

Project Approval

Section 75J of the *Environmental Planning & Assessment Act 1979*

Under the Minister for Planning and Infrastructure's delegation of 14 September 2011, and as members of the Planning Assessment Commission, we approve the project application referred to in schedule 1, subject to the conditions in schedules 2 to 5.

These conditions are required to:

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

Member of the Commission

Member of the Commission

Member of the Commission

Sydney

2011

SCHEDULE 1

Application Number:

09_0202

Proponent:

Warkworth Mining Limited

Approval Authority:

Minister for Planning and Infrastructure

Land:

See Appendix 1

Project:

Warkworth Extension Project

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DEFINITIONS

Aboriginal stakeholders	The Cultural Heritage Working Group, Wonnarua Nation Aboriginal Corporation, Upper Hunter Wonnarua Council, Lower Hunter Tribal Council, Ungooroo Aboriginal Corporation, Wonnarua Local Aboriginal Land Council, and any other relevant Aboriginal groups
Annual review	The review required by condition 3 of schedule 5
BCA	Building Code of Australia
Biodiversity offset strategy	The conservation and enhancement strategy described in EA, and depicted conceptually in the figure in Appendix 6
Blast misfire	The failure of one or more holes in a blast pattern to initiate
CCC	Community Consultative Committee
Conditions of this approval	Conditions contained in schedules 1 to 5 inclusive
Council	Singleton Shire Council
CPI	Australian Bureau of Statistics Consumer Price Index
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning and Infrastructure
Director-General	Director-General of the Department, or delegate
DRE	Division of Resources and Energy within the Department of Trade and Investment, Regional Infrastructure and Services
EA	Environmental assessment titled <i>Proposed Warkworth Extension Environmental Assessment</i> (5 volumes), dated April 2010 as modified by the response to submissions, dated August 2010; and the preferred project report, dated September 2011
EEC	Endangered ecological community, as defined under the <i>Threatened Species Conservation Act 1995</i>
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPL	Environment Protection Licence issued under the POEO Act
Evening	The period from 6pm to 10pm
Feasible	Feasible relates to engineering considerations and what is practical to build
Heritage item	An item as defined under the <i>Heritage Act 1977</i> and/or an Aboriginal Object or Aboriginal Place as defined under the <i>National Parks and Wildlife Act 1974</i>
Incident	A set of circumstances that: - causes or threatens to cause material harm to the environment; and/or - breaches or exceeds the limits or performance measures/criteria in this approval
Land	As defined in the EP&A Act, except for where the term is used in the noise and air quality conditions in schedules 3 and 4 of this approval where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial
Mining operations	Includes the removal of overburden and extraction, processing, handling, storage and transportation of coal on site
Mine water	Water that accumulates within active mining and infrastructure areas
Minister	Minister for Planning and Infrastructure, or delegate
Minor	Not very large, important or serious
Mitigation	Activities associated with reducing the impacts of the project
MSB	Mine Subsidence Board
Mt Thorley mine	The approved mining operations and associated development within the area marked in blue on the figure in Appendix 2
Mt Thorley-Warkworth mine complex	The combined operations of the Mount Thorley and Warkworth mines
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
NOW	NSW Office of Water within the Department of Primary Industries
OEH	Office of Environment and Heritage within the Department of Premier and Cabinet
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Privately-owned land	Land that is not owned by a public agency or a mining company (or its subsidiary)
Project	The development as described in the EA

Proponent	Warkworth Mining Limited, or any person who seeks carry out the development approved under this approval
Public infrastructure	Linear and related infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications, etc.
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Rehabilitation	The return land disturbed by the project to a good condition, and ensure it is safe, stable and non-polluting
ROM coal	Run-of-mine coal
RTA	Roads and Traffic Authority
Site	The land listed in Appendix 1
Statement of commitments	The Proponent's commitments in Appendix 4
Warkworth Mine	The approved mining operations and associated development within the area marked in red on the figure in Appendix 2
Wollombi Brook Heritage Conservation Area	The area depicted on the Figure 18 in Appendix 7

SCHEDULE 2 ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. The Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the project.

TERMS OF APPROVAL

2. The Proponent shall carry out the project generally in accordance with the:
 - (a) EA;
 - (b) statement of commitments; and
 - (c) conditions of this approval.

Notes:

- The general layout of the project is shown in Appendix 3; and
- The statement of commitments is reproduced in Appendix 4.

3. If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.
4. The Proponent shall comply with any reasonable requirement/s of the Director-General arising from the Department's assessment of:
 - (a) any reports, strategies, plans, programs, reviews, audits or correspondence that are submitted by the Proponent in accordance with this approval; and
 - (b) the implementation of any actions or measures contained in these documents.

LIMITS ON APPROVAL

Mining Operations

5. The Proponent may carry out mining operations on site until the end of October 2032.

Note: Under this approval, the Proponent is required to rehabilitate the site and carry out additional undertakings to the satisfaction of both the Director-General and the Executive Director, Mineral Resources in DRE. Consequently, this approval will continue to apply in all other respects other than the right to conduct mining operations until the rehabilitation of the site and those additional undertakings have been carried out satisfactorily.

Coal Extraction

6. The Proponent shall not extract more than:
 - (a) 18 million tonnes of ROM coal from the Warkworth mine in a calendar year; and
 - (b) 28 million tonnes of ROM coal from the Mt Thorley–Warkworth mine complex in a calendar year.

Coal Transport

7. The Proponent shall:
 - (a) not transport any coal produced at the Mt Thorley-Warkworth mine complex by public road;
 - (b) ensure that the coal produced on site, including any beneficiated tailings, is only sent to the:
 - Mt Thorley Coal Loader for transport by rail to export markets; or
 - Redbank Power Station for use in energy generation.

SURRENDER OF EXISTING DEVELOPMENT CONSENT

8. By the end of December 2012, or as otherwise agreed by the Director-General, the Proponent shall surrender the existing development consent (DA-300-9-2002-i) for the Warkworth mine in accordance with Section 104A of the EP&A Act.

Prior to the surrender of this development consent, the conditions of this approval shall prevail to the extent of any inconsistency with the conditions of the development consent.

STRUCTURAL ADEQUACY

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

Notes:

- *Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates (where applicable) for the proposed building works;*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the project; and*
- *The project is located in the Patrick Plains Mine Subsidence District, and under Section 15 of the Mine Subsidence Compensation Act 1961, the Proponent is required to obtain the MSB's approval before constructing any improvements on the site.*

DEMOLITION

10. The Proponent shall ensure that all demolition work on site is carried out in accordance with AS 2601-2001: *The Demolition of Structures*, or its latest version.

PROTECTION OF PUBLIC INFRASTRUCTURE

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

OPERATION OF PLANT AND EQUIPMENT

12. The Proponent shall ensure that all plant and equipment used on site is:
- (a) maintained in a proper and efficient condition; and
 - (b) operated in a proper and efficient manner.

