0.0	0.0	109	-0.3	0.0	0.0	35/35/35
54	108	-0.3	-0.2	0.0	108	-0.3	-0.3	0.0	35/35/35
55	107	-0.2	-0.3	0.0	107	-0.3	-0.2	0.0	35/35/35
56	106	-0.6	-0.5	0.0	105,106	-0.8	-0.7	0.0	35/35/35
58	111	0.0	0.0	0.0	111	-0.3	-0.1	0.0	37/35/35
61	119	0.0	0.0	0.0	119	-0.2	0.0	0.0	37/35/35
62	-	-	-	-	122	-0.1	0.0	0.0	37/35/35
65	142	-0.1	0.0	0.0	142	0.0	-0.1	0.0	35/35/35
66	143	-0.1	-0.1	0.0	143	-0.1	-0.1	0.0	35/35/35
67	144	0.0	-0.1	0.0	144	0.0	0.0	0.0	35/35/35
68	209	-1.4	0.0	0.0	209	-4.3	-1.7	-1.8	35/35/35

Owner	Residence				25% of Property Area				Criteria
Ref	Lot Ref	Day Neutral	Day/ Evening	Night	Lot Reference	Day Neutral	Day/ Evening	Night	Day/ Evening/ Night
69	210	-1.9	0.0	0.0	210	-3.2	-0.4	-0.9	35/35/35
71	-	-	-	-	348	-0.5	0.0	0.0	37/35/35
					362	-0.4	0.0	0.0	
72	349	-0.1	-0.1	0.0	349	0.0	0.0	0.0	37/35/35
73	391	-1.3	-0.1	0.0	374-376,390,391	-0.1	0.0	0.0	35/35/35
75	392	-0.5	0.0	0.0	392	-0.3	-0.1	0.0	35/35/35
76	372	-4.8	-0.9	-0.8	372	-2.7	-0.5	-0.8	35/35/35
77	373	-1.0	-0.1	0.0	373	-1.0	-0.1	-0.1	35/35/35
78	388	-1.7	-0.1	-0.2	388,409	-1.5	0.0	0.0	35/35/35
79	-	-	-	-	410	-1.3	0.0	-0.3	35/35/35
80	412	-1.1	-0.1	-0.1	412-414	-0.9	-0.1	-0.1	35/35/35
81	419	0.0	0.0	0.0	417-419	-1.0	-0.1	-0.1	35/35/35
82	421	0.0	0.0	0.0	411,415,416, 420-425	-0.3	-0.1	0.0	35/35/35
85	426	-0.6	-0.1	0.0	426,439,440	-1.0	-0.1	0.0	35/35/35
97	220	0.1	0.0	0.0	220	-0.1	-0.1	0.0	37/35/35
128	350	-0.4	0.0	0.0	350	-0.3	-0.1	0.0	37/35/35
137	-	-	-	-	216	-0.1	0.0	0.0	37/35/35
Total Affected Residences/ Properties		0	0	-1	Significant	0	-2	-2	
		-1	-2	-2	Moderate	-2	-1	-5	
		0	-1	3	Mild	0	-5	5	

Table 2 shows fewer properties would be significantly and moderately affected by noise from the Contracted Project compared to noise from the Exhibited Project. In many cases, residences and properties that would be significantly or moderately affected by noise from the Exhibited Project would be only mildly affected by noise from the Contracted Project.

5. CONCLUSION

From an environmental noise perspective, the Contracted Project differs from the Exhibited Project primarily due to removal of the Hillcroft mining area. Other changes, such as removal of the sand mining and sand transportation components of the Exhibited Project, would generally cause a minor noise reduction at all receivers during the day and evening.

Yours faithfully,

BRIDGES ACOUSTICS

MARK BRIDGES BE (Mech) (Hons) MAAS
Principal Consultant

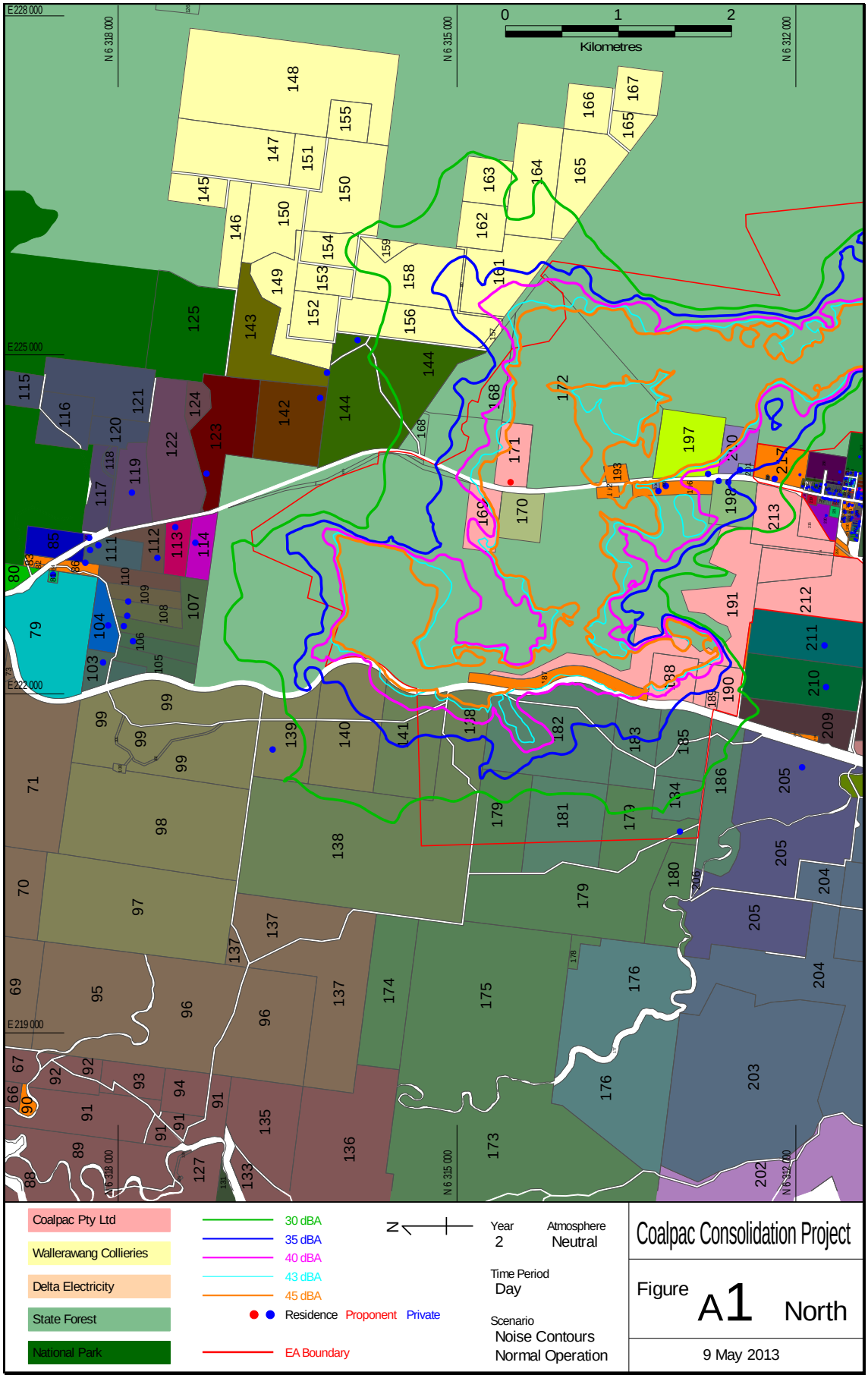
APPENDIX A: NOISE CONTOUR FIGURES

Noise contour figures for the Contracted Project have been prepared in the same format as those included in Appendix A of the Exhibited AIA.

FIGURE	NOISE CONTOUR FIGURE
A1	Year 2 day/evening, neutral weather conditions
A2	Year 2 day/evening, prevailing weather conditions
A3	Year 2 night, prevailing weather conditions
A4	Year 8 day/evening, neutral weather conditions
A5	Year 8 day/evening, prevailing weather conditions
A6	Year 8 night, prevailing weather conditions
A7	Year 14 day/evening, neutral weather conditions
A8	Year 14 day/evening, prevailing weather conditions
A9	Year 14 night, prevailing weather conditions
A10	Year 20 day/evening, neutral weather conditions
A11	Year 20 day/evening, prevailing weather conditions
A12	Year 20 night, prevailing weather conditions
A13	All years day/evening, neutral weather conditions
A14	All years day/evening, prevailing weather conditions
A15	All years night, prevailing weather conditions

Comparison of Contracted and Exhibited Project Figures:

A16	All years day/evening, neutral weather conditions
A17	All years day/evening, prevailing weather conditions
A18	All years night, prevailing weather conditions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E 225 000
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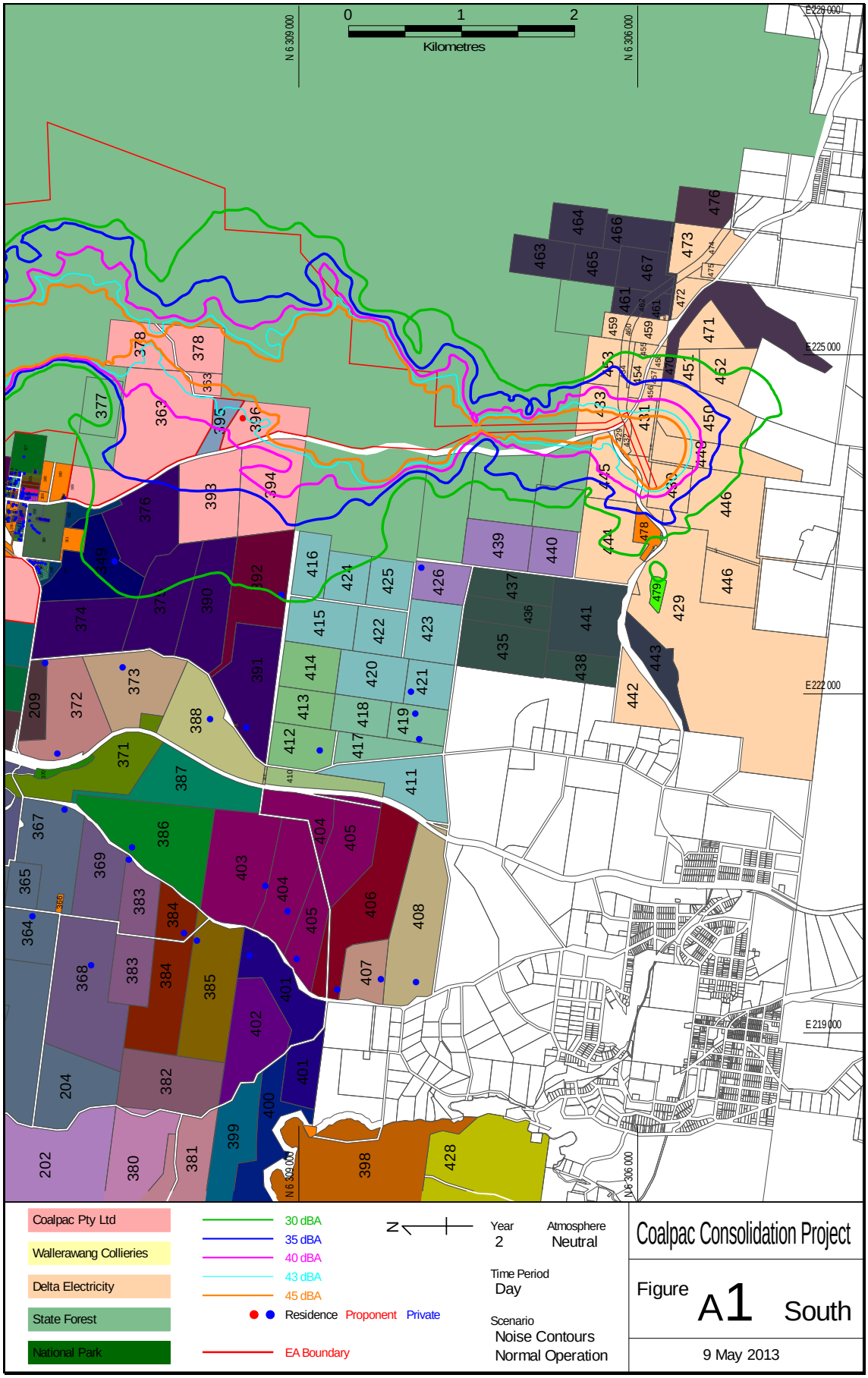
0
1
2
Kilometres
Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
2
Atmosphere
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A1 North
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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Year
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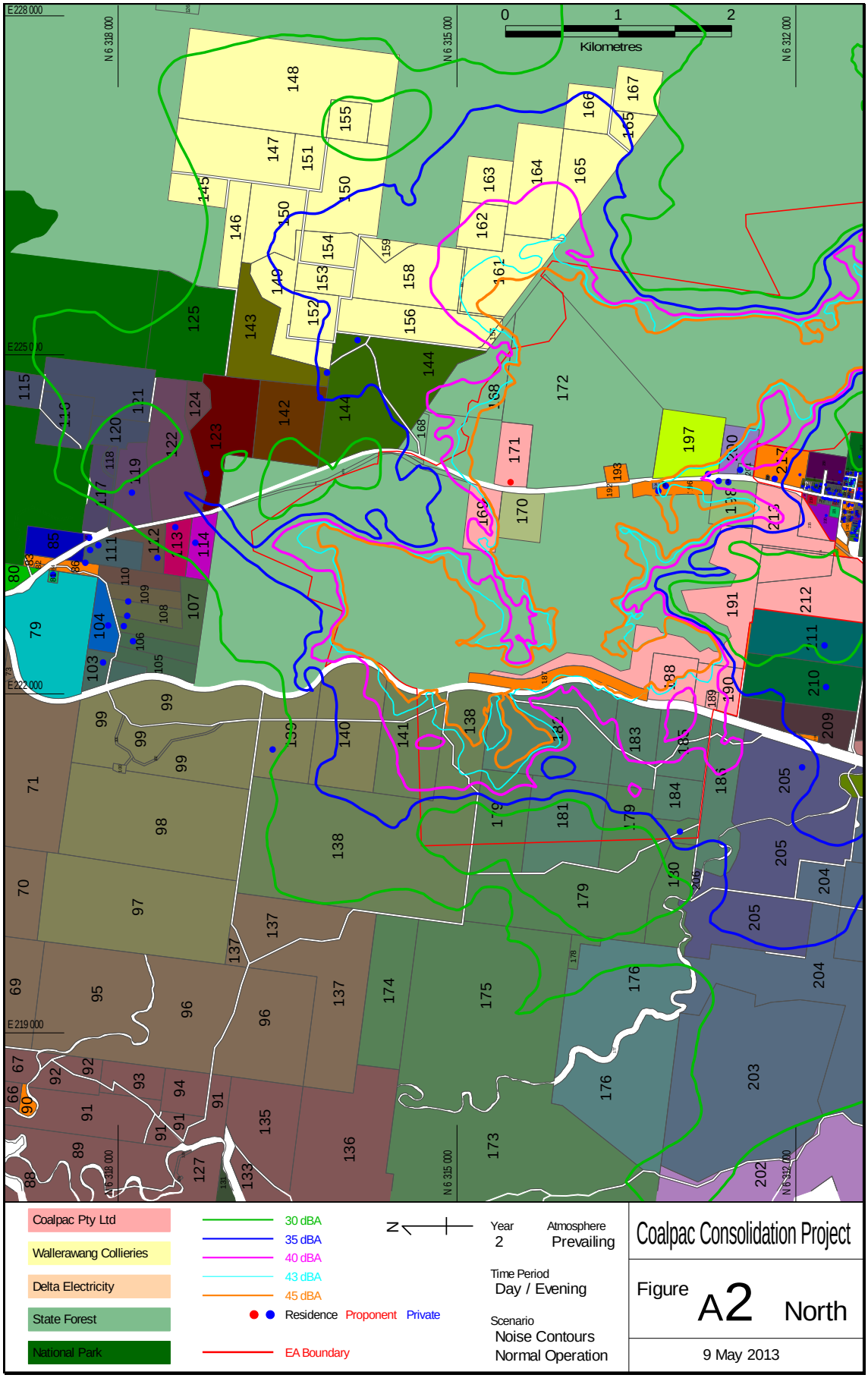
Atmosphere
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A1 South
9 May 2013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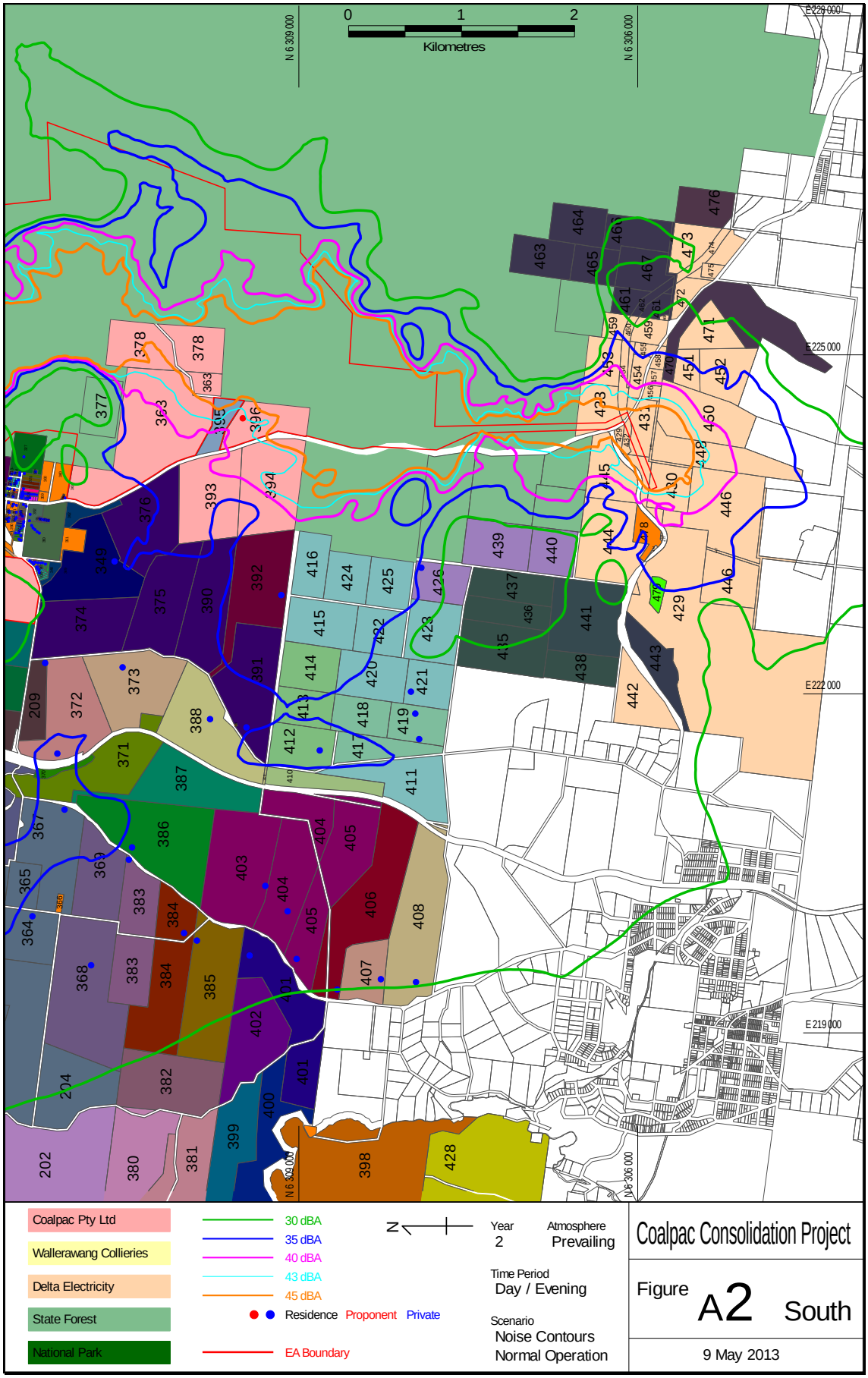
Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
2
Atmosphere
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A2 North
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
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35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
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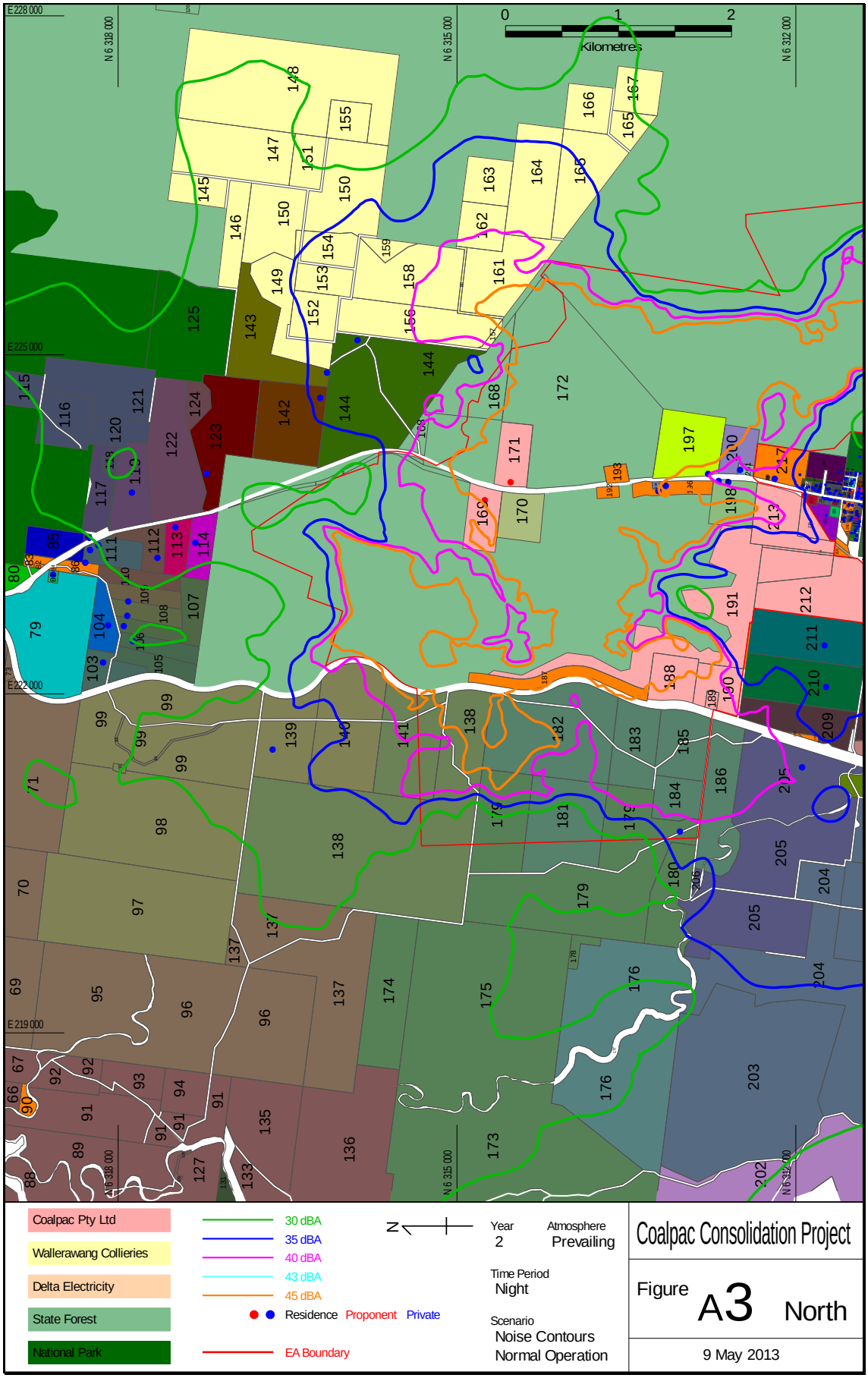
Atmosphere
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A2 South
9 May 2013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Kilometres
Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
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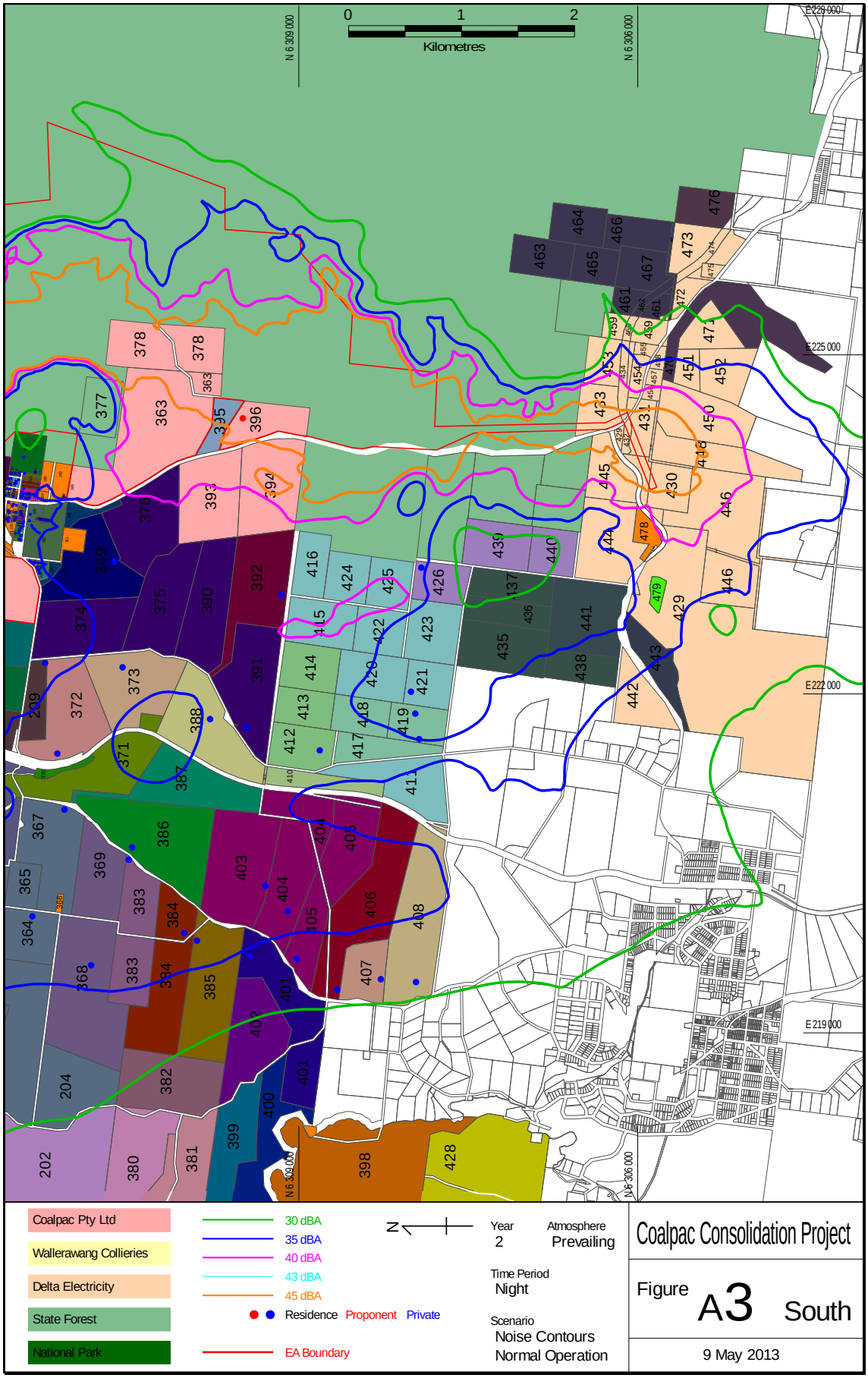
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A3 North
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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Year
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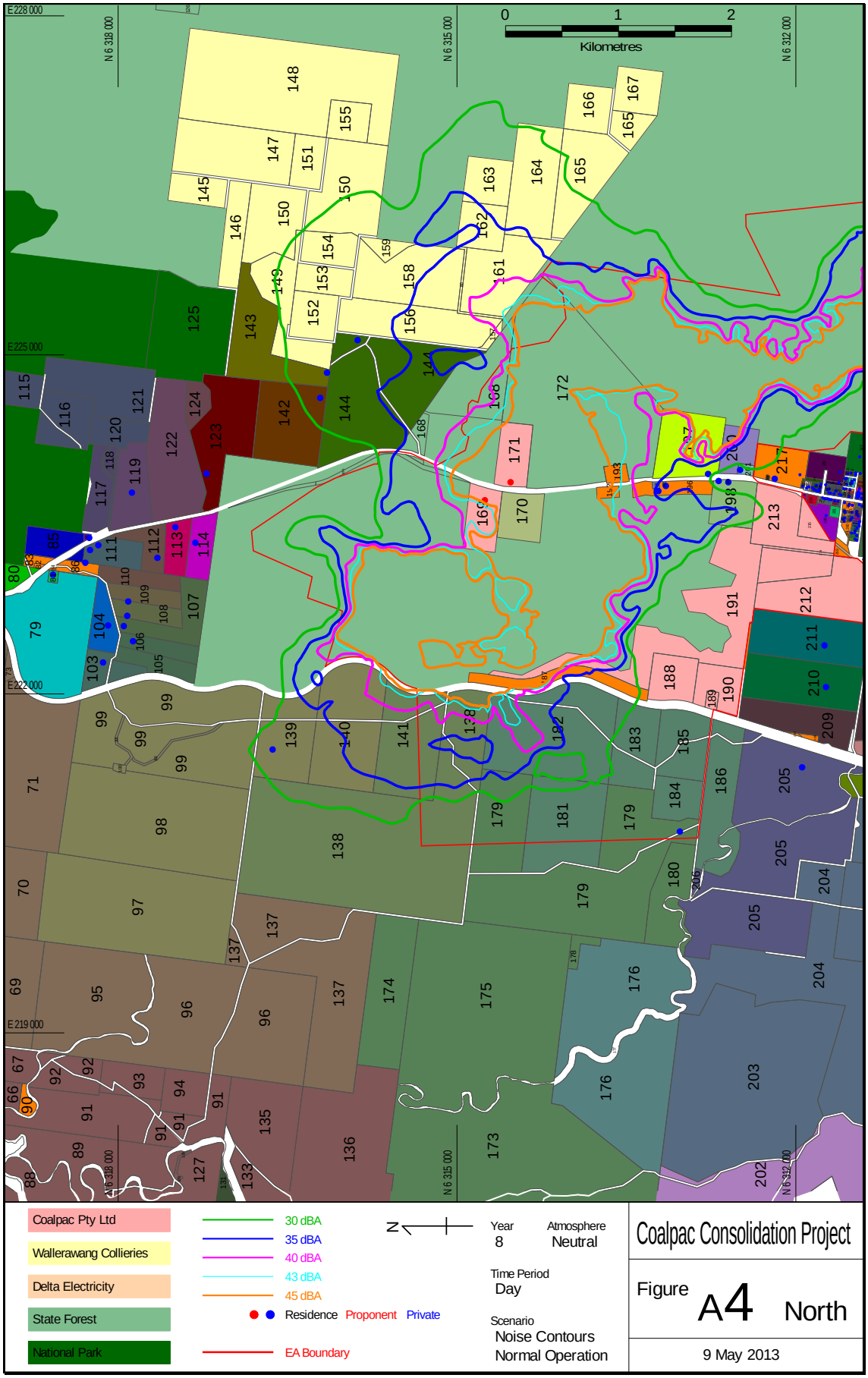
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A3 South
9 May 2013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Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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Year
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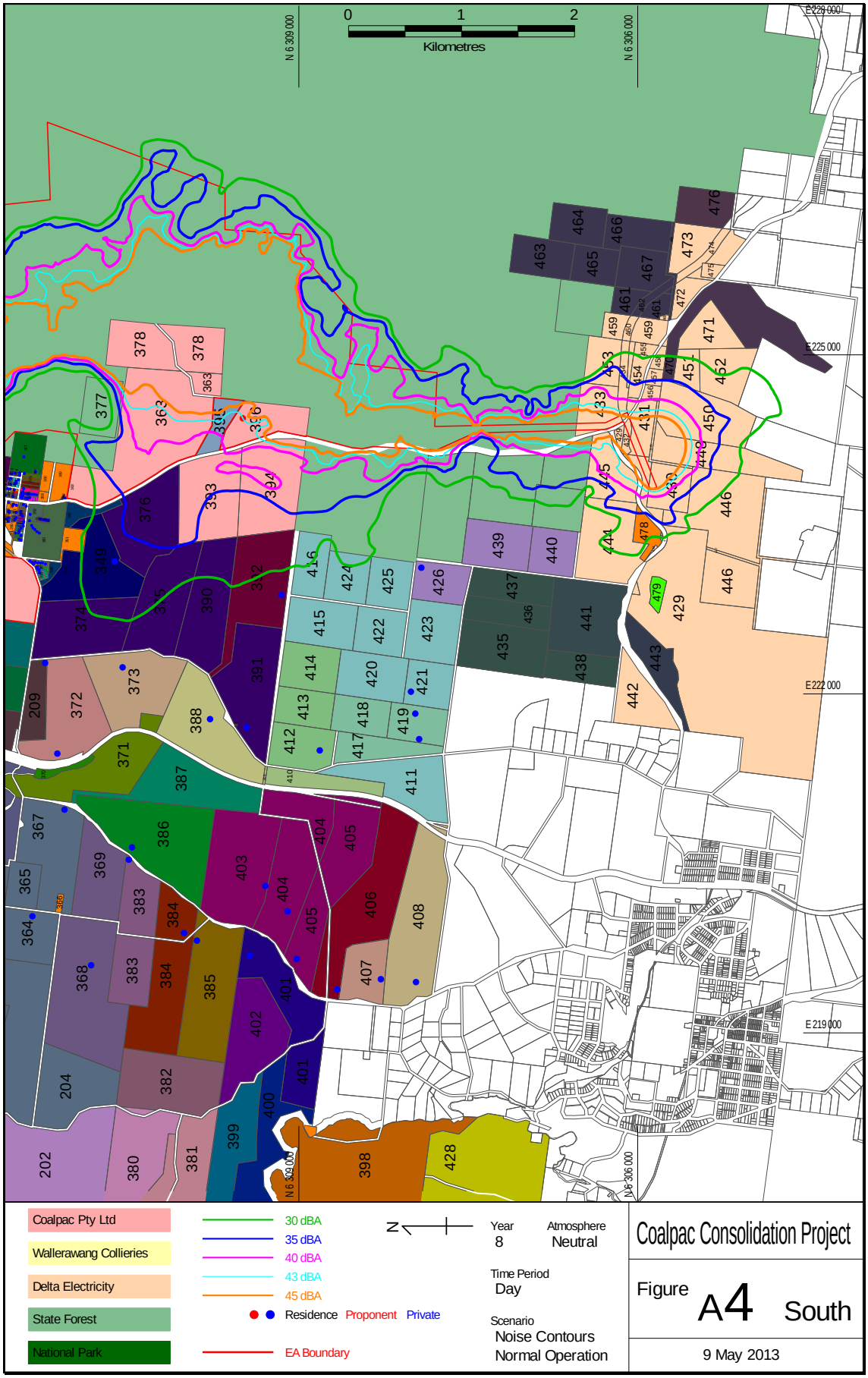
Atmosphere
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A4 North
9 May 2013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Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