STAGED SUBMISSION OF ANY STRATEGY, PLAN OR PROGRAM

13. With the approval of the Director-General, the Proponent may:
- (a) submit any strategy, plan or program required by this approval on a progressive basis; and
 - (b) combine any strategy, plan or program required by this approval with any similar strategy, plan or program required for the Mt Thorley mine.

Notes:

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

14. Until they are replaced by an equivalent strategy, plan or program approved under this approval, the Proponent shall implement the existing strategies, plans or programs for the site that have been approved under DA-300-9-2002-i.

COMMUNITY ENHANCEMENT

15. The Proponent shall establish and operate a trust fund for the project to the satisfaction of the Director-General. This trust fund must be:
- (a) directed towards providing benefits to the local communities affected by the project, and particularly the Bulga Village community;
 - (b) administered by a group that includes representatives from the local community;
 - (c) operating from the end of June 2012, unless the Director-General agrees otherwise.

Once it is established, the Proponent shall contribute at least \$380,000 to the trust fund each year during mining operations with the first payment to be made upon the establishment of the trust fund. Annual contributions must be increased over the life of the project in accordance with the CPI .

Alternatively, by the end of June 2012, unless the Director-General agrees otherwise, the Proponent may enter into a voluntary planning agreement with the Council in accordance with Division 6 of Part 4 of the EP&A Act. This agreement must provide for the payment of a similar quantum of funds as above, with these funds to be directed towards providing benefits to the local communities affected by the project, and particularly the Bulga Village community.

SCHEDULE 3 ENVIRONMENTAL PERFORMANCE CONDITIONS

ACQUISITION UPON REQUEST

Acquisition Upon Request

1. Upon receiving a written request for acquisition from an owner of the land listed in Table 1, the Proponent shall acquire the land in accordance with the procedures in conditions 8-9 of schedule 4.

Table 1: Land subject to acquisition upon request

Acquisition Basis	Land
Noise & Air	77, 102, D, E, F
Noise	81, 87, 97, 144, 146, 147, 148, 149, 150, 153, 154, 189, 190, 192, J
Air	A, B, K

Notes:

- To interpret the land referred to in Table 1, see the applicable figures in Appendix 5; and
- The Proponent is only required to acquire property 77 if the owner of the land no longer has acquisition rights under any development consent for the Wambo mine.

ADDITIONAL NOISE AND AIR QUALITY MITIGATION UPON REQUEST

2. Upon receiving a written request from the owner of any residence on the land listed in Table 1 or Table 2, the Proponent shall implement additional noise and/or air quality mitigation measures (such as double-glazing, insulation, air filters, a first flush roof water drainage system and/or air conditioning) at the residence in consultation with the landowner. These measures must be reasonable and feasible, and directed towards reducing the noise and/or air quality impacts of the project on the residence.

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

Table 2: Land subject to additional noise and/or air quality mitigation upon request

Mitigation Basis	Land
Noise & Air	117, 118, 126
Noise	27, 29, 34, 42, 50, 53, 55, 56, 57, 58, 59, 60, 62, 63, 64, 65, 66, 68, 69, 71, 72, 73, 82, 125, 128, 152, 181, 183, 184, 185, 186, 187, 188, 191
Air (Immediate)	81, 97, 111, 121, 123, 144, 146, 151, 193, 197
Air (From 2016)	199, 200, 201, 202, 203, 204, 205, 206, 207

Note: To interpret the land referred to in Table 2, see the applicable figures in Appendix 5.

NOISE

Impact Assessment Criteria

3. Except for the noise-affected land in Table 1, the Proponent shall ensure that the noise generated at the Mt Thorley-Warkworth mine complex does not exceed the criteria in Table 3 at any residence on privately-owned land or on more than 25 per cent of any privately-owned land.

Table 3: Noise Impact Assessment Criteria dB(A)

Location	Land	Day (L _{Aeq} (15min))	Evening (L _{Aeq} (15min))	Night (L _{Aeq} (15min))	Night (L _{A1} (1 min))
Bulga	65, 68	42	42	42	48
	27, 29, 34, 42, 50, 53, 55, 56, 57, 58, 59, 60, 62, 63, 64, 66, 69, 71, 72, 73, 82	41	41	41	48
	17, 19, 24, 25, 30, 31, 35, 36, 39, 40, 43, 44, 46, 47, 48, 49, 52, 74,	40	40	40	48
	13, 16, 18, 20, 21, 22, 23, 26, 32, 33, 37, 41, 45, 54, 61, 89	39	39	39	48
	67, 70,	37	37	37	48

Location	Land	Day (<i>L_{Aeq}</i> (15min))	Evening (<i>L_{Aeq}</i> (15min))	Night (<i>L_{Aeq}</i> (15min))	Night (<i>L_{A1}</i> (1 min))
	8, 10	36	36	36	48
	1, 2, 3, 4, 5, 6, 7, 9	35	35	35	48
	All other privately owned land	38	38	38	48
Warkworth	All privately owned land	38	38	38	48
Maison Dieu	118	39	39	39	45
	117, 169	38	38	38	45
	121, 123, 127, 170	37	37	37	47
	124, 141	36	36	36	47
	120, 122, 167, 168	35	35	35	47
	All other privately owned land	38	38	38	45
Gouldsville, Long Point	126	44	44	44	47
	125, 128,	42	42	42	47
	129	41	41	41	47
	130, 137, 139	40	40	40	47
	142, 143, 172, 173	39	39	39	47
	134, 176	37	37	37	47
	179	36	36	36	47
	171	35	35	35	47
	All other privately owned land	38	38	38	45
Hambledon Hill/ Wylies Flat	191	43	43	43	45
	152, 183, 186, 187	42	42	42	45
	181, 184, 188	41	41	41	45
	155, 156, 157, 182	40	40	40	48
	All other privately owned land	38	38	38	45
Mount Thorley	151	42	42	42	48
	All other privately owned land	38	38	38	48

Notes:

- To interpret the land referred to in Table 3, see the applicable figures in Appendix 5; and
- Noise generated by the Mt Thorley-Warkworth mine complex is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.

However, these criteria do not apply if the Proponent has an agreement with the relevant owner/s of these residences/land to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

Noise Acquisition Criteria

4. If the noise generated at the Mt Thorley-Warkworth mine complex systematically exceeds the criteria in Table 4 at any residence on privately-owned land or on more than 25 per cent of any privately-owned land, the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 8-9 of schedule 4.

Table 4: Land acquisition criteria dB(A) L_{Aeq} (15min)

Location	Land	Day (L_{Aeq} (15min))	Evening (L_{Aeq} (15min))	Night (L_{Aeq} (15min))
Bulga	All privately owned land	43	43	43
Warkworth	All privately owned land	43	43	43
Maison Dieu	All privately owned land	43	43	43
Gouldsville / Long Point	125, 126, 128, 129	45	45	45
	All other privately owned land	43	43	43
Hambledon Hill / Wylies Flat	All privately owned land	43	43	43
Mount Thorley	All privately owned land	43	43	43
	All other privately owned land	40	40	40

Notes:

- To interpret the land referred to Table 4, see the applicable figures in Appendix 5; and
- Noise generated by the Mt Thorley Warkworth mining complex is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.

Cumulative Noise Criteria

5. Except for the noise-affected land in Table 1, the Proponent shall implement all reasonable and feasible measures to ensure that the noise generated by the Mt Thorley-Warkworth mine complex combined with the noise generated by other mines does not exceed the criteria in Table 5 at any residence on privately-owned land or on more than 25 per cent of any privately-owned land.

Table 5: Cumulative noise impact assessment criteria dB(A) L_{Aeq} (period)

Location	Day (L_{Aeq} (period))	Evening (L_{Aeq} (period))	Night (L_{Aeq} (period))
Bulga, Warkworth and Mount Thorley	55	45	40
All other privately-owned land	50	45	40

Note: Cumulative noise is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.

Cumulative Noise Acquisition Criteria

6. If the cumulative noise generated by the Mt Thorley-Warkworth mine complex combined with the noise generated by other mines in the area systematically exceeds the criteria in Table 6 at any residence on privately-owned land or on more than 25 per cent of any privately-owned land, then upon receiving a written request from the landowner, the Proponent shall acquire the land on as equitable basis as possible with the relevant mines in accordance with the procedures in conditions 8-9 of schedule 4.

Table 6: Cumulative noise land acquisition criteria dB(A) L_{Aeq} (period)

Location	Day (L_{Aeq} (period))	Evening (L_{Aeq} (period))	Night (L_{Aeq} (period))
Bulga, Warkworth and Mount Thorley	60	50	45
All other privately-owned land	55	50	45

Note: The cumulative noise generated by the Mt Thorley-Warkworth mine complex combined with the noise generated by other mines in the area is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.

Attenuation of Plant

7. The Proponent shall:
 - (a) ensure that:
 - all new trucks, dozers, drills and excavators purchased for use on the site after the date of this approval are commissioned as noise suppressed (or attenuated) units;
 - the existing truck fleet on site at the date of this approval is progressively fitted with suitable noise attenuation packages with at least:
 - o 40% of these trucks being attenuated by the end of 2012;
 - o 50% of these trucks being attenuated by the end of 2013;
 - o 60% of these trucks being attenuated by the end of 2016; and
 - o 80% of these trucks being attenuated by the end of 2017;
 - suitable cladding or attenuation is fitted to the existing Warkworth coal handling plant by the end of 2012; and
 - (b) monitor and report on the implementation of these requirements annually on its website.
8. The Proponent shall:
 - (a) conduct an annual testing program of the attenuated plant on site to ensure that the attenuation remains effective;
 - (b) restore the effectiveness of any attenuation if it is found to be defective; and
 - (c) report on the results of any testing and/or restoration work on its website annually.

Operating Conditions

9. The Proponent shall:
 - (a) implement best noise management practice to minimise the operational, low frequency and traffic noise of the project;
 - (b) regularly assess the real-time noise monitoring and meteorological forecasting data and relocate, modify and/or stop operations on site to ensure compliance with the relevant conditions of this approval;
 - (c) use its best endeavours to achieve the long term noise goals for the Mt Thorley-Warkworth mine complex in Table 7, where this is reasonable and feasible, and report on the progress towards achieving these goals in the annual review; and
 - (d) co-ordinate the noise management on site with the noise management at nearby mines (including the Bulga, Wambo and Hunter Valley Operations mines) to minimise the cumulative noise impacts of the mines,
 to the satisfaction of the Director-General.

Table 7: Long Term Intrusive Noise Goals – Existing Residences

Location	Day	Evening	Night	
	<i>L_{Aeq}</i> (15 min)	<i>L_{Aeq}</i> (15 min)	<i>L_{Aeq}</i> (15 min)	<i>L_{A1}</i> (1 min)
Bulga	38	38	38	48
Warkworth	38	38	38	48
Maison Dieu	35	35	35	45
Gouldsville / Long Point	35	35	35	45
Hambledon Hill / Wylies Flat	35	35	35	45
Mount Thorley	37	37	37	47
All other privately-owned land	35	35	35	45

Notes:

- To interpret the locations referred to Table 7, see the applicable figures in Appendix 5; and
- Noise generated by the Mt Thorley-Warkworth mine complex is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.

Noise Management Plan

10. The Proponent shall prepare and implement a Noise Management Plan for the Mt Thorley-Warkworth mine complex to the satisfaction of the Director-General. This plan must:
 - (a) be submitted to the Director-General for approval by the end of June 2012;
 - (b) describe the measures that would be implemented to ensure compliance with the relevant conditions of this approval, including a real-time noise management system that employs both reactive and proactive mitigation measures;
 - (c) include a noise monitoring program that:
 - uses a combination of real-time and supplementary attended monitoring measures to evaluate the performance of the Mt Thorley-Warkworth mine complex;
 - includes a protocol for determining exceedances of the relevant conditions in this approval;
 - evaluates and reports on the effectiveness of the real-time noise management system;
 - provides for the annual validation of the noise model for the Mt Thorley-Warkworth mine complex; and

- (d) include a protocol that has been prepared in consultation with the owners of nearby mines (including the Bulga, Wambo and Hunter Valley Operations mines) to minimise the cumulative noise impacts of the mines.

BLASTING

Blasting Criteria

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

Table 8: Blasting criteria

Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
Residence on privately owned land	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months
Wambo Homestead, Bulga Bridge, St Phillips Church	-	10	0%
Aboriginal grinding grooves: • MTW-266~WSW-09-22; • MTW-267~WSW-09-22; • MTW-268~WSW-209-23; and • Mt Thorley M 37-6-0163 (before it is relocated)	-	To be specified in the Blast Management Plan (see below)	0%
All public infrastructure	-	50 or alternatively a specific limit determined to the satisfaction of the Director-General by the structural design methodology in AS 2187.2-2006, or its latest version	0%

Note: To identify the Aboriginal grinding grooves referred to in this table, see the applicable figure in Appendix 7.

However, these criteria (except for the criteria for the Aboriginal grinding grooves) do not apply if the Proponent has a written agreement with the relevant owner, and has advised the Department in writing of the terms of this agreement.

Blasting Hours

12. The Proponent shall only carry out blasting on site between 7am and 6pm Monday to Saturday inclusive. No blasting is allowed on Sundays, public holidays, or at any other time without the written approval of the Director-General.

Blasting Frequency

13. The Proponent may carry out a maximum of:
- 3 blasts a day, unless an additional blast is required following a blast misfire; and
 - 15 blasts a week, averaged over a calendar year,
- for all operations at the Mt Thorley-Warkworth mine complex.

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

Note: For the purposes of this condition, a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the mine.

14. The Proponent shall not carry out more than 1 blast a day within 500 metres of the Putty Road and Golden Highway.

Property Inspections

15. If the Proponent receives a written request from the owner of any privately-owned land within 2 kilometres of the approved open cut mining pit/s on site for a property inspection to establish the baseline condition of any buildings and/or structures on his/her land, or to have a previous property inspection updated, then within 2 months of receiving this request the Proponent shall:
- (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to:
 - establish the baseline condition of any buildings and other structures on the land, or update the previous property inspection report; and
 - identify measures that should be implemented to minimise the potential blasting impacts of the project on these buildings and/or structures; and
 - (b) give the landowner a copy of the new or updated property inspection report.