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40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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Year
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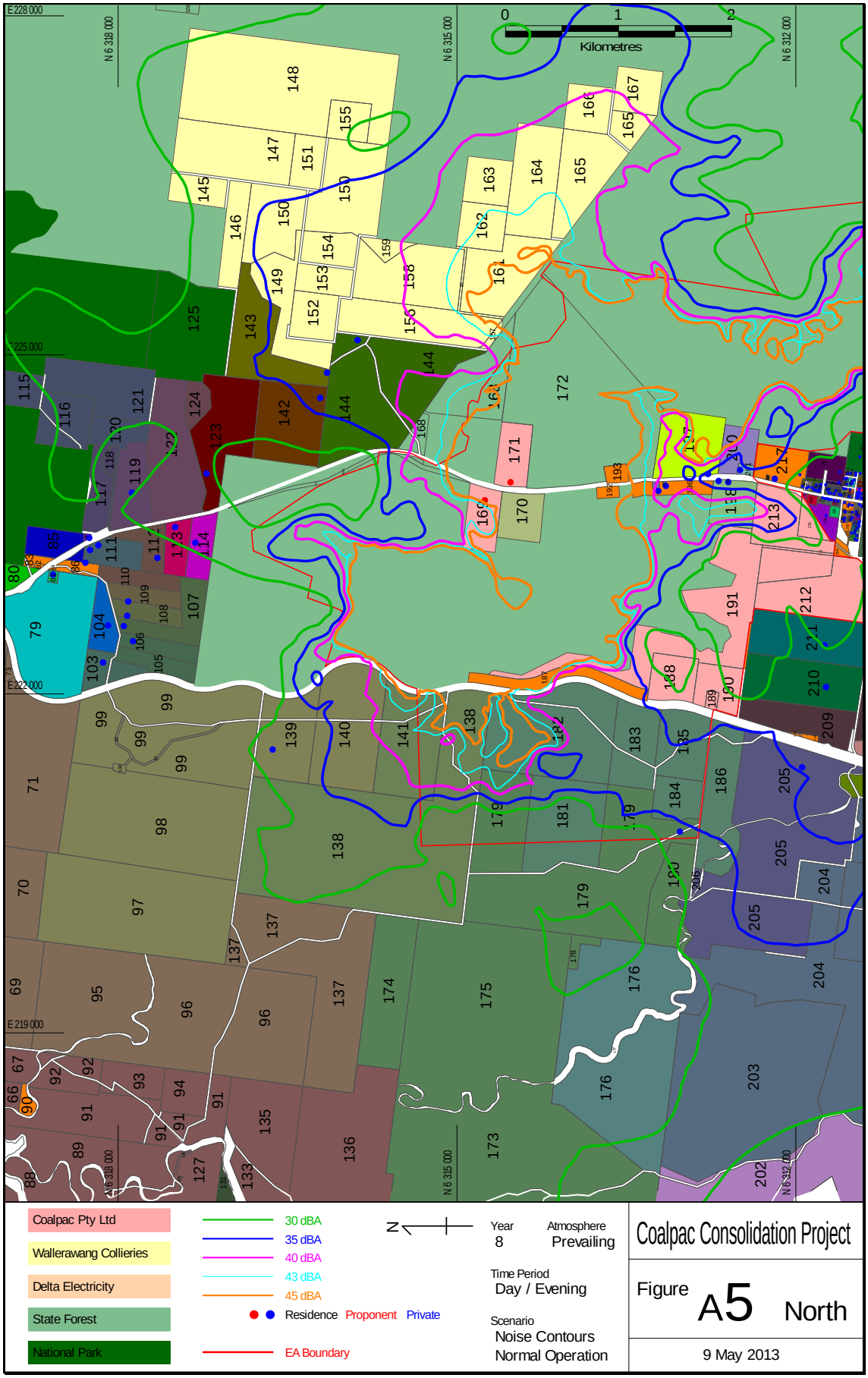
Atmosphere
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A4 South
9 May 2013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Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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Year
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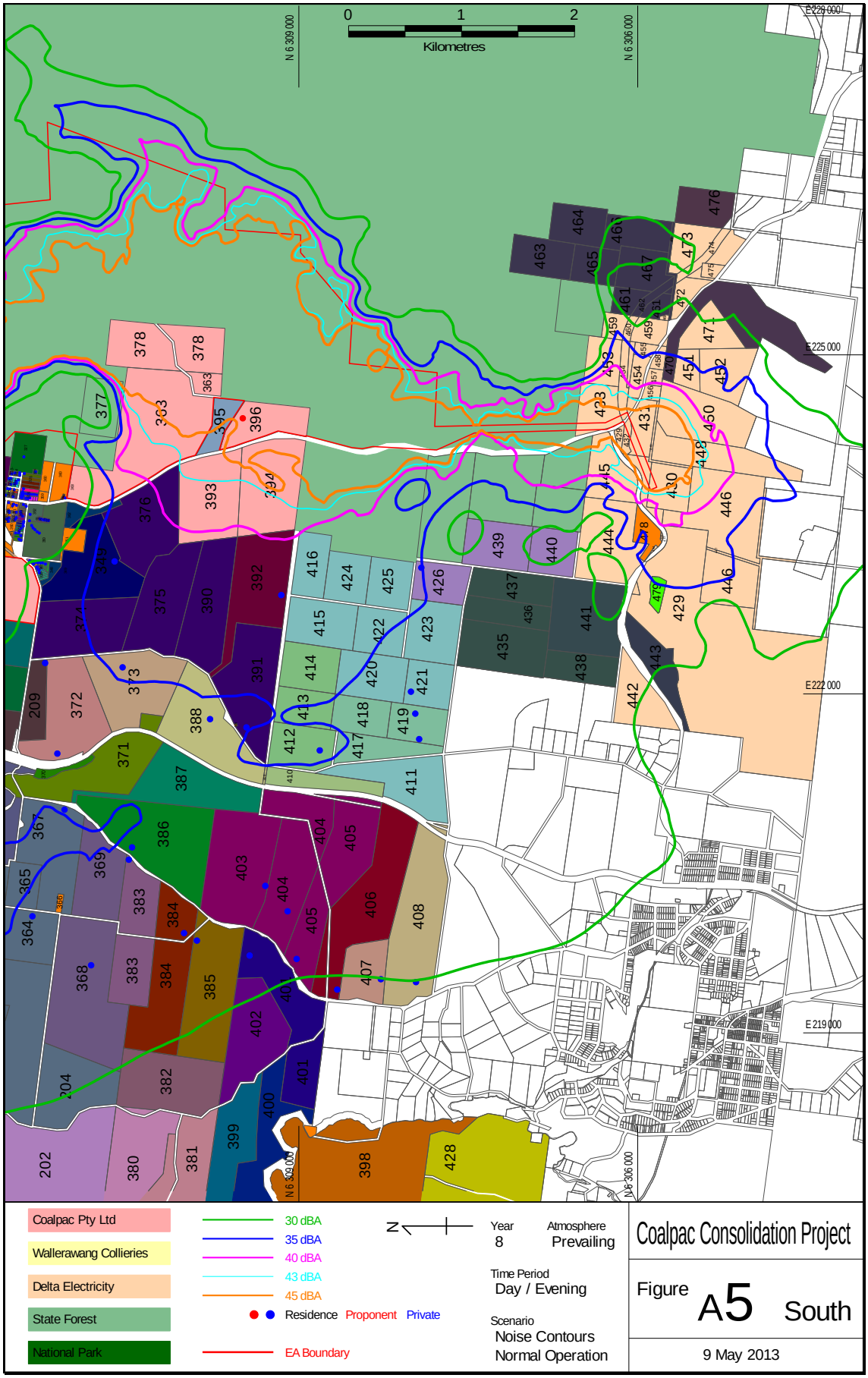
Atmosphere
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A5 North
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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Year
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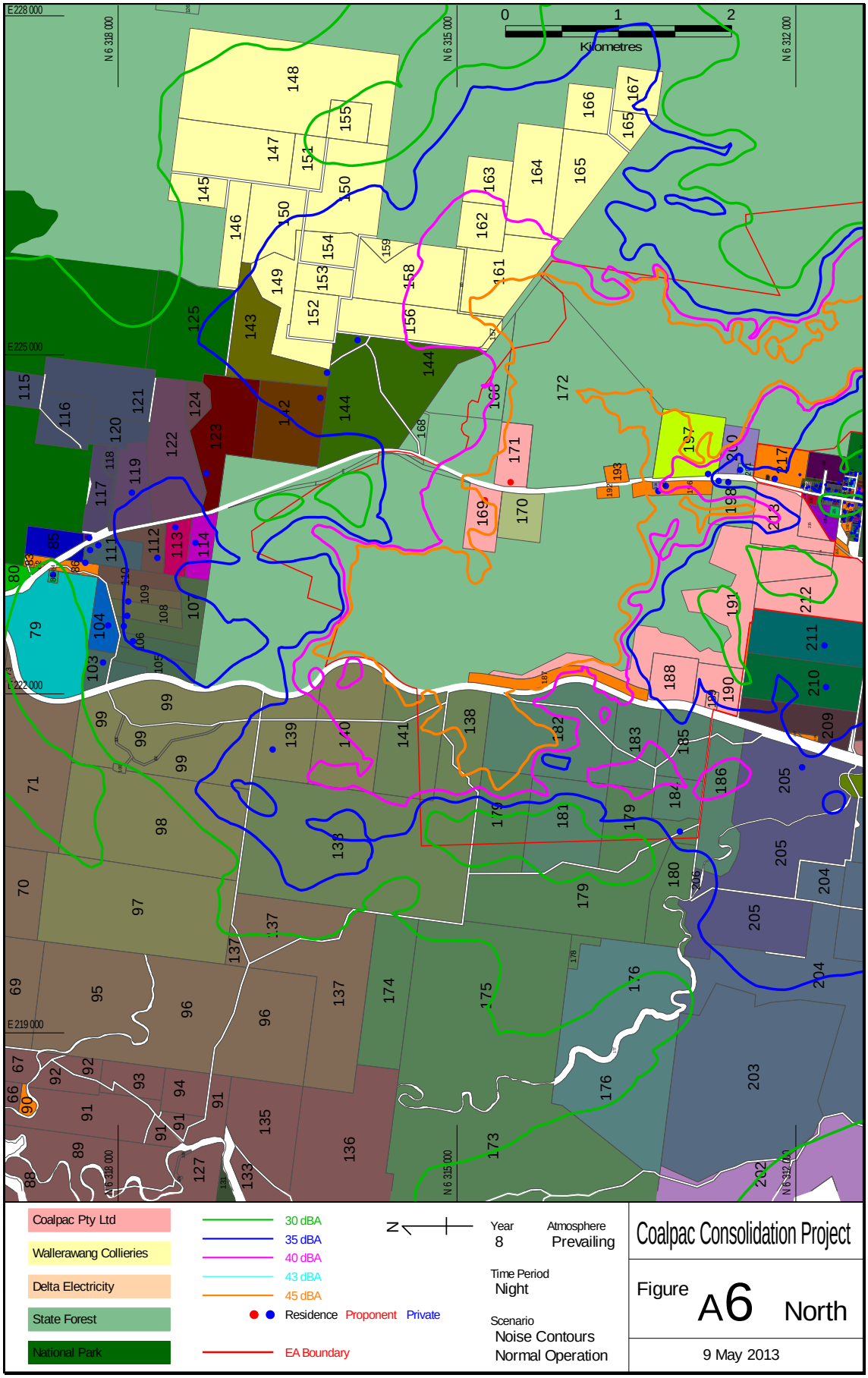
Atmosphere
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A5 South
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
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40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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Year
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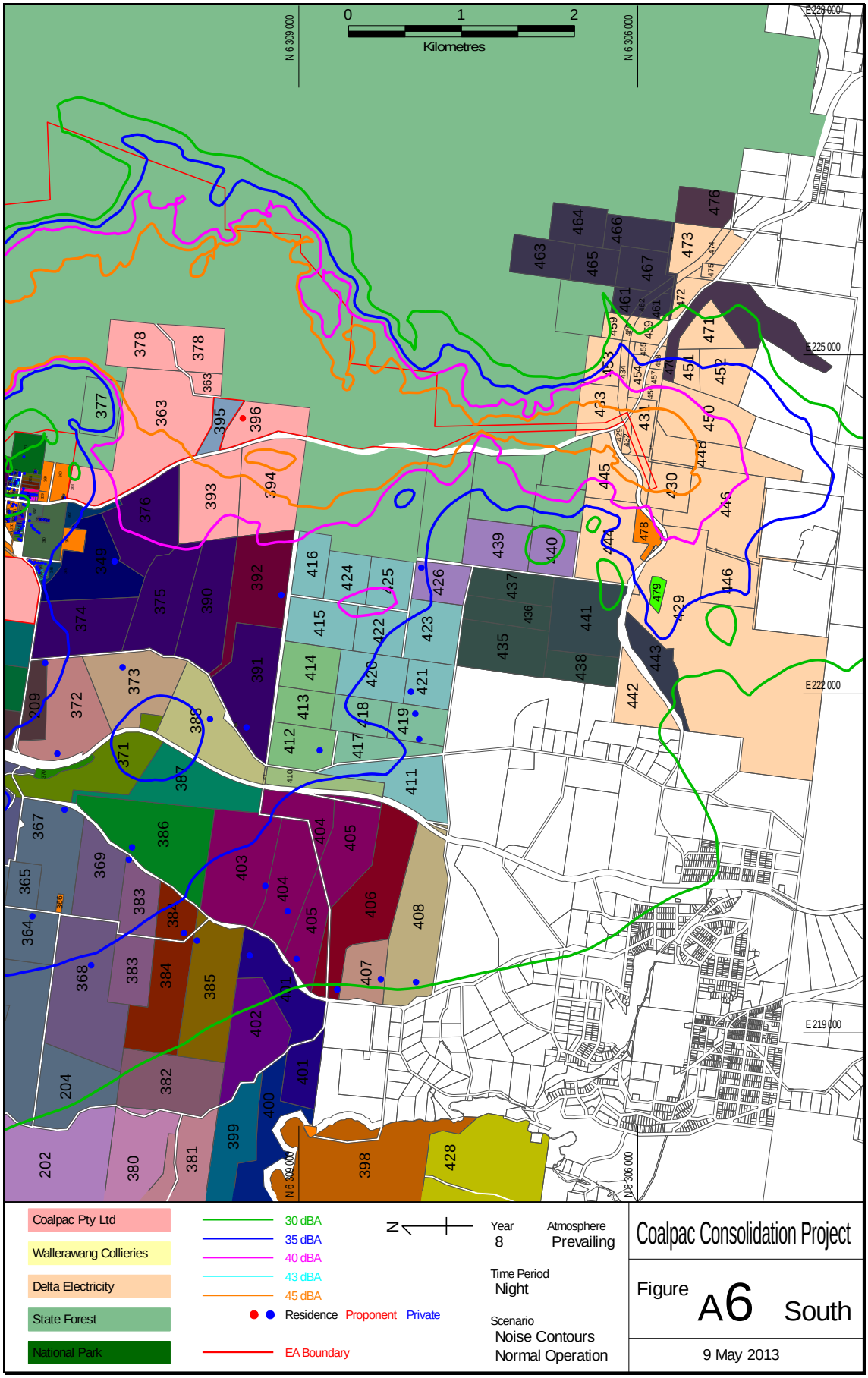
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A6 North
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
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40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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Year
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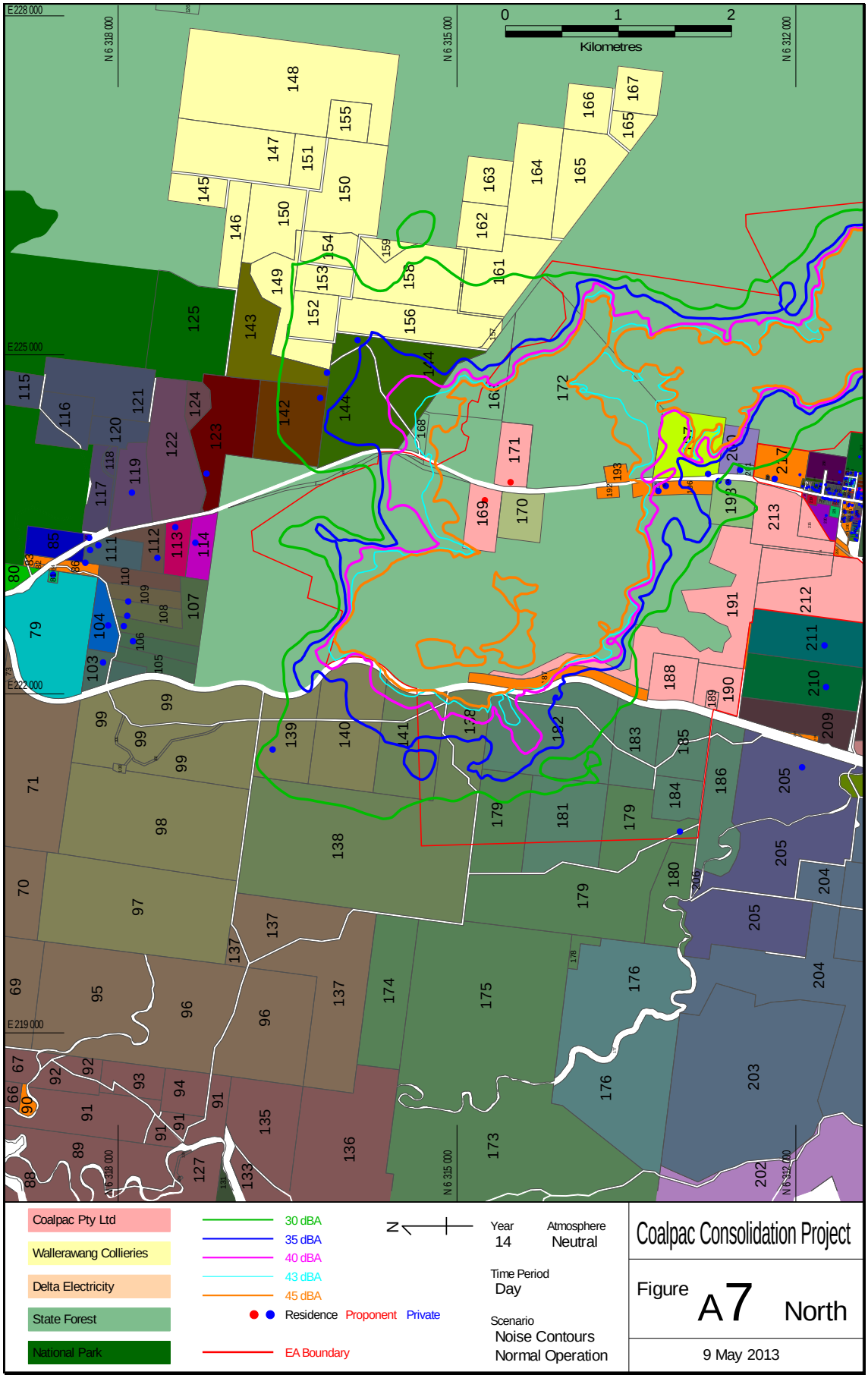
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A6 South
9 May 2013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Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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Year
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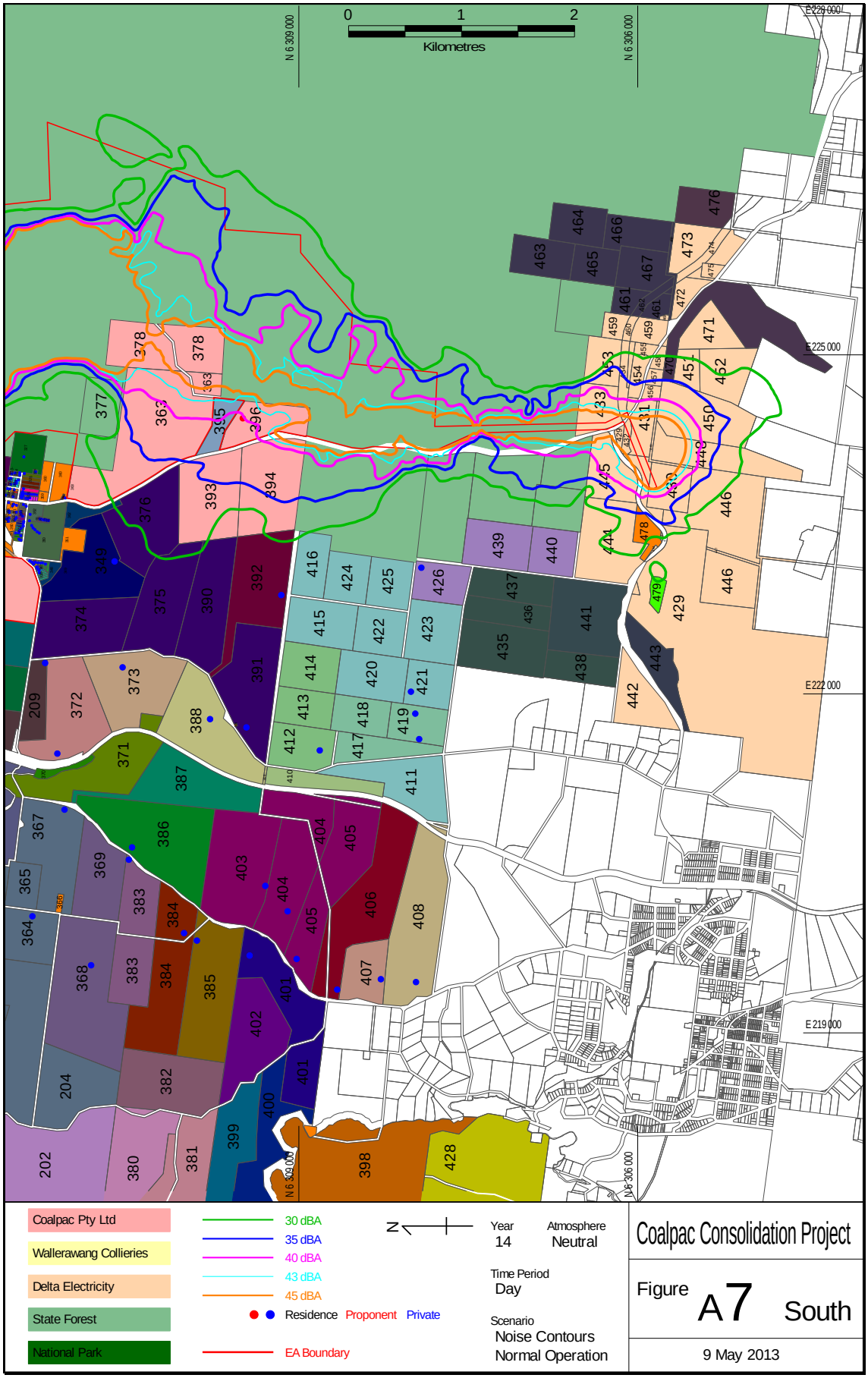
Atmosphere
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A7 North
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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Year
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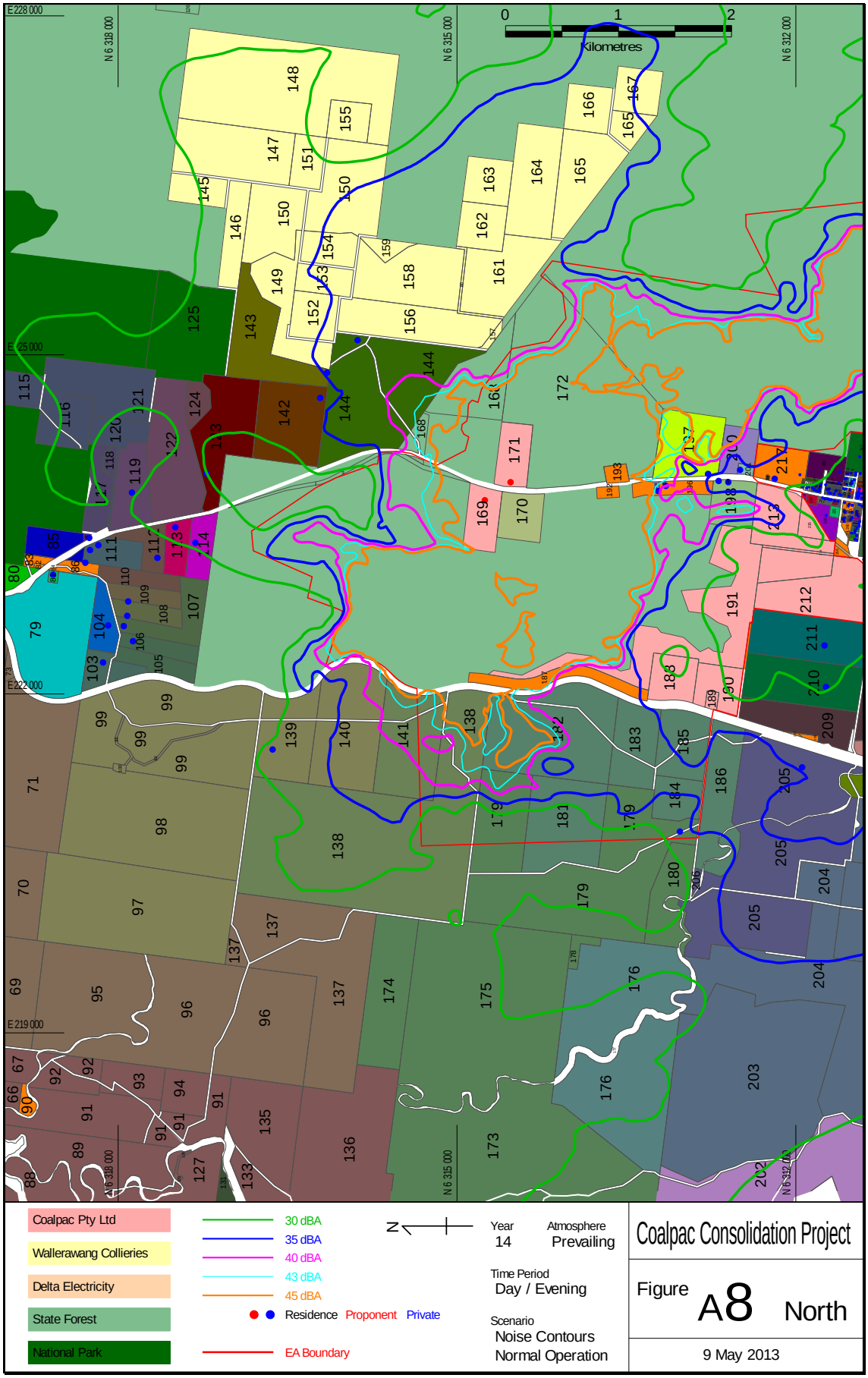
Atmosphere
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A7 South