Property Investigations

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

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

If the Proponent or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Director-General for resolution.

Operating Conditions

17. During mining operations on site, the Proponent shall:
- (a) implement best blasting practice to:
 - protect the safety of people and livestock in the area surrounding blasting operations;
 - protect public or private infrastructure/property in the area surrounding blasting operations from blasting damage; and
 - minimise the dust and fume emissions from blasting at the project;
 - (b) minimise the frequency and duration of any road closures, and avoid road closures during peak traffic periods;
 - (c) co-ordinate the timing of blasting on site with the timing of blasting at nearby mines (including the Bulga, Wambo, and Hunter Valley Operations mines) to minimise the cumulative blasting impacts of the mines; and
 - (d) operate a suitable system to enable the public to get up-to-date information on the proposed blasting schedule on site, to the satisfaction of the Director-General.
18. The Proponent shall not undertake blasting on site within 500 metres of:
- (a) any public road without the approval of the appropriate road authority; or
 - (b) any land outside the site that is not owned by the Proponent, unless:
 - the Proponent has a written agreement with the relevant landowner to allow blasting to be carried out closer to the land, and the Proponent has advised the Department in writing of the terms of this agreement, or
 - the Proponent has:
 - o demonstrated to the satisfaction of the Director-General that the blasting can be carried out closer to the land/public road without compromising the safety of the people or livestock on the land, or damaging the buildings and/or structures on the land; and
 - o updated the Blast Management Plan to include the specific measures that would be implemented while blasting is being carried out within 500 metres of the land.

Blast Management Plan

19. The Proponent shall prepare and implement a Blast Management Plan for the project to the satisfaction of the Director-General. This plan must:
- (a) be submitted to the Director-General for approval by the end of June 2012;
 - (b) propose and justify ground vibration limits for the protection of the Aboriginal grinding grooves or any alternative ground vibration limits for public infrastructure in the vicinity of the site;
 - (c) describe the measures that would be implemented to comply with the relevant conditions of this approval;

- (d) include a road closure management plan for blasting within 500 metres of a public road, that has been prepared in consultation with the RTA and Council;
- (e) include a blast monitoring program for evaluating the performance of the project, including:
 - compliance with the applicable criteria;
 - any blasting impacts on the heritage items specified in Table 8 above; and
 - minimising the fume emissions from the site; and
- (f) include a protocol that has been prepared in consultation with the owners of nearby mines (including the Bulga, Wambo and Hunter Valley Operations mines) to minimise the cumulative blasting impacts of the mines.

AIR QUALITY & GREENHOUSE GAS

Odour

20. The Proponent shall ensure that no offensive odours are emitted from the site, as defined under the POEO Act.

Greenhouse Gas Emissions

21. The Proponent shall implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Director-General.

Air Quality Criteria

22. Except for the air quality affected land in Table 1, the Proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate emissions generated by the Mt Thorley-Warkworth mine complex do not exceed the criteria listed in Tables 9, 10 and 11 at any residence on privately owned land, or on more than 25 percent of any privately owned land.

Table 9: Long term impact assessment criteria for particulate matter

Pollutant	Averaging period	^d Criterion
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³

Table 10: Short term impact assessment criterion for particulate matter

Pollutant	Averaging period	^d Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³

Table 11: Long term impact assessment criteria for deposited dust

Pollutant	Averaging period	Maximum increase ² in deposited dust level	Maximum total ¹ deposited dust level
^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month

Notes to Tables 9-11

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources);

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own);

^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and

^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Director-General.

Air Quality Acquisition Criteria

23. If particulate matter emissions generated by the Mt Thorley-Warkworth mine complex exceed the criteria in Tables 12, 13, and 14 at any residence on privately owned land, or on more than 25 percent of any privately owned land, then upon written request for acquisition from the landowner, the Proponent shall acquire the land in accordance with the procedures in conditions 8-9 of schedule 4.

Table 12: Long term land acquisition criteria for particulate matter

Pollutant	Averaging period	^d Criterion
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³

Table 13: Short term land acquisition criteria for particulate matter

Pollutant	Averaging period	^{da} Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 150 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	24 hour	^b 50 µg/m ³

Table 14: Long term land acquisition criteria for deposited dust

Pollutant	Averaging period	Maximum increase ² in deposited dust level	Maximum total ¹ deposited dust level
^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month

Notes to Tables 12-14

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources);

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own);

^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and

^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Director-General.

Operating Conditions

24. The Proponent shall:
- implement best practice air quality management to minimise the off-site odour, fume and dust emissions of the Mt Thorley-Warkworth mine complex;
 - minimise any visible off-site air pollution;
 - minimise the surface disturbance of the site;
 - regularly assess the real-time air quality monitoring and meteorological forecasting data and relocate, modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent; and
 - co-ordinate the air quality management on site with the air quality management at nearby mines (including the Bulga, Wambo and Hunter Valley Operations mines) to minimise the cumulative air quality impacts of the mines,
- to the satisfaction of the Director-General.

Air Quality and Greenhouse Gas Management Plan

25. The Proponent shall prepare and implement an Air Quality and Greenhouse Gas Management Plan for the Mt Thorley-Warkworth mine complex to the satisfaction of the Director-General. This plan must:
- be prepared in consultation with OEH, and be submitted to the Director-General for approval by the end of June 2012;
 - describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, including a real-time air quality management system that employs reactive and proactive mitigation measures;
 - include an air quality monitoring program that:
 - uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the development;
 - includes PM_{2.5} monitoring (although this obligation could be satisfied by the regional air quality monitoring network if sufficient justification is provided);
 - includes a protocol for determining exceedances of the relevant conditions of this consent; and
 - include a protocol that has been prepared in consultation with the owners of nearby mines (including the Bulga, Wambo and Hunter Valley Operations mines) to minimise the cumulative air quality impacts of the mines.

METEOROLOGICAL MONITORING

26. For the life of the project, the Proponent shall ensure that there is a meteorological station in the vicinity of the site that:
- complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline; and
 - is capable of continuous real-time measurement of temperature lapse rate in accordance with the *NSW Industrial Noise Policy*.

SOIL & WATER

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

Water Supply

27. The Proponent shall ensure that it has sufficient water for all stages of the project, and if necessary, adjust the scale of mining operations to match its available water supply, to the satisfaction of the Director-General.

Compensatory Water Supply

28. The Proponent shall provide compensatory water supply to any landowner of privately owned land whose water supply is adversely and directly impacted (other than an impact that is negligible) as a result of the project, in consultation with NOW, and to the satisfaction of the Director-General.

The compensatory water supply measures must provide an alternative long-term supply of water that is equivalent to the loss attributable to the project. Equivalent water supply should be provided (at least on an interim basis) within 24 hours of the loss being identified.

If the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

If the Proponent is unable to provide an alternative long-term supply of water, then the Proponent shall provide alternative compensation to the satisfaction of the Director-General.

Water Discharges

29. The Proponent shall ensure that all surface water discharges from the site comply with the:
- (a) discharge limits (both volume and quality) set for the project in any EPL; or
 - (b) relevant provisions of the POEO Act or *Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002*.

Water Transfers

30. The Proponent may transfer water from the Mt Thorley-Warkworth mine complex to the Hunter Valley Operations mine or Redbank Power Station, and receive water from these two facilities on the site.

Water Management Plan

31. The Proponent shall prepare and implement a Water Management Plan for the Mt Thorley-Warkworth mine complex to the satisfaction of the Director-General. This plan must be prepared in consultation with NOW and OEH by suitably qualified and experienced persons whose appointment has been approved by the Director-General, and submitted to the Director-General by the end of June 2012.

In addition to the standard requirements for management plans (see Condition 2 of Schedule 5), this plan must include:

- (a) a Site Water Balance that:
 - includes details of:
 - o sources and security of water supply, including contingency planning for future reporting periods;
 - o water use on site;
 - o water management on site, including details of water sharing between neighbouring mining operations;
 - o any off-site water transfers and discharges;
 - o reporting procedures, including comparisons of the site water balance for each calendar year; and
 - describes the measures that would be implemented to minimise clean water use on site;
- (b) a Surface Water Management Plan, that includes:
 - a detailed description of the water management system on site, including the:
 - o clean water diversion systems;
 - o erosion and sediment controls; and
 - o water storages;
 - detailed plans, including design objectives and performance criteria, for:
 - o design and management of the final voids;
 - o design and management of any tailings dams;
 - o reinstatement of drainage lines on the rehabilitated areas of the site; and
 - o control of any potential water pollution from the rehabilitated areas of the site;
 - performance criteria for the following, including trigger levels for investigating any potentially adverse impacts associated with the project:

- o the water management system;
 - o surface water quality of Wollombi Brook and the Hunter River; and
 - o stream and riparian vegetation health of Loders Creek, Wollombi Brook and the Hunter River;
 - a program to monitor:
 - o the effectiveness of the water management system; and
 - o surface water flows and quality, stream and riparian vegetation health in Loders Creek, Wollombi Brook and the Hunter River (in so far as it could potentially be affected by the project);
 - a plan to respond to any exceedances of the performance criteria, and mitigate and/or offset any adverse surface water impacts of the project; and
- (c) a Groundwater Management Plan, which includes:
- groundwater assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts;
 - a program to monitor:
 - o groundwater inflows to the open cut mining operations;
 - o the impacts of the project on:
 - the alluvial aquifers, including additional groundwater monitoring bores as required by NOW;
 - base flows to Wollombi Brook;
 - any groundwater bores on privately-owned land that could be affected by the project;
 - the ephemeral perched aquifer associated with the Aeolian sand sheets; and
 - groundwater dependent ecosystems, including the Hunter Lowlands Redgum Forest EEC and River Red Gum Floodplain Woodland EEC located in the Wollombi Brook alluvium downstream of the site;
 - o the seepage/leachate from water storages, backfilled voids and the final void;
 - a program to validate the groundwater model for the project, including an independent review of the model every 5 years, and comparison of monitoring results with modelled predictions; and
 - a plan to respond to any exceedances of the performance criteria.

BIODIVERSITY

Biodiversity Offset Strategy

32. The Proponent shall implement the biodiversity offset strategy described in the EA, summarised in Table 15 and shown conceptually in Appendix 6 to the satisfaction of the Director-General.

Table 15: Summary of the Biodiversity Offset Strategy

Area	Offset Type	Minimum Size (hectares)
Southern Biodiversity Area	Existing vegetation to be enhanced and additional vegetation to be established, with the restoration of at least 38.6 ha of the Warkworth Sands Woodland EEC and 277.9 ha of the Central Hunter Grey Box-Ironbark Woodland and/or Central Hunter Ironbark-Spotted Gum-Grey Box Forest EECs	977.5
Northern Biodiversity Area	Existing vegetation to be enhanced and additional vegetation to be established, with the restoration of at least 195.8 ha of the Warkworth Sands Woodland EEC and 23.1 ha of the Central Hunter Grey Box-Ironbark Woodland and/or Central Hunter Ironbark-Spotted Gum-Grey Box Forest EECs	342
Goulburn River Biodiversity Area	Existing vegetation to be enhanced	1,299.3
Seven Oaks Biodiversity Area	Existing vegetation to be enhanced and additional vegetation to be established, with the restoration of at least 8.5 ha of derived native grassland and 160.2 ha of Cassina/Acacia Shrubland	523
Putty Biodiversity Area	Existing vegetation to be enhanced and additional vegetation to be established, with the restoration of at least 12.2 ha of derived native grassland	379

Bowditch Biodiversity Area	Existing vegetation to be enhanced and additional vegetation to be established, with the restoration of at least 2.3 ha of derived native grassland	520
Additional Offset Area	Existing woodland vegetation	750
Rehabilitation Area	Vegetation to be established, with the restoration of at least 2,114 ha of Central Hunter Grey Box-Ironbark Woodland and/or Central Hunter Ironbark-Spotted Gum-Grey Box Forest EECs	2,114
TOTAL		6,904.8

Notes:

- To identify the areas referred to in Table 15, see the applicable figures in Appendix 6;
- The strategy includes the enhancement of existing fauna habitat within these areas, and where necessary the targeted establishment of naturally scarce fauna habitat; and
- The Additional Offset Area must have at least 750 hectares of woodland vegetation.

33. By the end of December 2012, unless the Director-General agrees otherwise, the Proponent shall update the biodiversity offset strategy referred to above, in consultation with the Department and OEH, to the satisfaction of the Director-General. The updated strategy must include the specific details on the Additional Offset Area, and include the additional land to be added to the Southern Biodiversity Area under condition 64 of schedule 3 (see Figure 12 of Appendix 6).

Note: The Additional Offset Area should be directed towards the conservation and enhancement of vegetation for the Central Hunter Grey Box–Ironbark Woodland and Central Hunter Ironbark–Spotted Gum–Grey Box Forest EECs. If the Proponent is unable to secure suitable land to offset the residual impacts of the project on these EECs, and has demonstrated to the satisfaction of the Director-General that it has used its best endeavours to secure this land, then the Proponent should ensure that the Additional Offset Area is directed towards the achievement of strategic conservation initiatives within the region, such as the Great Eastern Ranges initiative.