9 May 2013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Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
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43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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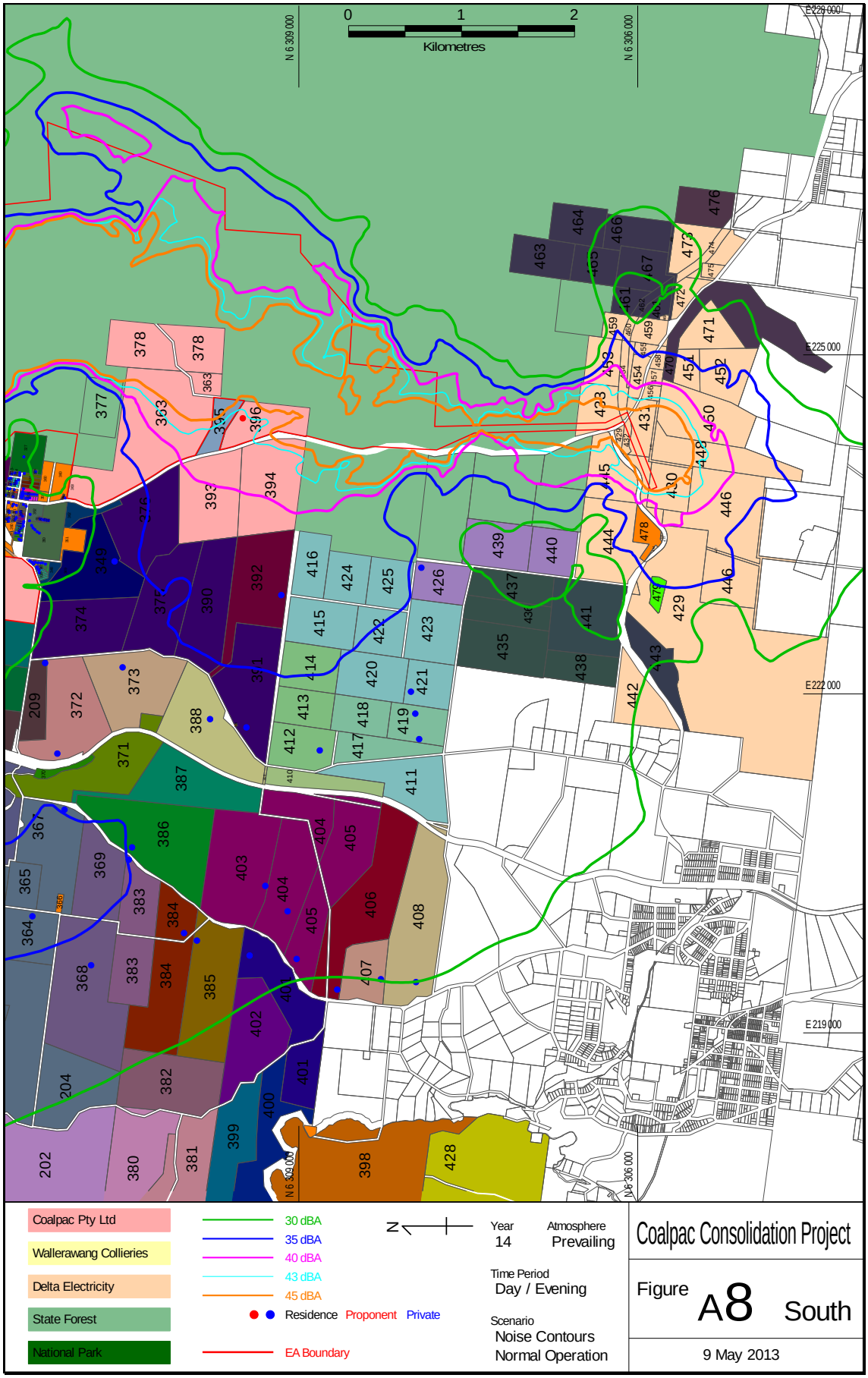
Year
14
Atmosphere
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A8 North
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
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45 dBA
Residence Proponent Private
EA Boundary
N
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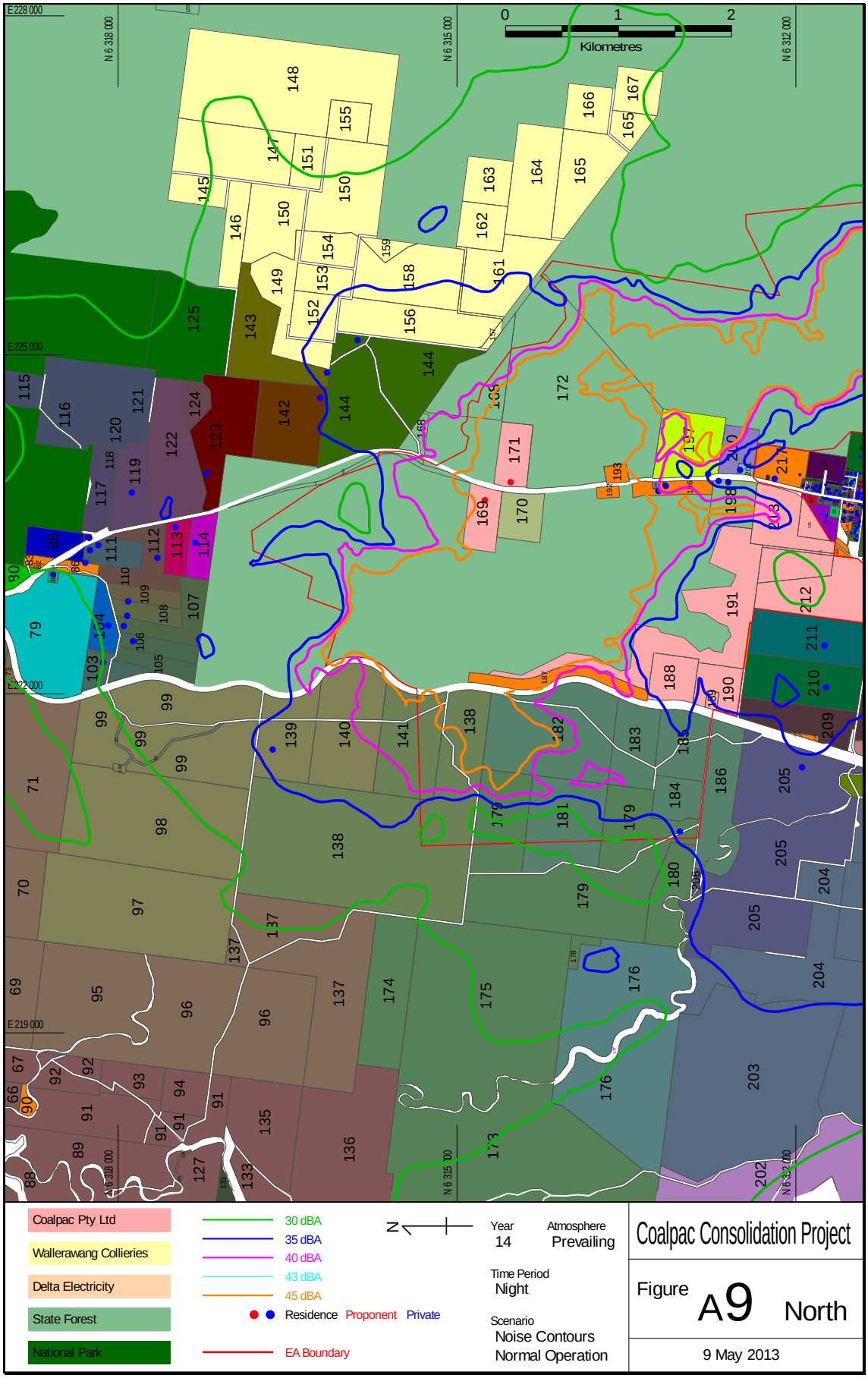
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A8 South
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
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45 dBA
Residence Proponent Private
EA Boundary
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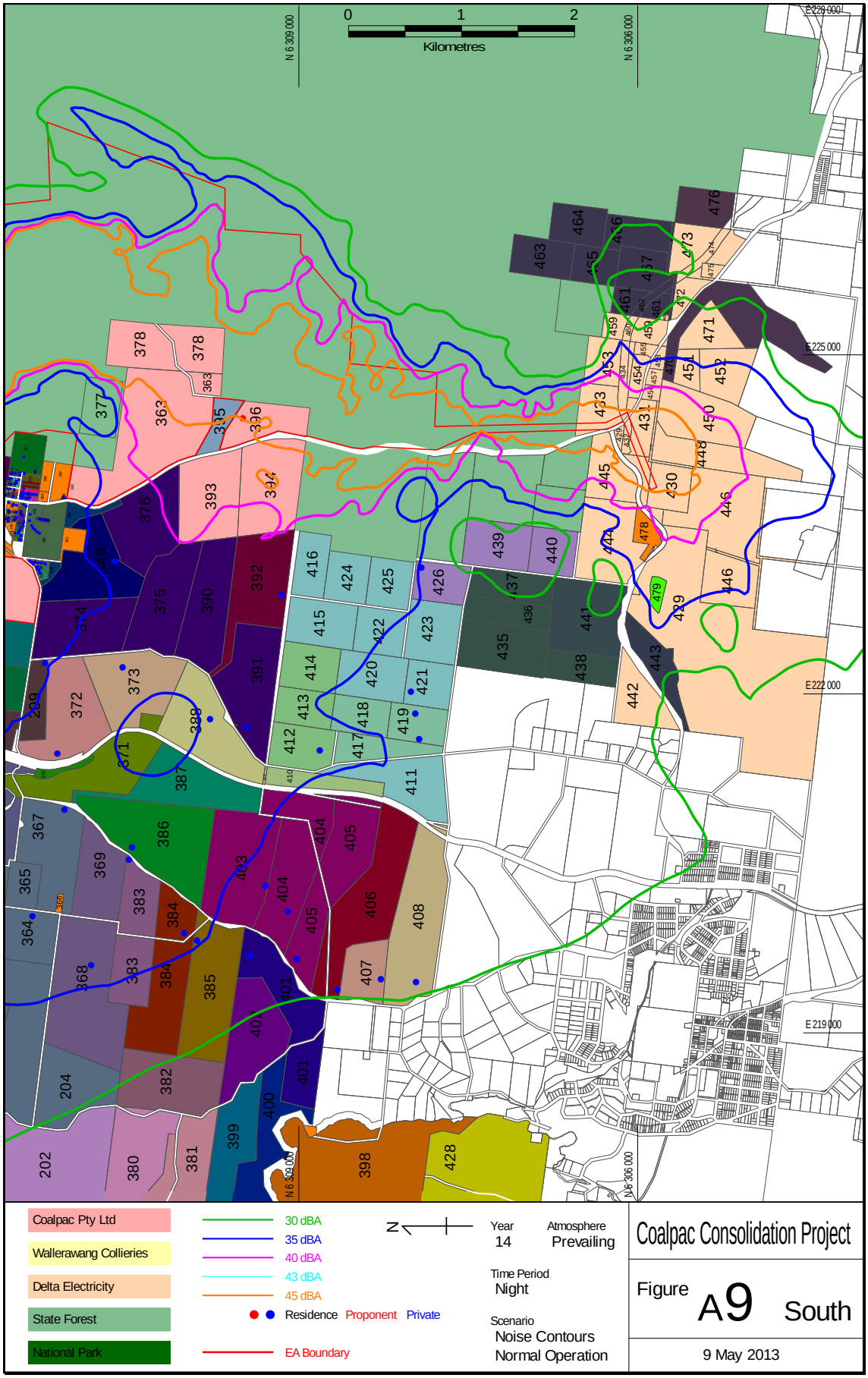
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A9 North
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
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45 dBA
Residence Proponent Private
EA Boundary
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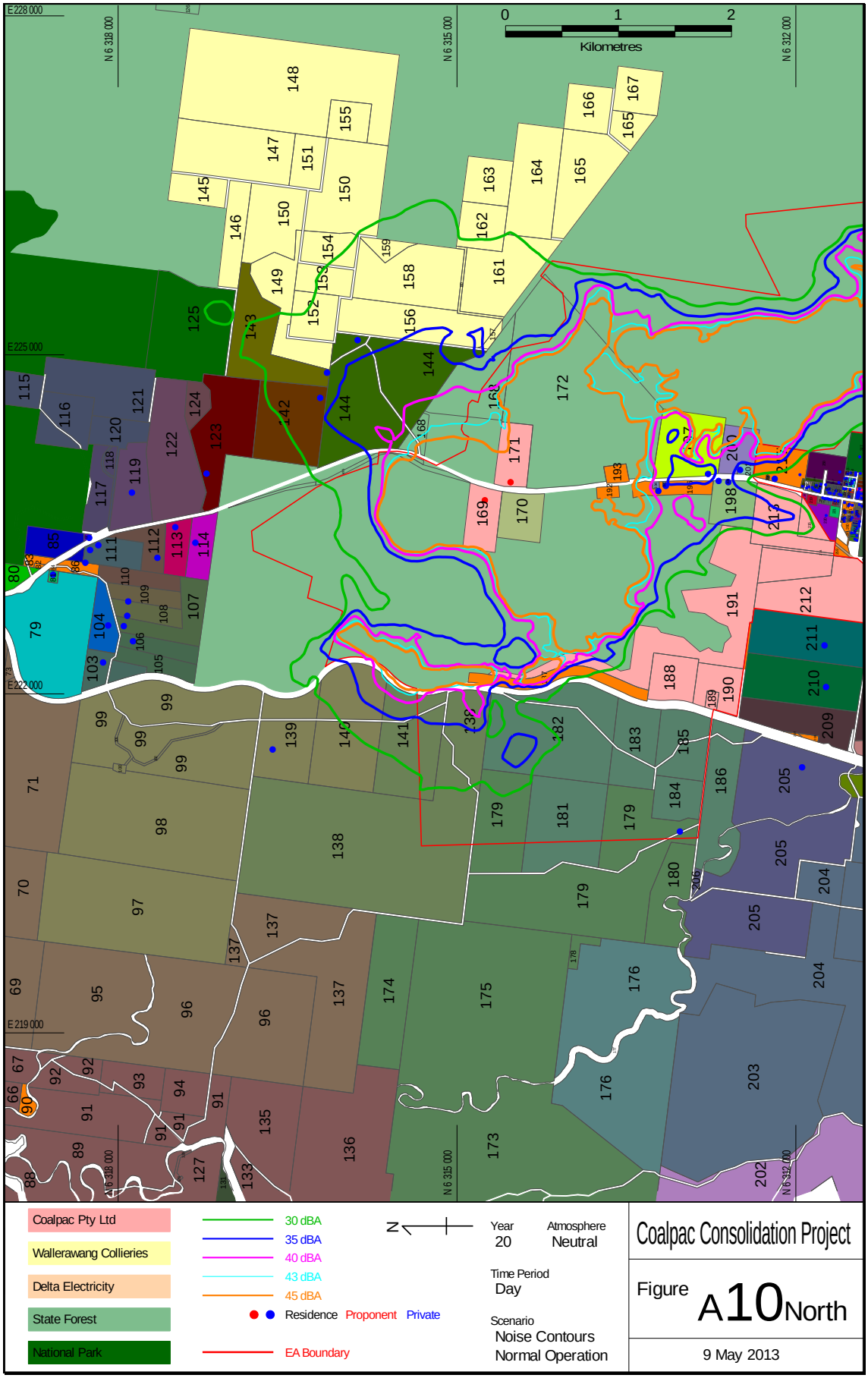
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A9 South
9 May 2013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State Forest
National Park
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Residence Proponent Private
EA Boundary
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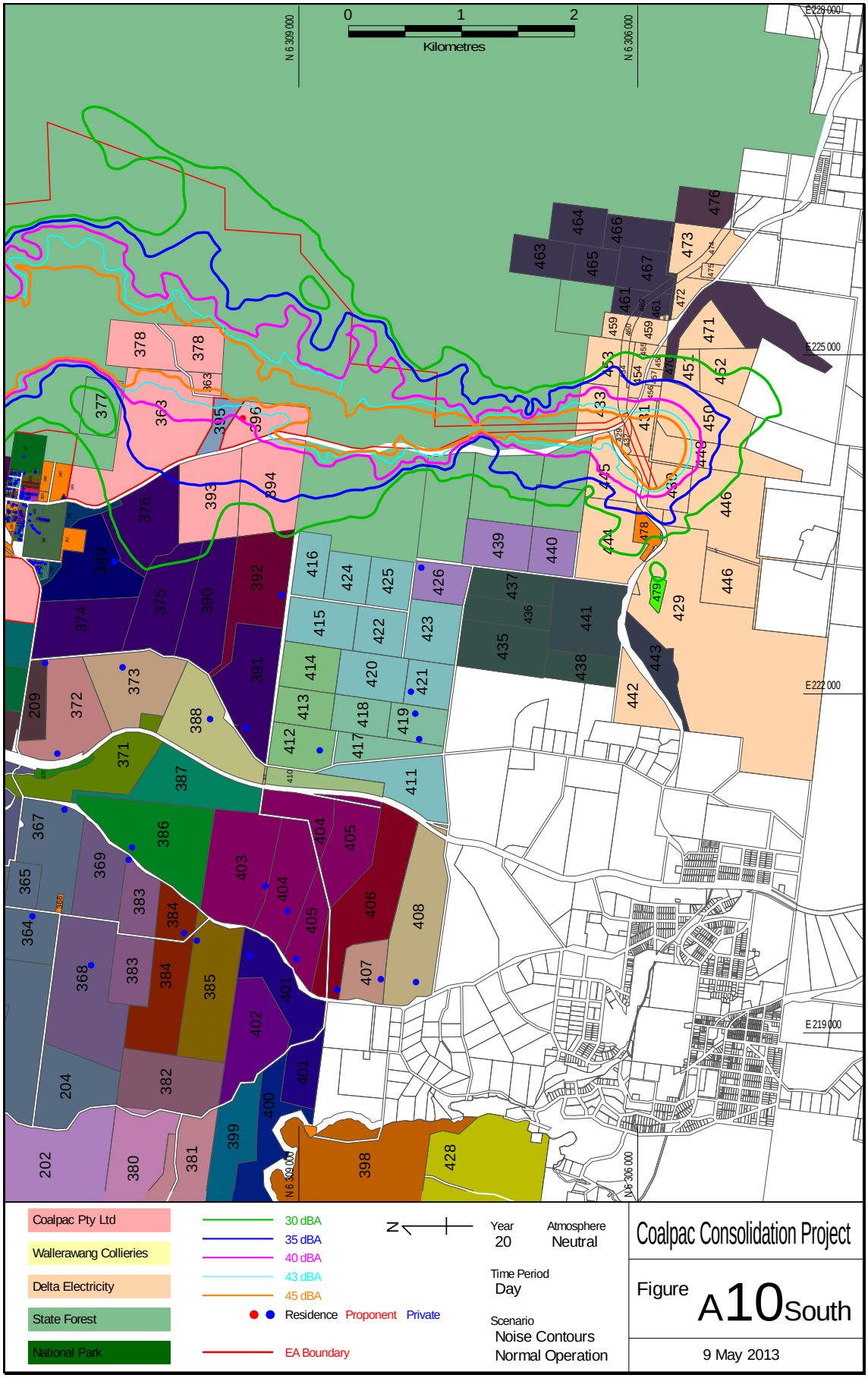
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A10 North
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
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45 dBA
Residence Proponent Private
EA Boundary
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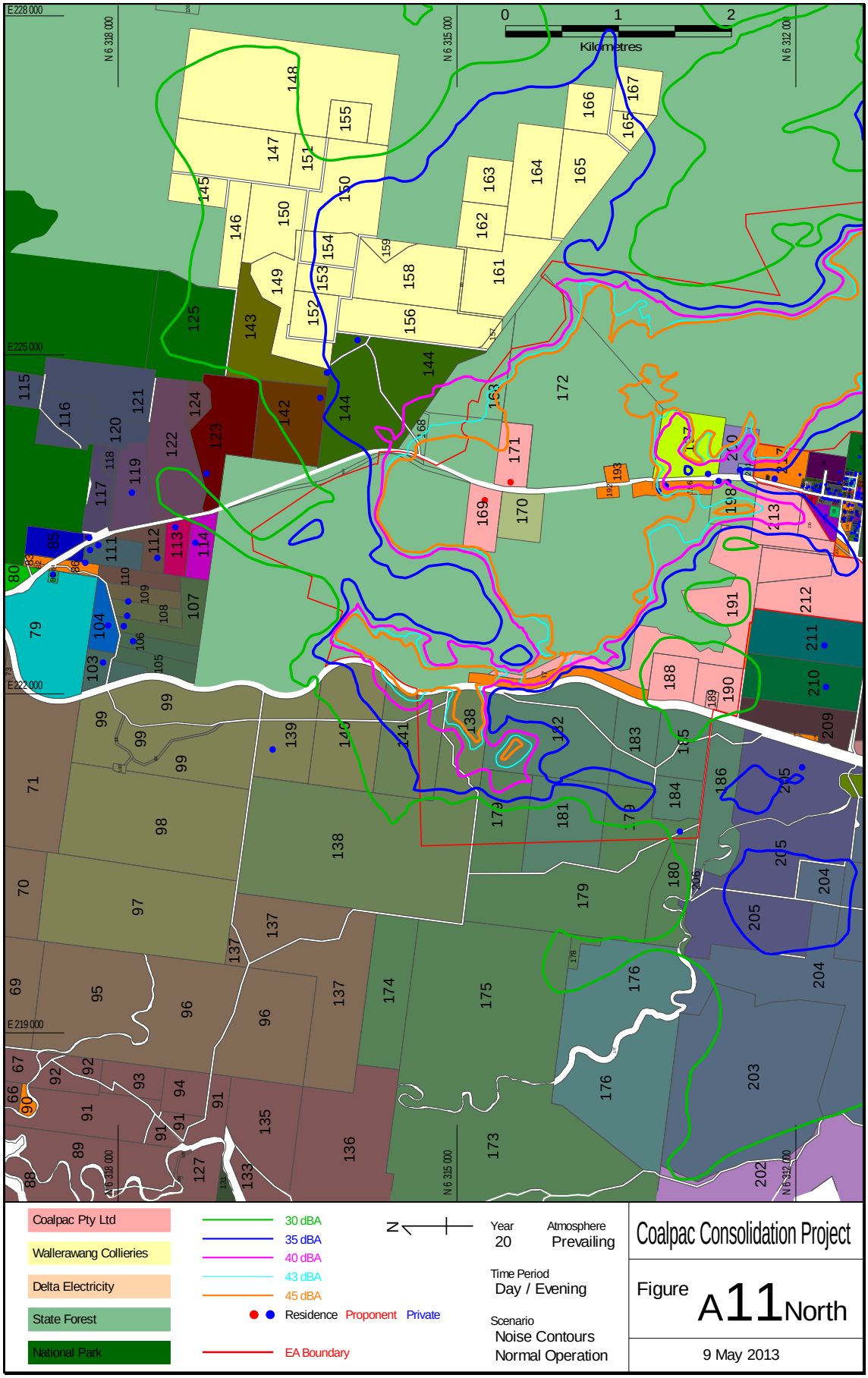
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A10 South
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
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43 dBA
45 dBA
Residence Proponent Private
EA Boundary
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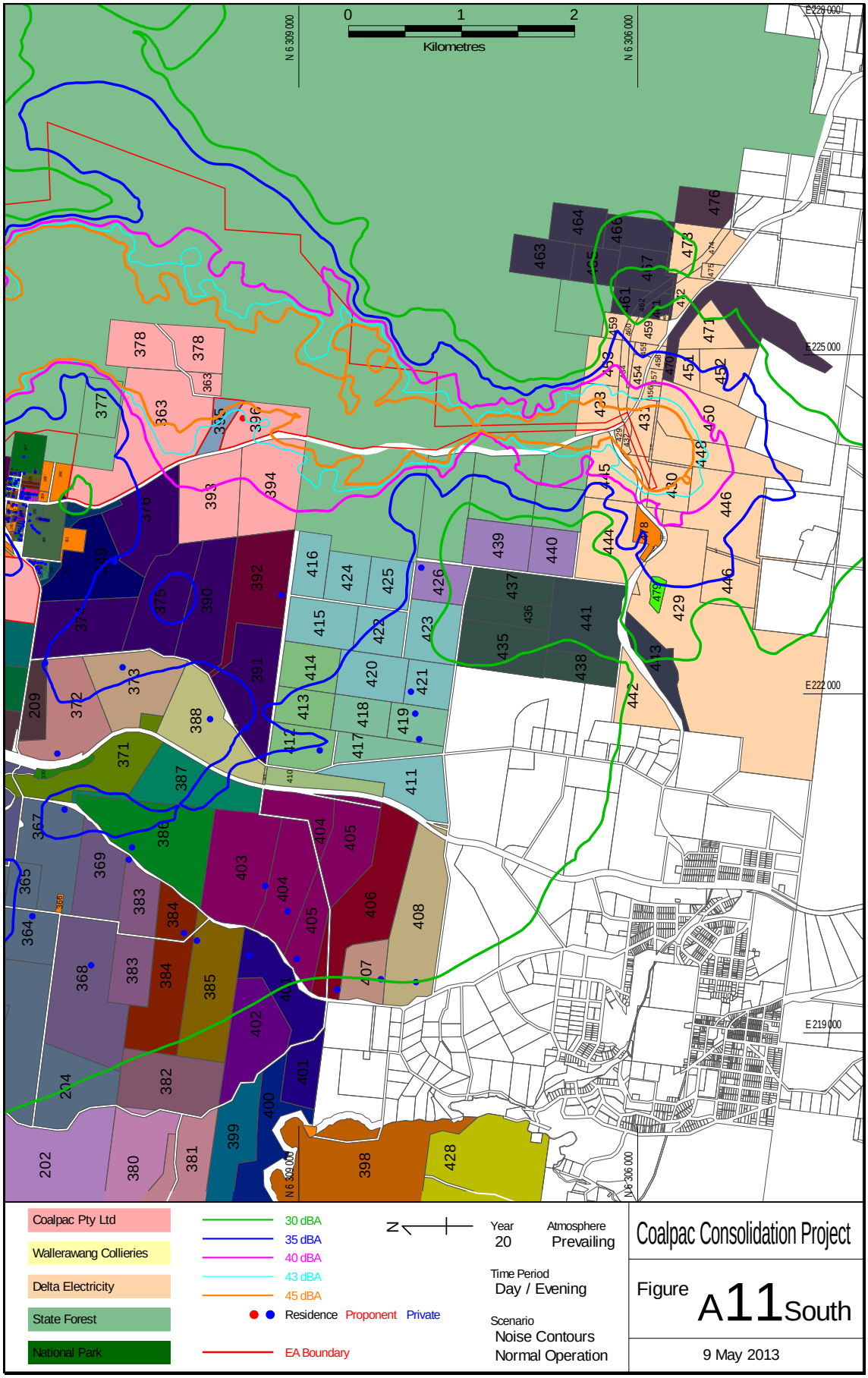
Atmosphere
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A11 North
9 May 2013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State Forest
National Park