34. The Proponent shall ensure that the biodiversity offset strategy and/or rehabilitation strategy is focused on the re-establishment of:
- the following endangered ecological communities:
 - Warkworth Sands Woodland;
 - Central Hunter Grey Box–Ironbark Woodland; and
 - Central Hunter Ironbark–Spotted Gum–Grey Box Forest; and
 - habitat for threatened fauna species, including the:
 - Regent Honey Eater, Swift Parrot, Glossy Black Cockatoo, Brown Treecreeper, Diamond Firetail, Grey-crowned Babbler, Hooded Robin, Little Lorikeet, Varied Sittella, Spotted Harrier, and Speckled Warbler; and
 - Eastern Bent-wing Bat, Eastern Freetail Bat, Large-eared Pied Bat, Little Bentwing Bat, Large-footed Myotis and Squirrel Glider.
35. By the end of December 2025, unless the Director-General agrees otherwise, the Proponent shall commission suitably qualified, experienced and independent persons - whose appointment has been approved by the Director-General - to undertake an audit of the revegetation of the rehabilitation area to the satisfaction of the Director-General. This audit must:
- include consultation with OEH and DRE;
 - assess the performance of the Central Hunter Grey Box–Ironbark Woodland and/or Central Hunter Ironbark–Spotted Gum–Grey Box Forest EEC revegetation in the rehabilitation area completed to date against the completion criteria in the Rehabilitation Management Plan;
 - identify any measures that should be implemented to improve the performance of the rehabilitation; and
 - if the completion criteria have not been met, or are not adequately trending towards being met, determine the likely ecological value of the rehabilitation once completed, and recommend additional measures to augment the offset strategy to ensure that it adequately offsets the project's impacts on these EECs.

If the audit recommends the implementation of additional measures to augment the offset strategy in accordance with (d) above, then within 6 months of the completion of the audit the Proponent shall revise the biodiversity offset strategy, in consultation with the Department and OEH, to the satisfaction of the Director-General.

Long Term Security of Offsets

36. The Proponent shall make suitable arrangements to provide for the long term security of the:
- (a) Southern, Northern, Seven Oaks, Putty, Goulburn River and Bowditch Biodiversity Areas by the end of December 2012;
 - (b) Additional Offset Area by the end of December 2013; and
 - (c) woodland vegetation to be established in the rehabilitation area within one year of the completion of mining operations on site, or as otherwise agreed by the Director-General, to the satisfaction of the Director-General.

Warkworth Sands Woodland

37. By the end of December 2012, unless the Director-General agrees otherwise, the Proponent shall prepare a recovery plan, or provide sufficient funding for the preparation of a recovery plan, for the Warkworth Sands Woodland EEC to the satisfaction of OEH.
38. The Proponent shall:
- (a) provide at least \$500,000 of funding to support the ongoing implementation of the existing Warkworth Sands Woodland Research Program being undertaken by the University of New England; and
 - (b) ensure that the findings of this research program are published in a suitable scientific publication.
39. The Proponent shall carry out a rehabilitation trial on the former quarry within the Southern Biodiversity Area to the satisfaction of the Director-General. The aim of this trial is to investigate the feasibility of establishing Warkworth Sands Woodland on disturbed land. By the end of December 2012, the Proponent shall submit a detailed plan for the trial to the Director-General for approval. This plan must:
- (a) be prepared by suitably qualified and experienced persons whose appointment has been approved by the Director-General;
 - (b) be prepared in consultation with OEH and DRE;
 - (c) describe the measures that would be implemented to:
 - carry out the trial; and
 - evaluate, monitor and report on its effectiveness; and
 - (d) provide for the findings of the research program to be published in a suitable scientific publication.
40. The Proponent shall:
- (a) ensure that the project does not have an adverse impact on the Warkworth Sands Woodland EEC adjacent to the disturbance area, and in particular the areas adjacent to the approved mining pit;
 - (b) monitor the effects of the project on this EEC, including the perched aquifer within the sandsheet; and
 - (c) implement suitable contingency measures if this monitoring suggests that the project may be having an adverse effect on this EEC.

Note: The detailed measures to be implemented to satisfy this condition are to be outlined in the Biodiversity Management Plan.

41. By the end of June 2012, the Proponent shall:
- (a) consult with the Council, Department of Defence and owners of the Bulga and Wambo mines;
 - (b) determine the feasibility of implementing a single management regime for all of the Warkworth Sands Woodland in existing conservation areas or on other Council-owned, Defence-owned or mine-owned land;
 - (c) report of the results of this consultation; and
 - (d) if agreement is reached to implement a single management regime, then describe – in broad terms – the proposed management regime.

Notes:

- *The details of any proposed management regime are to be outlined in the Biodiversity Management Plan (of each of the mines); and*
- *The proposed management could also be extended to cover additional vegetation communities, such as the Central Hunter Grey Box–Ironbark Woodland and Central Hunter Ironbark–Spotted Gum–Grey Box Forest EECs.*

Spotted Gum-Ironbark EECs

42. The Proponent shall prepare and implement a Hunter Ironbark Research Program for the project to the satisfaction of the Director-General. This program must:
- (a) be prepared in consultation with OEH and the owner of the Ravensworth mine complex;
 - (b) be submitted to the Director-General for approval by the end of June 2012;
 - (c) be directed towards encouraging research into the mapping and recovery of the establishment of Central Hunter Grey Box–Ironbark Woodland and/or Central Hunter Ironbark–Spotted Gum–

- Grey Box Forest EECs within the rehabilitation area, and in particular the ground stratum plant species of these EECs; and
- (d) provide for the findings of the research program to be published in a suitable scientific publication.

Note: The approval for the Ravensworth mine complex includes a similar condition. The aim is for both programs to complement one another, and for the findings of each program to be used to enhance the rehabilitation both these (and other) mines in the region.

43. The Proponent shall allocate at least \$500,000 towards the implementation of the program.

Orchids

44. By the end of December 2012, the Proponent shall:
- (a) carry out additional surveys within the proposed disturbance area to the west of Wallaby Scrub Road for:
- *Pterostylis gibbosa*;
 - *Diuris* sp. *Aff denrobioides*; and
 - *Diuris tricolor*; and
- (b) submit the survey results to both the Department and OEH.
45. If these surveys identify these orchids within the area, then the Proponent shall prepare an implement a Translocation Plan for these orchids to the satisfaction of the Director-General. This plan must:
- (a) be prepared by suitably qualified and experienced persons whose appointment has been approved by the Director-General;
- (b) be prepared in consultation with the Department and OEH;
- (c) be submitted to the Director-General for approval by the end of June 2013;
- (d) describe the measures that would be implemented to:
- translocate and manage the orchids;
 - monitor and report on the success of the translocation; and
 - ensure suitable contingency measures are implemented if the monitoring suggests the translocation is not working as well as intended; and
- (e) provide for the findings of the translocation process to be published in a suitable scientific publication.

Hunter Lowlands Redgum Forest and River Red Gum Floodplain Woodland EECs

46. The Proponent shall ensure that the project does not have an adverse impact on the Hunter Lowlands Redgum Forest EEC and River Red Gum Floodplain Woodland EEC located in the Wollombi Brook alluvium downstream of the site.

Additional Baseline Surveys – Biodiversity Areas

47. By the end of December 2012, the Proponent shall carry out additional flora and fauna surveys within the Goulburn River, Putty, Seven Oaks, and Bowditch Biodiversity Areas to improve the quality of the baseline data of these areas, particularly in relation to threatened fauna species and their habitats.

Management of Vegetation in the Buffer Land

48. The Proponent shall manage the vegetation in the buffer land in conjunction with the management of the vegetation within the adjoining Southern Biodiversity Area to the satisfaction of the Director-General.

Note: The buffer land referred to in this condition is the land between the western edge of the approved disturbance area and the Southern Biodiversity Area (see the applicable figures in Appendix 3 and 6). It does not form part of the conservation area, and may be the subject of a future development proposal.

Biodiversity Management Plan

49. The Proponent shall prepare and implement a Biodiversity Management Plan for the project to the satisfaction of the Director-General. This plan must:
- (a) be prepared in consultation with OEH, and submitted to the Director-General for approval by the end of December 2012;
- (b) describe how the implementation of the biodiversity offset strategy would be integrated with the overall rehabilitation of the site;
- (c) describe the short, medium, and long term measures that would be implemented to:
- manage the remnant vegetation and habitat on the site and in the offset area/s (if and when applicable); and
 - implement the biodiversity offset strategy (if and when applicable), including detailed performance and completion criteria;
- (d) include detailed performance and completion criteria for evaluating the performance of the biodiversity offset strategy, and triggering remedial action (if necessary);

- (e) include a detailed description of the measures that would be implemented over the next 3 years, including the procedures to be implemented for:
 - enhancing the quality of existing vegetation and fauna habitat;
 - restoring native vegetation and fauna habitat on the biodiversity areas and rehabilitation area through focusing on assisted natural regeneration, targeted vegetation establishment and the introduction of naturally scarce fauna habitat features (where necessary);
 - landscaping the land on site that faces public roads to minimise the visual and lighting impacts of the project;
 - maximising the salvage of resources within the approved disturbance area - including vegetative, soil and cultural heritage resources – for beneficial reuse in the enhancement of the biodiversity areas or rehabilitation area;
 - collecting and propagating seed;
 - minimising the impacts on fauna on site, including undertaking pre-clearance surveys;
 - managing any potential conflicts between the proposed restoration works in the biodiversity areas and any Aboriginal heritage values (both cultural and archaeological);
 - managing salinity;
 - controlling weeds and feral pests;
 - controlling erosion;
 - managing grazing and agriculture on site;
 - controlling access; and
 - bushfire management;
- (f) include a seasonally-based program to monitor and report on the effectiveness of these measures, and progress against the detailed performance and completion criteria;
- (g) identify the potential risks to the successful implementation of the biodiversity offset strategy, and include a description of the contingency measures that would be implemented to mitigate against these risks; and
- (h) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

Conservation Bond

50. Within 6 months of the approval of the biodiversity offset strategy, the Proponent shall lodge a conservation bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria of the Biodiversity Management Plan.

The sum of the bond shall be determined by:

- (a) calculating the full cost of implementing the offset strategy (other than land acquisition costs); and
- (b) employing a suitably qualified quantity surveyor to verify the calculated costs.

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

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

With the agreement of the Director-General, this bond may be combined with rehabilitation security deposit administered by DRE.

HERITAGE

Conservation

51. The Proponent shall:
- (a) add the area shaded in black on Figure 18 in Appendix 7 to the Wollombi Brook Heritage Conservation Area;
 - (b) conserve the Wollombi Brook Heritage Conservation Area in perpetuity; and
 - (c) enhance the Aboriginal cultural heritage and biodiversity values of this area, to the satisfaction of the Director General.
52. The Applicant shall prepare and implement an Aboriginal Heritage Conservation Strategy for the project to the satisfaction of the Director-General. This strategy must:
- (a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Director-General;
 - (b) be prepared in consultation with the Department, OEH and Aboriginal stakeholders;
 - (c) be submitted to the Director-General for approval by the end of June 2012, unless the Director-General agrees otherwise;
 - (d) identify the Aboriginal heritage values (both archaeological and cultural) of any biodiversity offset areas for the project, and describe how these values would be conserved and enhanced;

- (e) investigate the potential for :
 - expanding the Wollombi Brook Conservation Area to include additional land within the Wambo mining lease area; and/or
 - collaborative management of the Aboriginal heritage values of the land within the Southern Biodiversity Area and the adjoining Wambo-owned land adjacent to the conservation area, in consultation with the owner of the Wambo mine;
- (f) provide for the establishment, conservation and enhancement of off-site Aboriginal heritage conservation areas, including the Wollombi Brook Conservation Area, that have comparable Aboriginal heritage values (both cultural and archaeological) to the areas that would be developed on site;
- (g) describe the measures that would be implemented to provide appropriate long term security for the proposed Aboriginal heritage conservation areas; and
- (h) include an action plan for the implementation of the strategy.

Notes:

- *The Aboriginal heritage conservation area/s may be combined with the biodiversity conservation areas required under this approval; and*
- *The detailed measures for the implementation of the strategy are to be outlined in the Heritage Management Plan.*

53. Within 2 years of the approval of the Aboriginal Heritage Conservation Strategy, the Proponent shall demonstrate to the satisfaction of the Director General that it has made suitable arrangements to provide appropriate long term security for the Aboriginal heritage conservation area/s identified in the strategy.

Human Remains

54. This approval does not allow the Proponent to disturb any human remains found on the site.

Protection of Heritage Items

55. The Proponent shall protect the heritage items identified in Table 1 of Appendix 7.

Salvage

56. Prior to carrying out any development on site that could affect the heritage items identified in Table 2 of Appendix 7, the Proponent shall salvage those items in consultation with the relevant Aboriginal stakeholders, and in accordance with methodologies approved by the Director General.

Hunter Valley Sand Bodies Research Study

57. The Proponent shall undertake a Hunter Valley Sand Bodies Research Study to the satisfaction of the Director-General. This study must:
- (a) be undertaken by suitably qualified and experienced persons whose appointment has been approved by the Director-General, and in consultation with the Department, OEH and Aboriginal stakeholders; and
 - (b) be directed towards locating and evaluating sand bodies likely to contain evidence of early Aboriginal habitation (Pleistocene and early Holocene) in the Upper Hunter Valley.
58. The Proponent shall:
- (a) submit the research design for the study, as well as an action plan for undertaking the study, to the Director-General for approval by the end of December 2012; and
 - (b) ensure that the findings of the study are published in a suitable scientific journal.

Archaeological Excavation - Warkworth Sands

59. Prior to carrying out any development within the Warkworth Sand Sheet (identified in Figure 20 of Appendix 7), the Proponent shall undertake an Archaeological Excavation Program within the sand sheet to the satisfaction of the Director-General. This program must be:
- (a) undertaken by suitably qualified and experienced persons whose appointment has been endorsed by the Director-General, and in consultation with the Department, OEH, and Aboriginal Stakeholders;
 - (b) use a methodology and research design that allows for the testing and salvage of any archaeological deposits;
 - (c) provide for the detailed analysis of any heritage items recovered during the program, and their associated archaeological context/s, and further investigations of the material collected (including but not limited to residue analysis, dating, artefact analysis); and
 - (d) include a strategy for the short and long term management of the heritage items recovered during the excavations.