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Residence Proponent Private
EA Boundary
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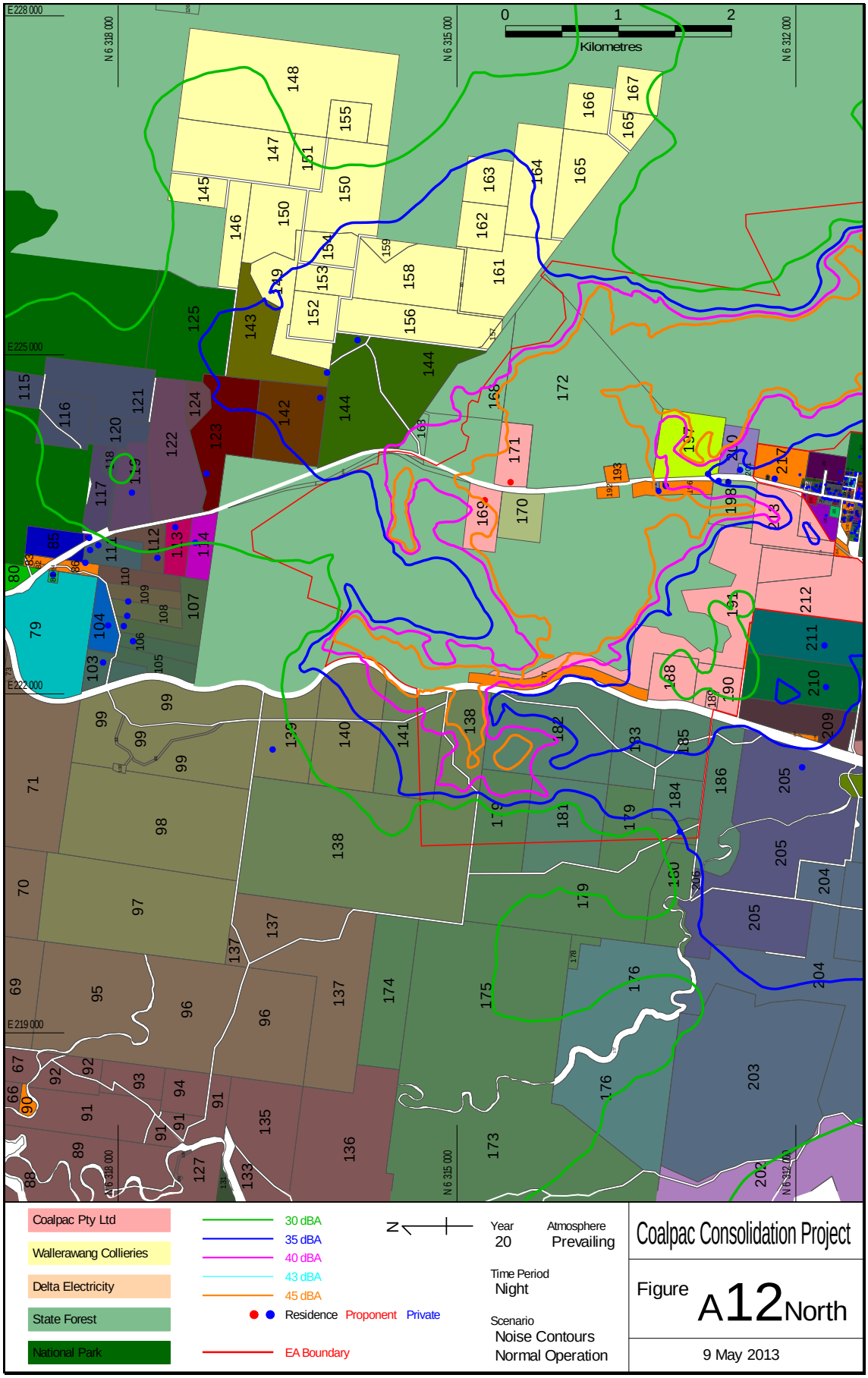
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A11 South
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
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45 dBA
Residence Proponent Private
EA Boundary
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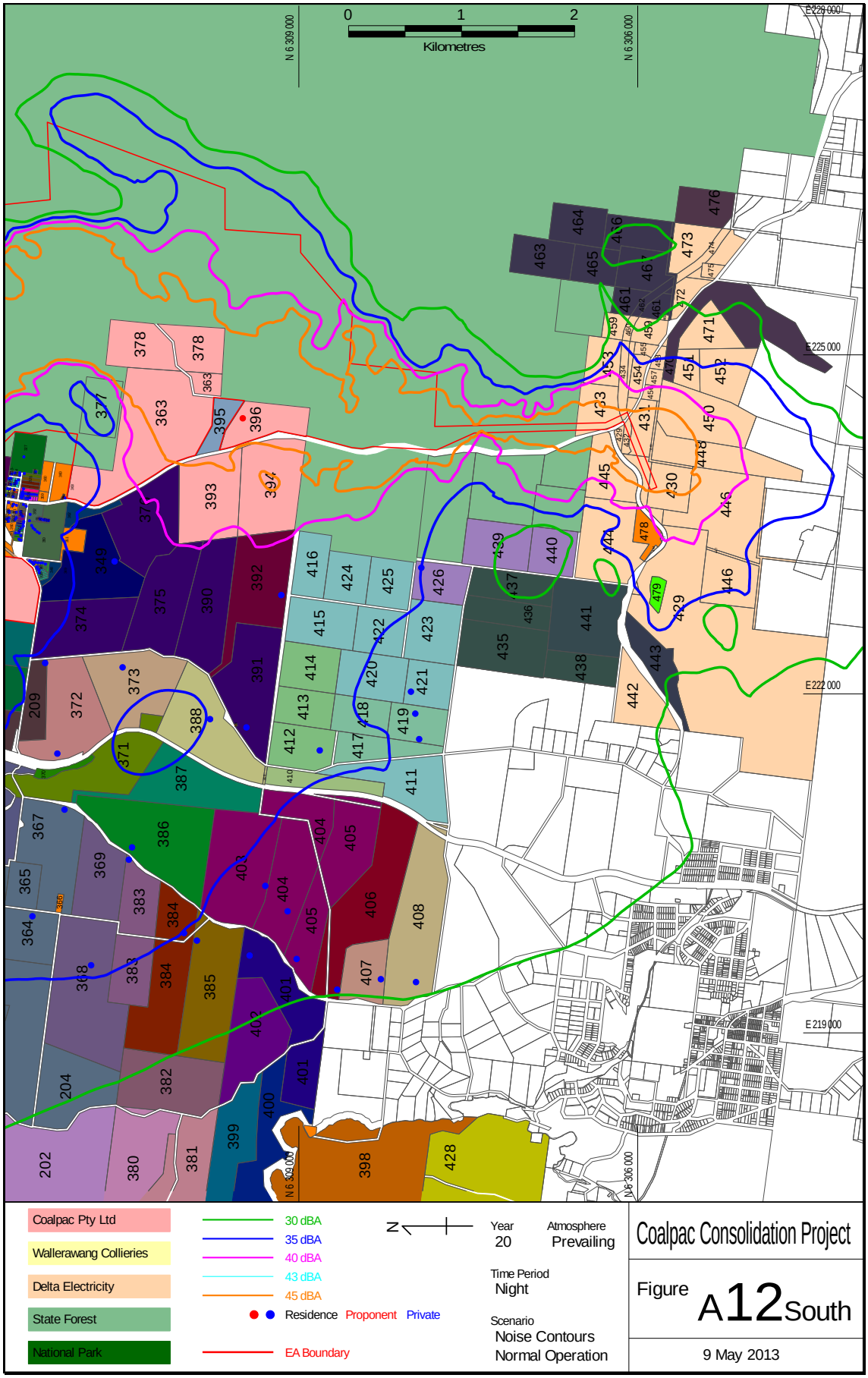
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A12 North
9 May 2013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State Forest
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45 dBA
Residence Proponent Private
EA Boundary
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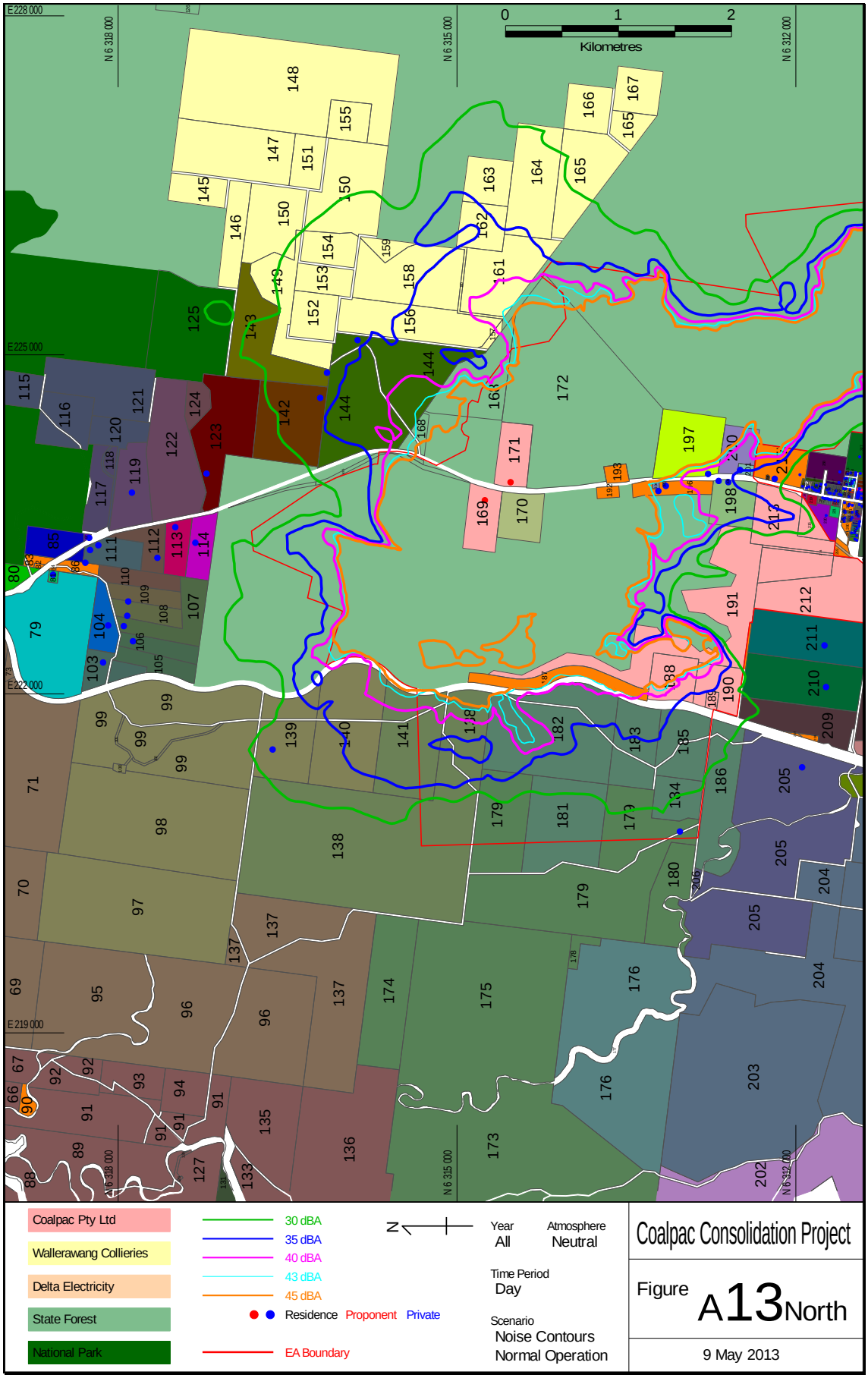
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A12 South
9 May 2013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Kilometres
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Wallerawang Collieries
Delta Electricity
State Forest
National Park
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40 dBA
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45 dBA
Residence Proponent Private
EA Boundary
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All
Atmosphere
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A13 North
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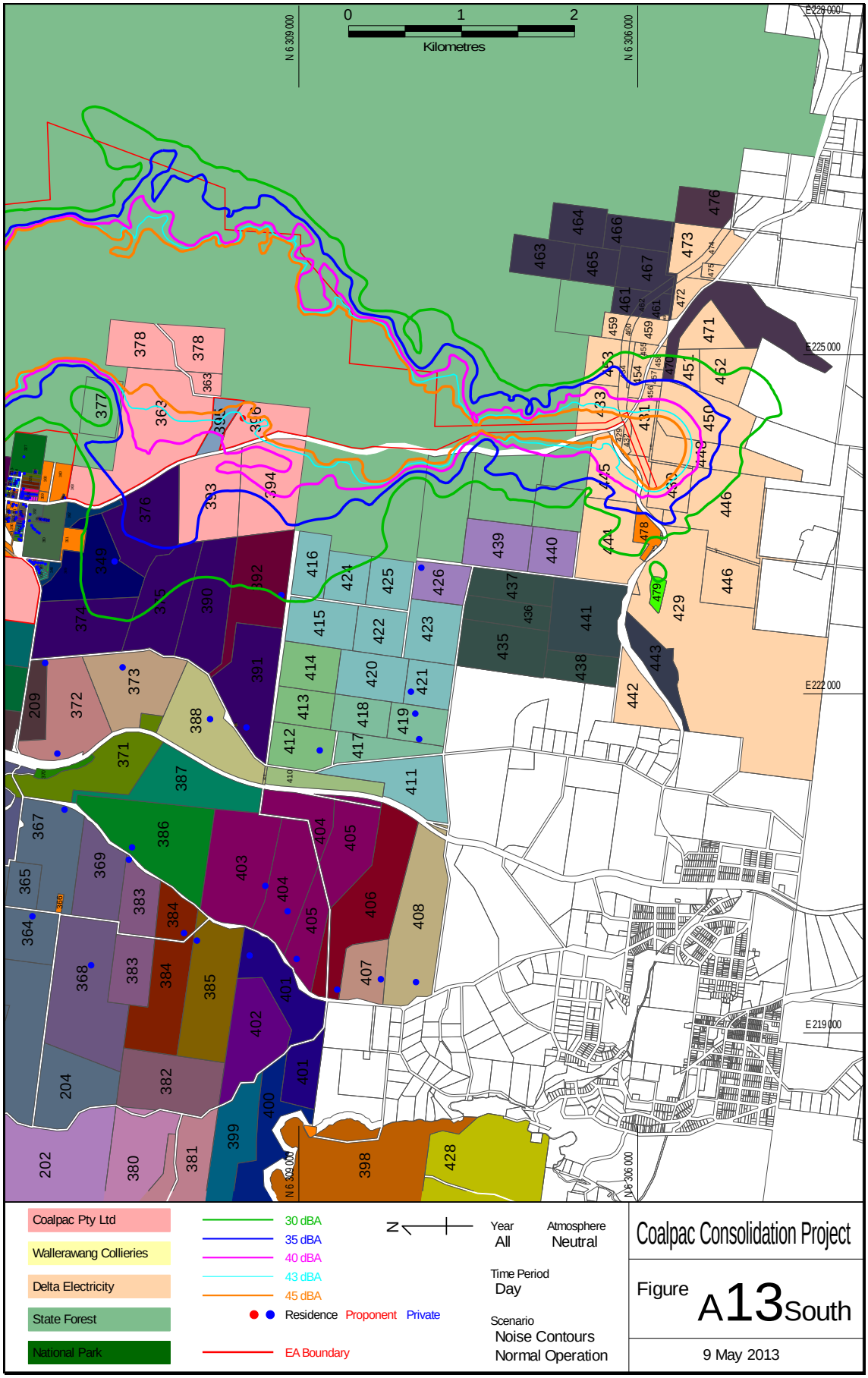
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National Park
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Residence Proponent Private
EA Boundary
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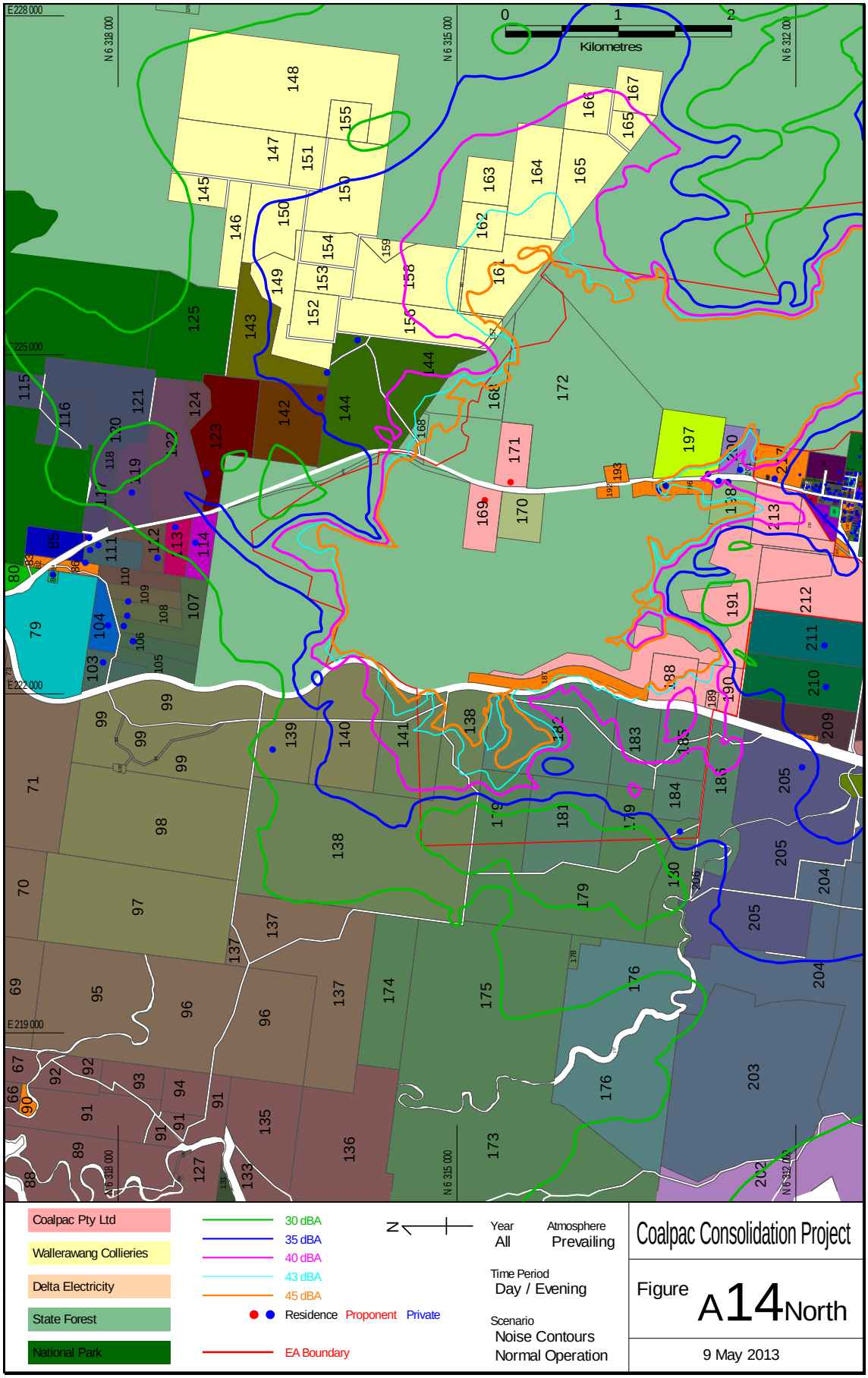
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A13 South
9 May 2013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Wallerawang Collieries
Delta Electricity
State Forest
National Park
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Residence Proponent Private
EA Boundary
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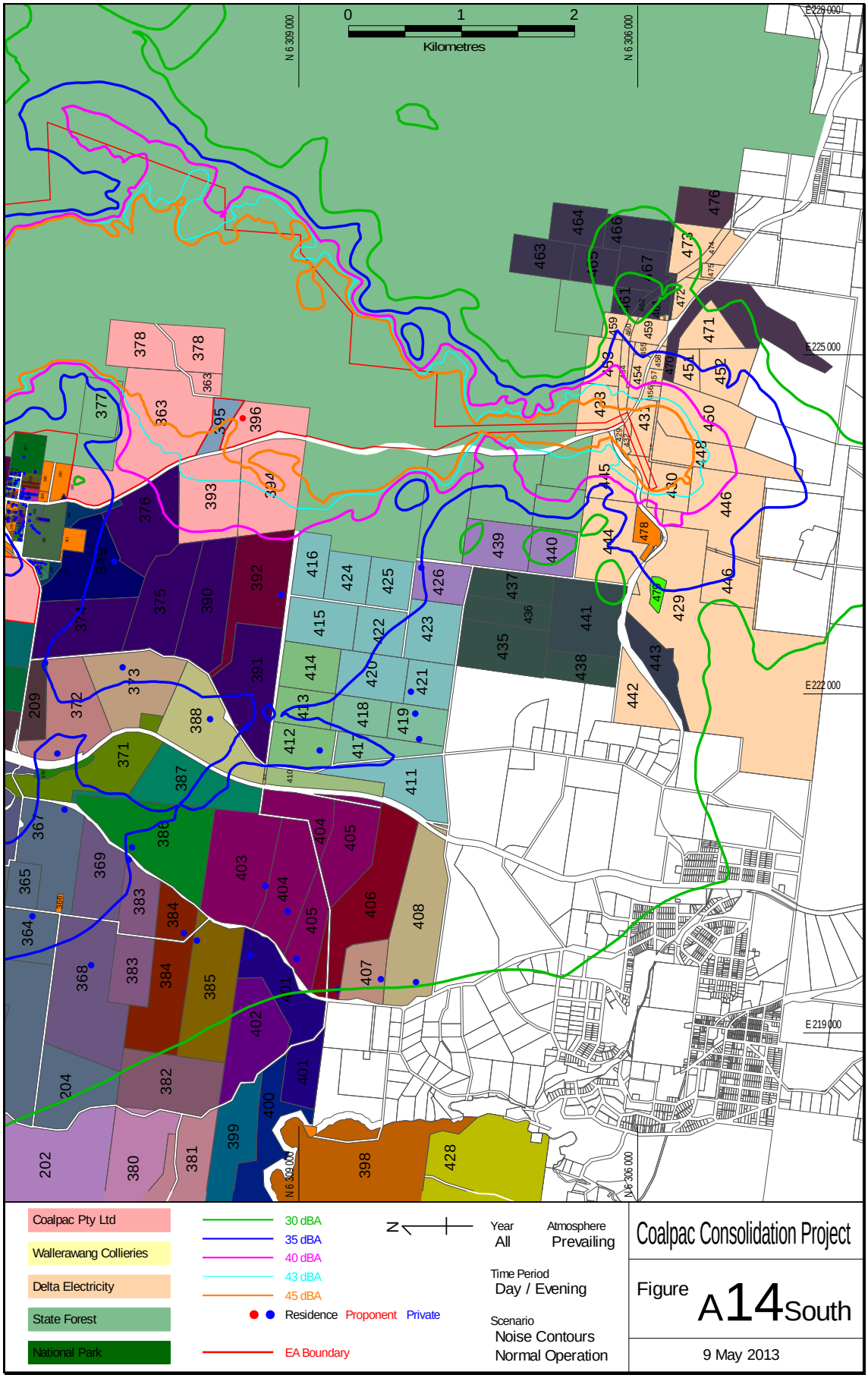
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A14 North
9 May 2013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National Park
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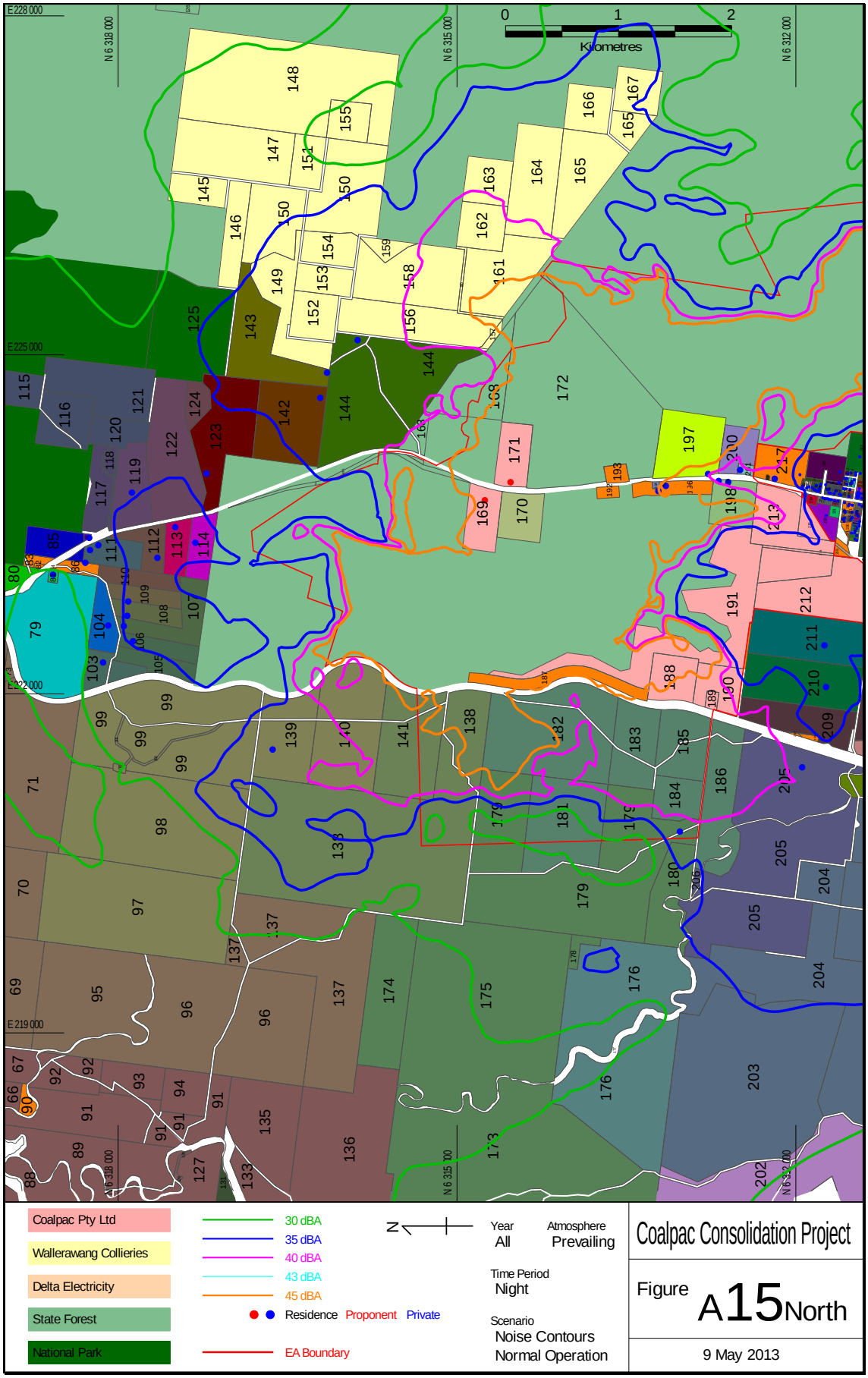
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
All
Atmosphere
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A14South
9 May 2013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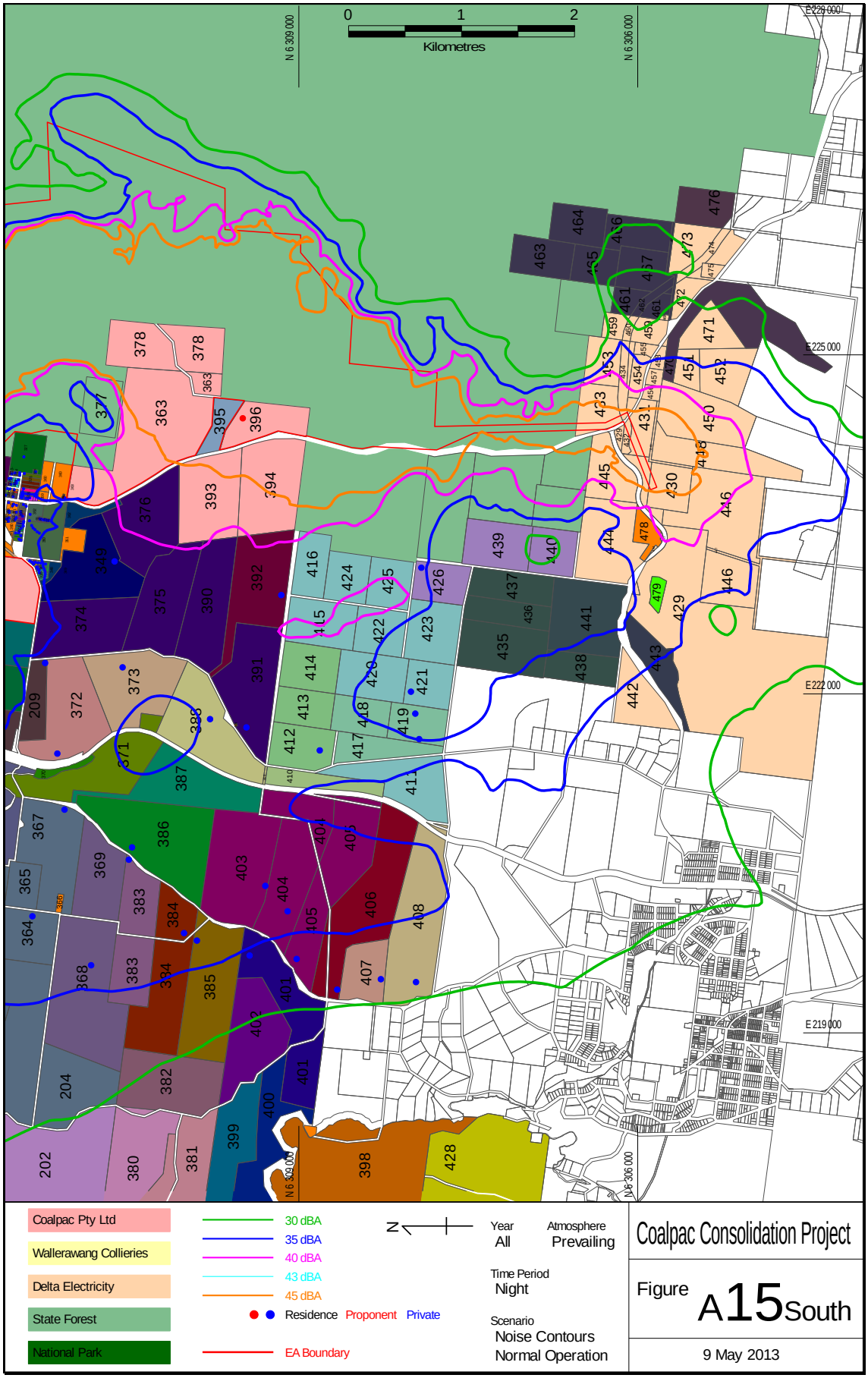
2
Kilometres
Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
All
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A15 North
9 May 2013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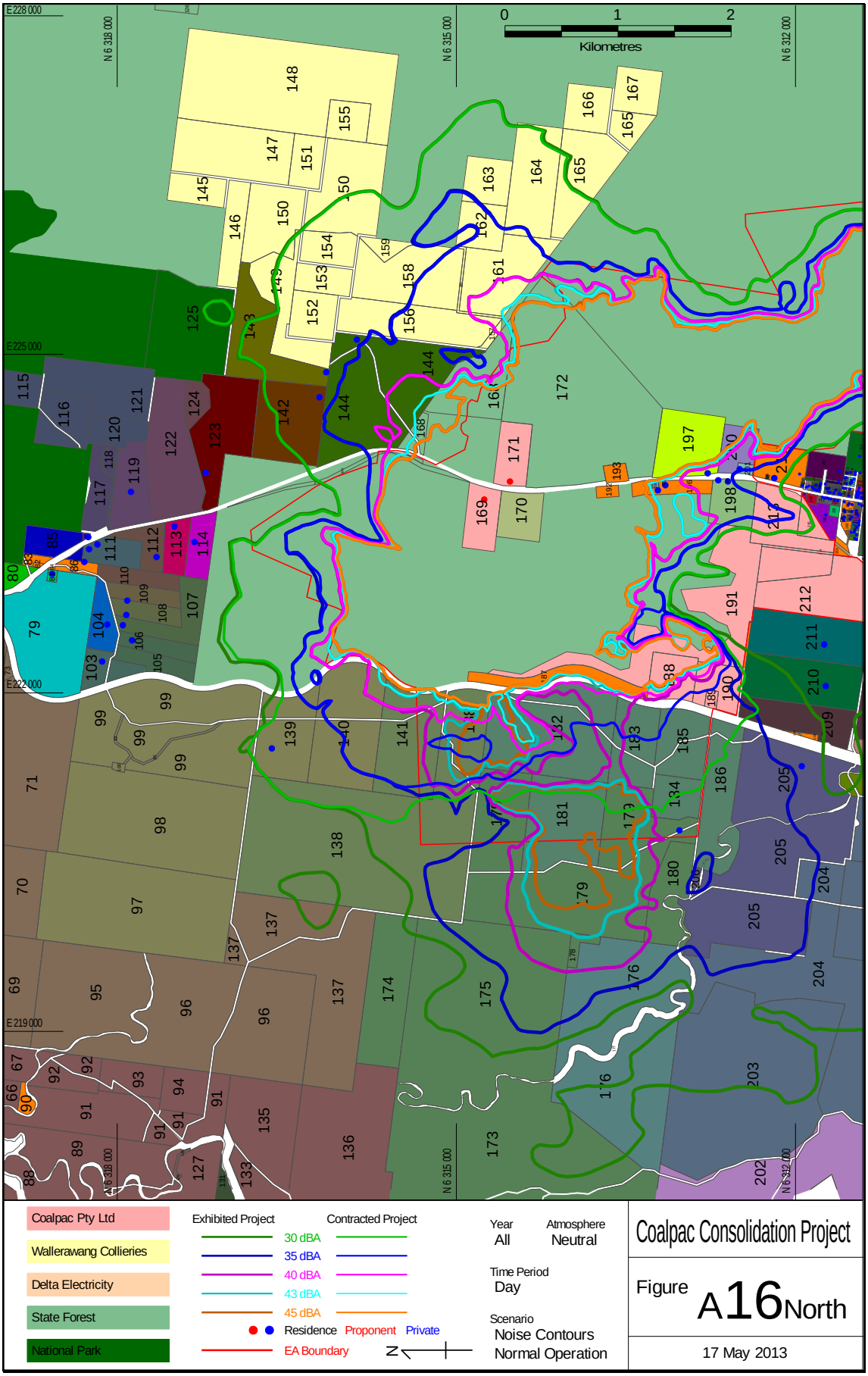
Wallerawang Collieries
Delta Electricity
State Forest
National Park
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
All
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A15 South
9 May 2013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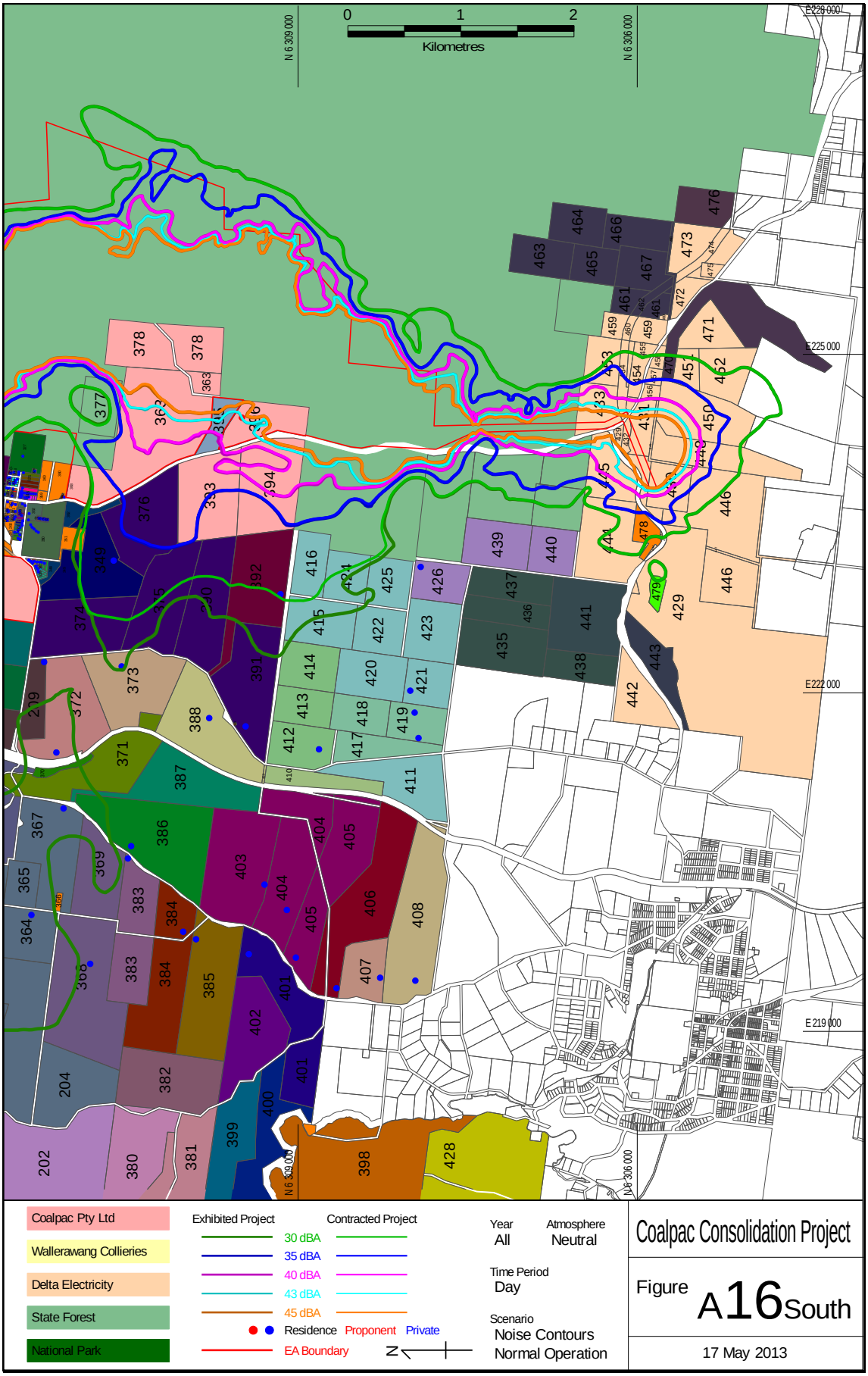
Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
Exhibited Project
Contracted Project
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
All
Atmosphere
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A16 North
17 May 2013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Kilometres
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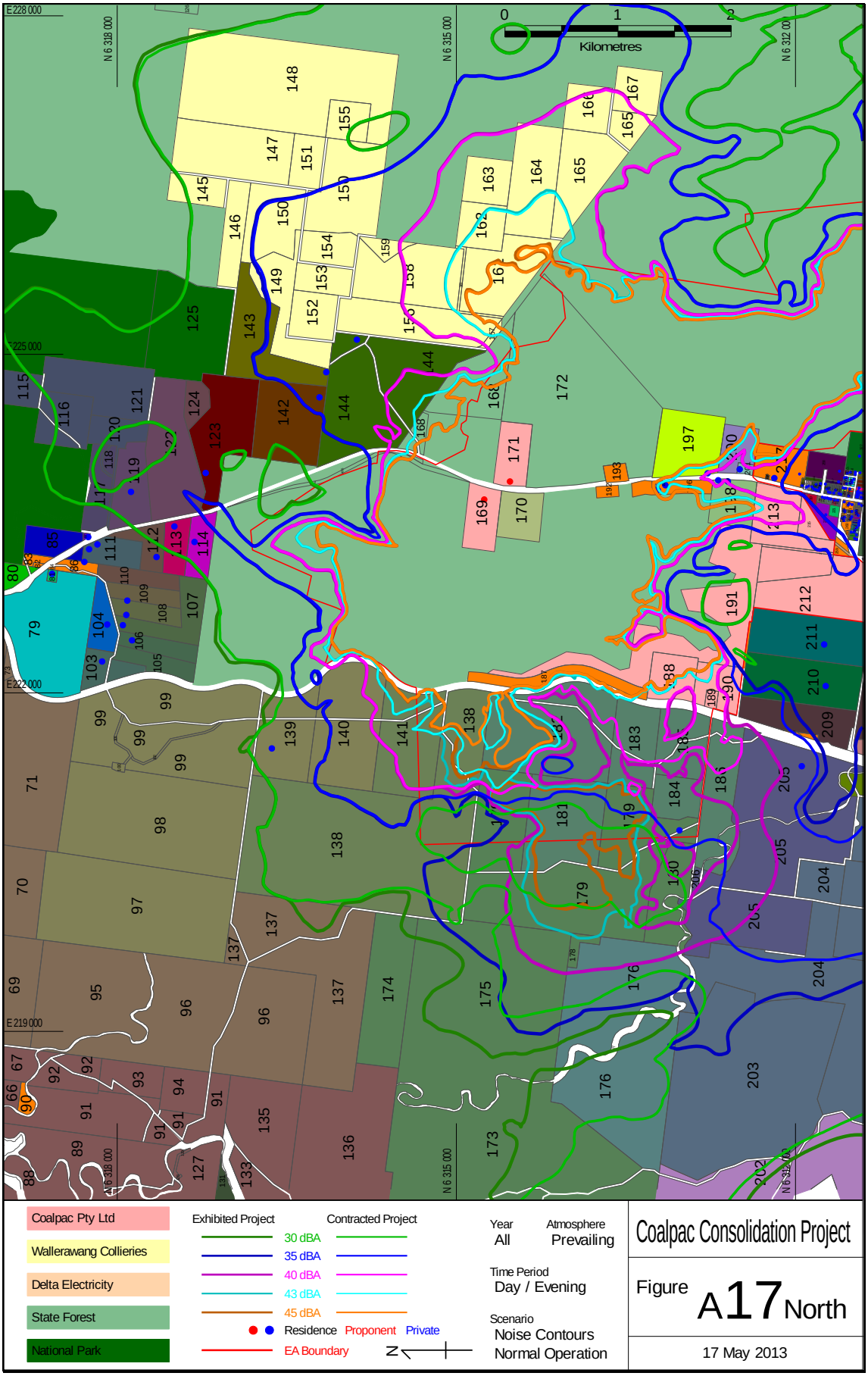
Wallerawang Collieries
Delta Electricity
State Forest
National Park
Exhibited Project
Contracted Project
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
Year
All
Atmosphere
Neutral
Time Period
Day
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A16 South
17 May 2013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N 6 318 000
N 6 315 000
N 6 312 000
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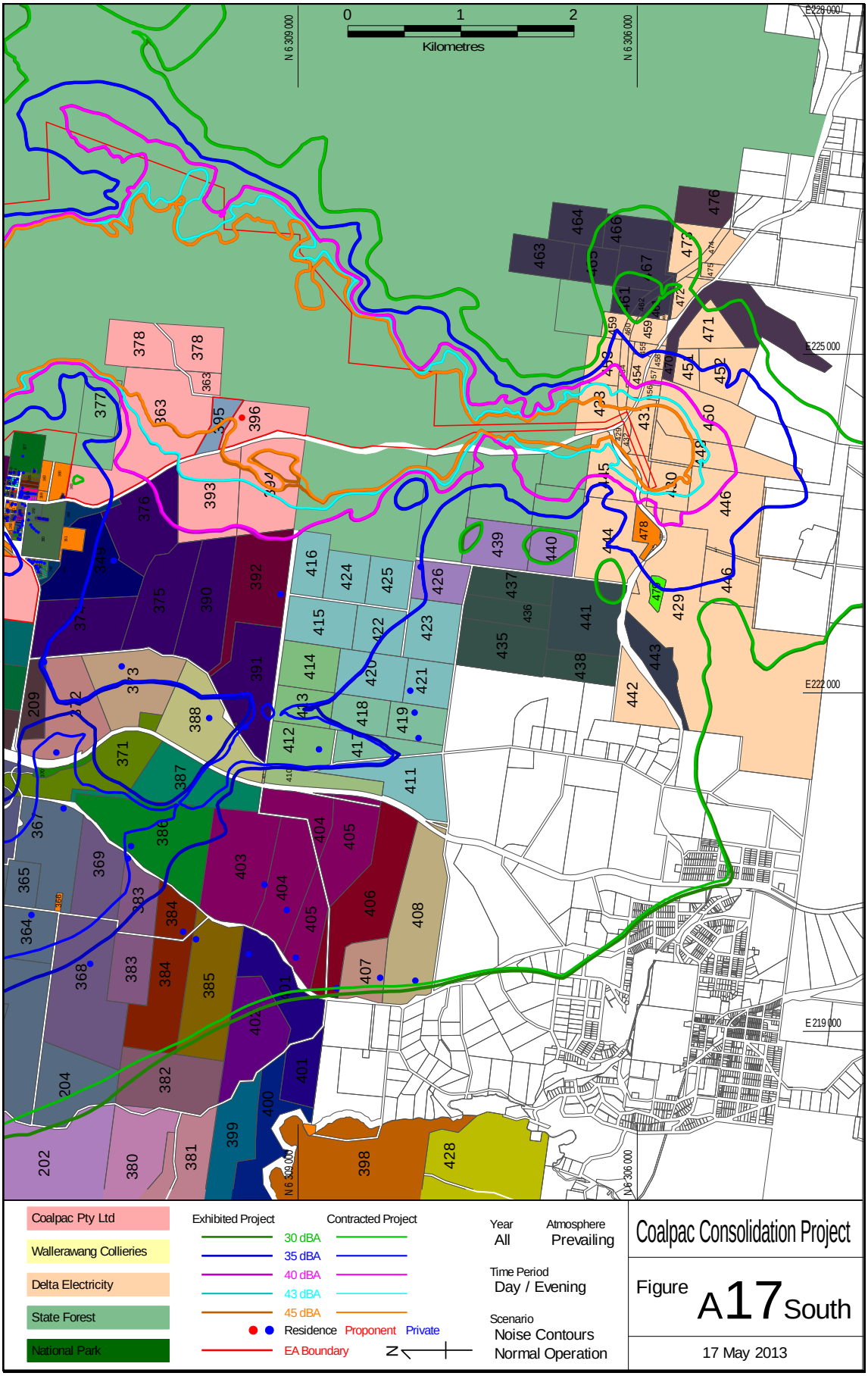
Kilometres
Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
Exhibited Project
Contracted Project
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
All
Atmosphere
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A17 North
17 May 2013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2
Kilometres
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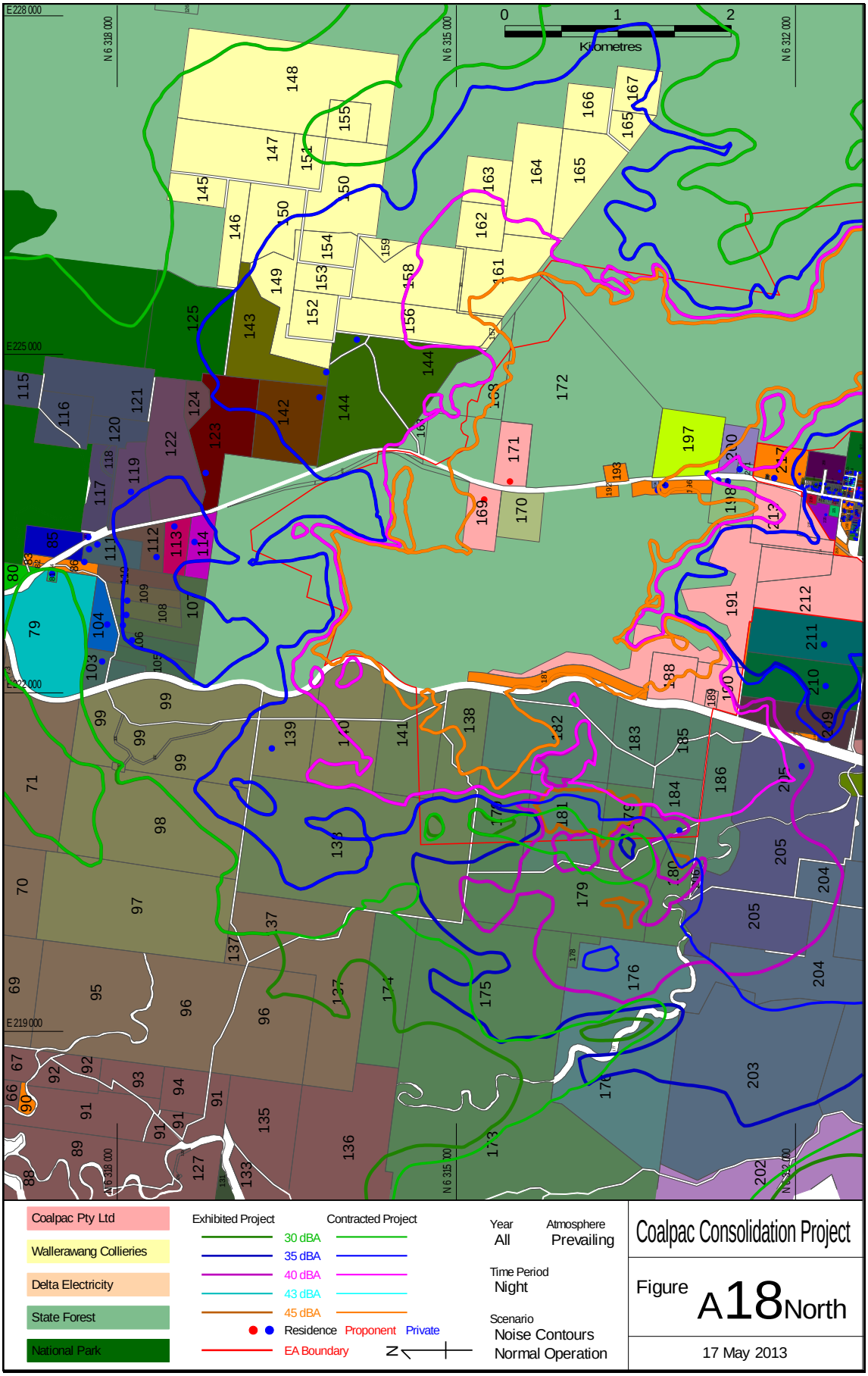
N 6 306 000
E 225 000
E 222 000
E 219 000
Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
Exhibited Project
Contracted Project
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
Year
All
Atmosphere
Prevailing
Time Period
Day / Evening
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A17 South
17 May 2013


E 228 000
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E 219 000
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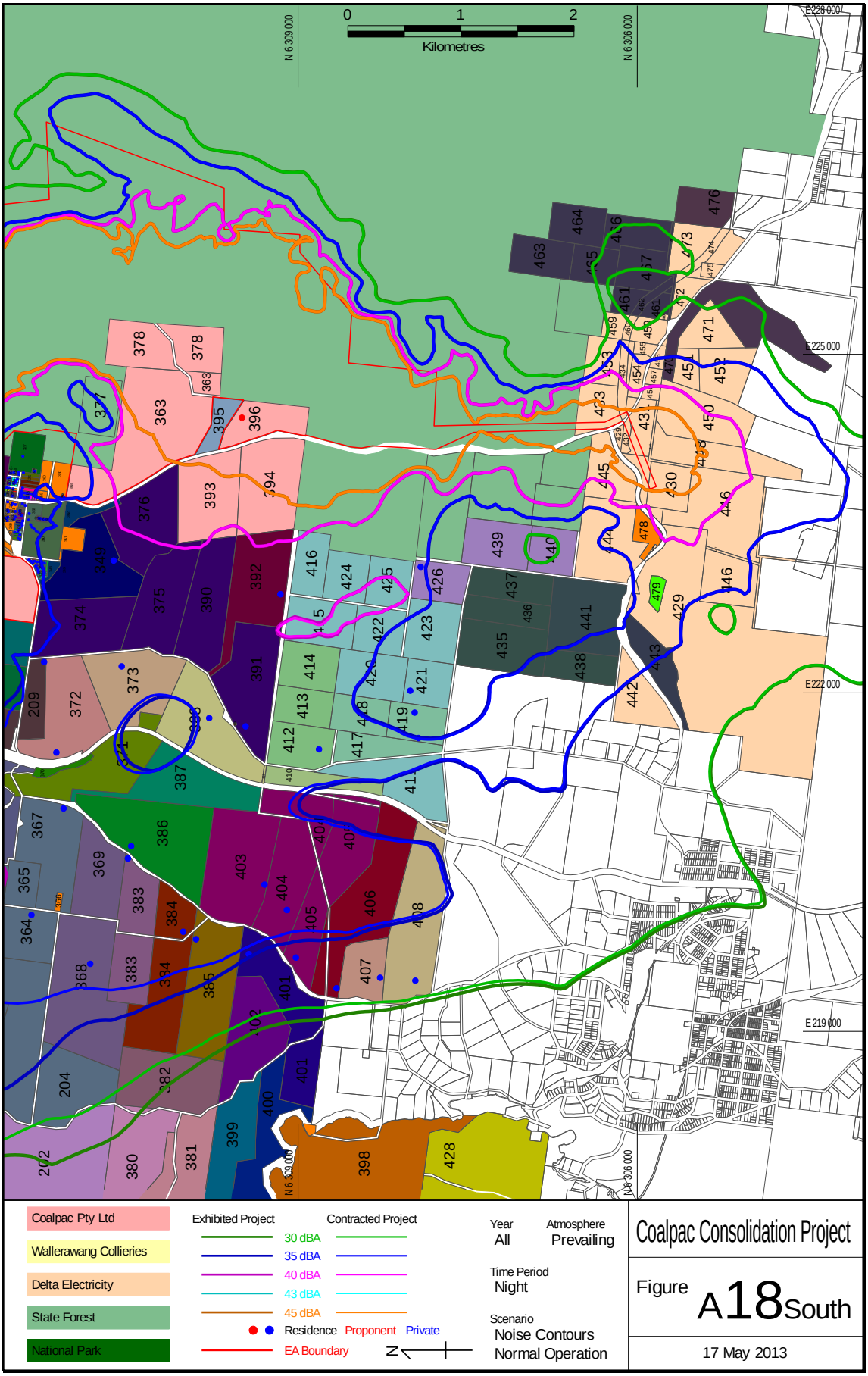
0
1
2
Kilometres
Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
Exhibited Project
Contracted Project
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
All
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A18 North
17 May 2013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1
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Kilometres
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E 226 000
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E 219 000
Coalpac Pty Ltd
Wallerawang Collieries
Delta Electricity
State Forest
National Park
Exhibited Project
Contracted Project
30 dBA
35 dBA
40 dBA
43 dBA
45 dBA
Residence Proponent Private
EA Boundary
N
Year
All
Atmosphere
Prevailing
Time Period
Night
Scenario
Noise Contours
Normal Operation
Coalpac Consolidation Project
Figure A18South
17 May 2013

APPENDIX B: PREDICTED NOISE LEVEL TABLES

Noise level tables for the Contracted Project have been presented in the same format as the equivalent tables in Appendix C of the Exhibited AIA.

TABLE	DESCRIPTION
B1	Operational noise levels at residences, LAeq,15min
B2	Operational noise levels over 25% of property areas, LAeq,15min

Table B1: Operational Noise Levels at Residences, LAeq,15min

Owner ID	Residence ID	Predicted Noise Level, LAeq,15min												Criteria Day/ Evening/ Night
		Day/Evening Neutral				Day/Evening Prevailing				Night Prevailing				
		Year 2	Year 8	Year 14	Year 20	Year 2	Year 8	Year 14	Year 20	Year 2	Year 8	Year 14	Year 20	
2	217N	31.1	27.1	27.5	28.9	36.1	31.6	31.5	33.6	37.2	33.5	32.2	33.3	37/35/35
	217S	28.6	25.7	26.8	28.6	33.0	29.8	31.7	33.3	34.3	32.0	31.4	32.4	37/35/35
5	139	28.3	31.3	30.4	24.8	29.0	31.3	30.4	24.8	33.1	37.7	35.7	29.0	35/35/35
6	179	28.7	25.2	23.8	21.4	36.6	34.3	33.9	32.0	38.5	36.9	36.4	34.7	35/35/35
8	364	24.8	24.2	21.9	22.5	34.7	34.8	35.7	34.7	36.7	36.2	37.6	36.5	35/35/35
	367	25.7	25.1	21.8	22.8	35.6	34.9	35.0	35.2	37.9	36.8	37.2	37.2	35/35/35
9	205	27.6	25.8	23.3	23.8	36.6	34.0	33.8	33.9	38.7	35.9	36.3	36.5	35/35/35
10	368	23.6	23.1	20.6	20.8	33.6	33.6	34.2	33.8	35.8	34.7	35.8	35.4	35/35/35
11	383	24.8	24.3	21.3	21.8	34.7	34.7	35.0	34.7	36.9	35.9	37.0	36.6	35/35/35
13	384	24.1	23.6	20.5	20.6	33.9	33.5	33.8	33.5	35.9	34.4	35.4	35.0	35/35/35
14	385	23.9	23.6	20.5	20.5	33.8	33.3	33.6	33.3	35.7	34.2	35.1	34.7	35/35/35
17	386	25.5	25.4	21.8	22.7	34.8	34.9	34.9	34.9	37.0	36.2	37.0	37.0	35/35/35
23	403	24.4	24.0	21.3	21.4	34.2	33.0	33.1	33.1	36.0	34.0	34.4	34.3	35/35/35
	404	23.6	23.6	20.8	20.9	34.0	32.5	32.5	32.7	35.6	33.5	33.8	34.0	35/35/35
30	198	36.1	29.5	30.1	36.8	39.3	33.4	33.5	38.8	39.7	34.2	33.8	34.5	35/35/35
	199	35.1	29.1	29.2	37.3	38.9	33.3	32.8	39.8	39.5	34.0	33.7	34.1	37/35/35
31	197	37.7	30.5	32.3	32.9	40.1	34.7	35.9	36.0	40.4	36.2	34.9	35.1	35/35/35
32	201	35.2	29.4	29.4	33.1	38.9	33.7	32.9	35.8	39.4	33.9	33.3	33.5	37/35/35
33	195	41.2	33.3	37.4	35.4	42.5	37.1	40.2	39.4	43.8	39.0	38.2	40.2	37/35/35
34	194	41.5	34.3	37.5	37.5	43.1	38.6	41.1	43.5	45.3	40.5	40.4	43.6	37/35/35
50	114	27.6	24.6	25.3	23.3	32.2	31.1	30.7	27.8	31.2	36.0	33.9	30.1	37/35/35
51	113	26.8	24.1	25.0	23.9	32.4	31.6	31.3	28.7	31.9	36.5	34.6	31.3	37/35/35
52	112	25.9	23.8	24.7	22.2	29.1	27.9	28.3	25.6	30.9	35.9	34.2	29.7	37/35/35
53	109	25.2	24.6	25.4	21.2	25.9	25.7	26.1	22.5	29.8	35.2	33.5	29.1	35/35/35
54	108	25.2	24.7	25.4	20.9	25.6	25.2	25.8	21.8	29.7	35.2	33.4	28.8	35/35/35
56	106	25.5	24.6	25.3	20.6	25.7	24.8	25.5	21.1	30.0	35.2	33.3	28.2	35/35/35
65	142	25.9	31.1	33.1	33.4	35.0	35.7	34.1	33.6	35.7	37.3	34.7	38.1	35/35/35
66	143	26.6	31.8	32.7	33.7	35.2	36.5	35.2	34.7	36.4	37.9	35.7	37.6	35/35/35
67	144	29.2	33.8	34.6	33.8	36.3	37.9	36.5	36.9	38.0	38.7	36.1	37.1	35/35/35
68	209	26.3	27.3	23.4	25.2	31.4	33.0	31.7	35.0	33.9	34.1	34.7	35.4	35/35/35
72	349	31.5	33.5	28.5	29.1	34.6	36.8	32.7	35.1	37.7	38.4	35.8	37.7	35/35/35
73	391	26.3	26.7	23.0	23.2	34.8	35.0	34.3	35.0	36.7	36.1	36.4	37.0	35/35/35
75	392	30.1	29.6	27.6	26.8	37.2	38.2	37.4	37.4	38.3	39.0	39.0	39.5	35/35/35
76	372	26.2	25.4	22.6	23.0	35.6	34.8	34.5	35.0	38.5	37.5	37.4	37.7	37/35/35
77	373	28.4	29.0	24.9	25.8	34.6	35.2	34.3	35.5	36.6	36.4	36.4	37.1	35/35/35
78	388	27.0	26.9	23.4	23.8	33.6	34.5	33.5	33.6	35.4	35.2	35.6	35.2	35/35/35
80	412	26.1	26.2	23.3	23.6	36.0	35.3	34.7	34.9	38.3	36.8	36.5	36.9	35/35/35
85	426	27.1	26.3	24.9	24.3	34.4	35.3	33.4	33.0	36.3	35.8	34.6	35.1	35/35/35

Table B2: Operational Noise Levels over 25% of Property Areas, LAeq,15min

Owner ID	Property ID	Predicted Noise Level, LAeq,15min												Criteria Day/ Evening/ Night
		Day/Evening Neutral				Day/Evening Prevailing				Night Prevailing				
		Year 2	Year 8	Year 14	Year 20	Year 2	Year 8	Year 14	Year 20	Year 2	Year 8	Year 14	Year 20	
2 Crown	192 Waste	45.2	45.3	57.1	48.1	48.7	49.4	58.9	53.1	51.0	50.9	50.7	51.1	70/ - / -
	193 Cemetary	48.3	45.2	50.6	51.6	48.9	48.7	53.5	56.2	52.8	48.7	49.1	51.4	65/ - / -
	196 Vacant	42.8	36.5	41.5	40.6	45.1	41.8	45.3	47.9	46.9	43.7	43.6	46.1	- / - / -
	217	35.8	30.2	30.7	36.7	40.9	36.1	34.8	41.1	41.5	36.2	34.7	35.3	37/35/35
5	97-102, 138-141	29.0	30.5	30.0	25.3	32.8	33.2	32.4	26.4	33.4	37.1	35.2	29.3	35/35/35
6	173-175, 178-186	23.7	22.4	22.6	21.3	30.5	30.6	31.3	29.7	32.3	32.9	33.8	32.2	35/35/35
7	176	20.5	19.4	19.6	19.1	29.3	29.6	30.5	29.2	31.4	31.6	32.6	31.1	35/35/35
8	203,204,364, 365,367	23.5	22.4	20.8	21.0	34.0	33.9	34.7	34.1	36.1	35.6	36.7	35.8	35/35/35
9	205,206	26.8	25.2	23.4	23.1	36.6	35.9	36.0	35.3	38.9	37.9	38.5	38.0	35/35/35
10	368,369	24.2	23.6	21.1	21.5	34.5	34.6	35.2	34.4	36.5	35.8	37.1	36.2	35/35/35
11	383	24.2	23.5	20.8	21.0	34.3	34.3	34.6	34.4	36.5	35.4	36.5	36.0	35/35/35
13	384	23.9	23.5	20.4	20.6	33.8	33.5	33.8	33.5	35.9	34.4	35.4	35.0	35/35/35
14	385	23.4	23.3	20.1	20.2	33.4	32.6	32.9	32.8	35.2	33.3	34.3	34.1	35/35/35
15	371	25.8	25.1	22.2	22.7	34.8	34.3	34.2	34.8	37.2	36.3	36.5	37.0	35/35/35
16	370	26.0	25.2	22.4	22.6	35.4	34.5	34.4	34.8	38.2	37.0	37.1	37.3	35/35/35
17	386	25.8	25.8	22.1	23.0	34.8	34.8	34.7	35.0	37.0	36.3	36.9	37.0	35/35/35
18	387	26.1	26.0	22.6	23.0	34.5	34.7	34.5	35.0	36.6	36.0	36.6	37.0	35/35/35
23	403-405	24.7	24.3	21.4	21.5	34.3	33.4	33.4	33.4	36.2	34.5	34.9	34.7	35/35/35
24	406	23.2	23.4	20.6	20.6	34.4	32.9	32.4	32.5	36.0	33.9	33.8	34.0	35/35/35
26	408	22.3	22.7	20.3	19.6	33.8	32.5	31.9	31.8	35.3	33.4	33.2	33.3	35/35/35
29	170	60.1	62.6	57.7	58.6	60.9	63.0	59.1	60.0	61.3	60.2	58.9	60.0	37/35/35
30	198,199	37.6	34.1	32.0	38.1	45.6	43.0	40.7	43.9	46.6	43.2	43.2	43.9	37/35/35
31	197	67.6	44.5	43.2	43.3	68.1	47.1	46.1	46.0	67.2	47.9	47.7	47.7	37/35/35
32	201	35.2	29.4	29.4	33.1	38.9	33.7	32.9	35.8	39.4	33.9	33.3	33.5	37/35/35
33	195	41.2	33.3	37.4	35.4	42.5	37.1	40.2	39.4	43.8	39.0	38.2	40.2	37/35/35
34	194	42.8	35.7	41.3	38.4	44.0	40.6	44.4	45.2	46.7	42.2	42.2	45.0	37/35/35
35	200	46.0	39.7	39.1	42.6	48.6	43.9	43.0	44.7	49.1	44.2	43.8	43.9	37/35/35
50	114	28.1	24.9	25.6	24.1	34.1	32.1	32.1	29.3	31.7	35.7	34.1	30.9	35/35/35
51	113	27.1	24.3	25.0	23.5	32.0	31.1	30.8	28.2	31.7	36.2	34.4	30.9	37/35/35
52	110,112	26.0	24.1	25.1	22.5	29.5	28.5	28.7	26.3	31.2	35.9	34.2	30.4	37/35/35
53	109	26.5	24.8	25.6	21.6	27.4	26.2	26.6	23.3	29.9	36.0	34.1	29.2	35/35/35
54	108	27.0	25.3	25.9	21.5	27.3	26.0	26.4	22.7	29.9	36.5	34.3	29.0	35/35/35
55	107	28.0	25.6	26.2	22.0	28.7	26.4	26.7	23.5	30.0	36.9	34.4	28.6	35/35/35
56	105,106	26.9	25.6	25.9	21.7	27.0	25.8	26.0	21.9	29.8	35.8	33.6	28.2	35/35/35
58	111	24.7	23.5	24.5	22.1	28.0	27.5	27.8	25.2	30.7	35.2	33.8	29.9	37/35/35
61	119	24.6	23.4	24.4	23.4	30.7	30.1	29.9	27.7	31.6	35.3	33.5	31.3	37/35/35
62	122	25.1	24.6	25.6	25.2	33.3	32.7	32.0	30.3	32.5	35.1	33.8	33.7	37/35/35
65	142	25.0	29.4	31.8	31.8	33.1	34.4	33.3	32.1	34.1	35.8	33.9	37.0	35/35/35
66	143	25.9	29.7	29.5	30.7	34.5	35.1	33.8	33.0	33.9	35.8	34.1	35.7	35/35/35
67	144	30.5	35.1	38.3	38.2	36.8	39.5	38.4	38.8	38.7	38.9	36.7	39.0	35/35/35
68	209	28.7	26.4	23.9	24.4	34.4	33.3	32.8	34.2	36.7	35.1	35.2	35.5	35/35/35
69	210	28.2	25.9	23.7	25.1	32.6	31.5	30.5	33.1	35.2	33.6	33.9	34.4	35/35/35
71	348	28.9	28.0	25.4	26.3	30.9	31.1	28.5	33.6	35.1	35.3	33.5	34.0	35/35/35
	362	30.9	30.0	27.4	28.0	32.3	31.6	29.9	30.7	36.9	37.0	35.6	36.0	37/35/35
72	349	30.9	32.2	27.8	28.5	34.2	36.3	32.4	35.3	37.1	37.8	35.7	37.1	37/35/35
73	374-376, 390,391	30.9	31.9	28.7	28.9	35.0	37.8	35.8	36.0	38.0	39.0	37.8	38.6	35/35/35

Owner ID	Property ID	Predicted Noise Level, LAeq,15min												Criteria Day/ Evening/ Night
		Day/Evening Neutral				Day/Evening Prevailing				Night Prevailing				
		Year 2	Year 8	Year 14	Year 20	Year 2	Year 8	Year 14	Year 20	Year 2	Year 8	Year 14	Year 20	
75	392	31.2	30.7	28.8	28.2	37.1	39.0	37.8	37.4	38.1	39.3	38.9	39.5	35/35/35
76	372	26.7	27.5	23.6	25.0	34.8	34.4	33.9	35.1	37.5	36.5	36.5	36.9	35/35/35
77	373	28.4	28.9	25.1	25.9	34.3	35.2	34.2	35.3	36.5	36.5	36.2	36.9	35/35/35
78	388,409	27.4	27.3	23.9	24.3	34.4	34.9	34.3	34.9	36.3	35.9	36.3	36.7	35/35/35
79	410	25.5	25.3	22.4	22.7	34.2	34.5	34.1	34.3	36.1	35.6	35.7	36.1	35/35/35
80	412-414	27.4	27.4	24.6	24.6	36.2	36.5	34.9	35.5	38.3	37.7	36.8	37.7	35/35/35
81	417-419	25.2	25.5	22.7	22.6	34.8	34.5	33.3	33.6	36.6	35.7	35.0	35.5	35/35/35
82	411,415,416, 420-425	29.3	29.5	27.5	26.5	37.9	38.3	36.9	36.8	39.0	39.4	38.6	39.1	35/35/35
97	220	27.1	24.2	24.4	27.4	31.9	28.8	28.8	35.8	33.2	31.1	31.2	32.8	35/35/35
128	350	28.7	25.9	24.6	25.8	31.5	28.6	28.1	33.1	35.2	33.9	33.4	34.7	37/35/35
137	216	31.8	27.7	27.8	29.2	36.6	31.9	31.6	33.5	37.6	33.5	32.4	33.3	37/35/35

APPENDIX D

ABORIGINAL STAKEHOLDER CORRESPONDENCE

Gundungurra Tribal Council Aboriginal Corporation
14 Oak Street Katoomba NSW 2780
Phone: 04111 46063 ABN: 8457869549
Email: sharonbrown@gundungurra.org.au
Website: www.gundungurra.org.au

28 February 2013

Mr David Kitto
Director
NSW Department of Planning
GPO Box 39
SYDNEY

Dear Mr Kitto

The Gundungurra People are registered Native Title holders in the area in which Coalpac Pty Ltd Is presently seeking approval for its consolidation project.

We fully support Coalpac's initiatives and have recently signed an Ancillary Agreement to work with them with their rehabilitation and conservation initiatives.

We look forward to further developing a long term association with Coalpac to not only progress our cultural and economic pursuits but, more importantly, to ensure our country receives the protection it deserves. A matter we believe we can achieve in working with Coalpac representatives.

As you may be aware we have recently secured NSW Office of Environment and Heritage endorsement to manage archaeological heritage investigation projects for land owners, miners and developers under our Caring for Country strategies.

In view of the above we are particularly well placed to assist Coalpac Pty Ltd in its conservation and rehabilitation initiatives.

Sharon Brown
Chairperson

Elsie Stockwell
Gundungurra Native Title Claimant

WARRABINGA

Native Title Claimants Aboriginal Corporation

ICN: 2972 Incorporated in the Corporations (Aboriginal and Torres Strait Islander) Act 2006
PO Box 282
MUDGEE NSW 2850
FAX: 02 4627 8633
EMAIL: info@warrabinga.com.au

Mr David Kitto
Director
NSW Department of Planning
GPO Box 39
SYDNEY

15 April 2013

Dr Mr Kitto,

The Warrabinga Wiradjuri People has assisted Coalpac Pty Ltd in the development of its cultural and heritage responsibilities for the proposed consolidation project.

To this end we have entered into an agreement with Coalpac Pty Ltd to assist it with both cultural heritage and rehabilitation matters.

We are committed to working closely with Coalpac for the future and in doing so support their ongoing initiatives for both conservation and rehabilitation.

We are particularly keen to assist Coalpac with the management of its offset properties and any new initiatives associated with this aspect of their proposed operations.

Yours sincerely

Lance Syme
Chairperson
Warrabinga Native Title Claimants Aboriginal Corporation