Prior to carrying out any archaeological excavation works within the sand sheet, the Proponent shall obtain the Director-General's approval for the detailed archaeological excavation program.

Great North Road

60. By the end of December 2012, unless the Director-General agrees otherwise, the Proponent shall carry out further historical and physical archaeological investigations on site in relation to the Great North Road to the satisfaction of the Director-General. These investigations must:
- (a) be undertaken by suitably qualified and experienced persons whose appointment has been endorsed by the Director-General, and in consultation with the Department and OEH;
 - (b) use a suitable methodology for the archaeological investigation (to identify significant remnant road fabric);
 - (c) provide for the detailed analysis of any heritage items discovered during the investigations;
 - (d) include management options for these heritage items (including options for relocation); and
 - (e) if the findings of the investigations are significant, provide for the preparation and implementation of a heritage interpretation plan.

Bulga RAAF Base

61. By the end of December 2012, unless the Director-General agrees otherwise, the Proponent shall prepare:
- (a) a detailed archival record and survey of the whole Bulga RAAF Base in accordance with the applicable heritage guidelines; and
 - (b) a conservation management plan for the parts of the base that are not to be developed, which includes an assessment of the structural integrity of the kitchen building, and describes what measures would be implemented (if any) to enhance its structural integrity,
- to the satisfaction of the Director-General.

Following approval, the Proponent shall implement the conservation management plan to the satisfaction of the Director-General.

Heritage Management Plan

62. The Proponent shall prepare and implement a Heritage Management Plan for the project to the satisfaction of the Director-General. This plan must:
- (a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Director-General;
 - (b) be prepared in consultation with OEH and the Aboriginal stakeholders (in relation to the management of Aboriginal heritage values);
 - (c) be submitted to the Director-General for approval by the end of June 2012, unless the Director-General agrees otherwise;
 - (d) include the following for the management of Aboriginal Heritage:
 - a detailed plan for the implementation of the approved Aboriginal Heritage Conservation Strategy;
 - a description of the measures that would be implemented for:
 - o protecting, monitoring and/or managing the heritage items identified in Table 1 of Appendix 7;
 - o managing the heritage items identified in Table 2 of Appendix 7, including any proposed archaeological investigations and/or salvage measures;
 - o managing the discovery of any human remains or previously unidentified Aboriginal objects on site;
 - o maintaining and managing reasonable access for Aboriginal stakeholders to heritage items on site and within any Aboriginal heritage conservation areas;
 - o ongoing consultation with the Aboriginal stakeholders in the conservation and management of Aboriginal cultural heritage both on site and within any Aboriginal heritage conservation areas; and
 - o ensuring any workers on site receive suitable heritage inductions prior to carrying out any development on site, and that suitable records are kept of these inductions;
 - a strategy for the storage of any heritage items salvaged on site, both during the project and in the long term;
 - (e) include the following for the management of Historic Heritage:
 - a detailed plan for the implementation of any measures resulting from the further investigations into the Great North Road;
 - the conservation management plan for the Bulga RAAF Base;
 - a description of the measures that would be implemented for:
 - o managing the discovery of human remains or previously unidentified heritage items on site; and
 - o ensuring any workers on site receive suitable heritage inductions prior to carrying out any development on site, and that suitable records are kept of these inductions.

Note: It is accepted that the detailed plan for the implementation of the Aboriginal Heritage Conservation Strategy, the detailed plan for the implementation of the any measures resulting from the further investigations into the Great North Road, and the conservation management plan for the Bulga RAAF Base will not be submitted with the initial Heritage Management Plan. They should be progressively added to the plan once they are completed

TRANSPORT

Wallaby Scrub Road

63. This approval allows open cut mining through Wallaby Scrub Road, but does not authorise the proposed relocation of Wallaby Scrub Road.

Note: The Proponent requires an approval under the Roads Act 1993 to close Wallaby Scrub Road, and enable the implementation of the approved mine plan. It also needs to obtain a mining lease over the road under the Mining Act 1992.

Intersection Upgrades

64. By the end of December 2012, unless the Director-General agrees otherwise, the Proponent shall:
- (a) improve the channelisation of the southbound intersection of Putty Road and the Golden Highway intersection to the satisfaction of the RTA; and
 - (b) pay the RTA \$1 million towards the upgrade of the intersection of Broke Road and the Golden Highway, or alternatively carry out upgrade works of an equivalent value on the intersection to the satisfaction of the RTA.

Putty Road Bridge

65. The Proponent shall construct and maintain the third Putty Road bridge between the Warkworth and Mt Thorley mines to the satisfaction of the RTA, and bear all costs associated with the construction, maintenance and removal of this bridge during the rehabilitation of the site.

Rural Fire Service – Mitigation Measures

66. Prior to the closure of Wallaby Scrub Road, the Proponent shall:
- (a) consult with Council and the Rural Fire Service;
 - (b) investigate and evaluate options for minimising the effectiveness/responsiveness of the region's Rural Fire Services during emergencies due to the closure of Wallaby Scrub Road; and
 - (c) submit a report to the Director-General for approval describing which of the options would be implemented, with an action plan for the implementation of any detailed mitigation measures.

Following approval, the Proponent shall implement the agreed mitigation measures to the satisfaction of the Director-General.

Monitoring of Coal Transport

67. The Proponent shall:
- (a) keep records of the amount of coal transported from the Mt Thorley-Warkworth mine complex in each calendar year; and
 - (b) make these records publicly available on its website at the end of each calendar year.

VISUAL

Operating Conditions

68. The Proponent shall:
- (a) implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the project;
 - (b) establish and maintain an effective vegetative screen along the boundary of the site that adjoins public roads;
 - (c) ensure no outdoor lights shine above the horizontal; and
 - (d) ensure that all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting*.

Visual Impact Management Plan

69. The Proponent shall prepare and implement a Visual Impact Management Plan for the project to the satisfaction of the Director-General. This plan must:
- (a) be prepared by suitably qualified and experienced persons whose appointment has been approved by the Director-General;
 - (b) be prepared in consultation with Council and the Department;
 - (c) be submitted to the Director General for approval by the end of February 2012;
 - (d) identify the residences on privately-owned land within the primary visual catchment (see the figure in Appendix 8) surrounding the Mt Thorley-Warkworth mine complex that are likely to have significant direct views of the mining operations at some stage during the project; and describe (in general terms) the additional mitigation measures that could be implemented to reduce the visibility of the mining operations on site from these residences; and
 - (e) identify options for enhancing the planting on public land, including road reserves, surrounding the site to reduce the visual impacts of the project on the primary visual catchment; describe

which of these options would be implemented; and include an action plan for the implementation of these options.

70. Within 1 month of the approval of the Visual Impact Management Plan, the Proponent shall notify in writing the owners of the residences/land identified in 70(d) above, that they are entitled to ask the Proponent to implement additional visual mitigation measures to reduce the visibility of these mining operations from the residences on their properties.

Additional Visual Impact Mitigation

71. Upon receiving a written request from the owner of any residence on privately-owned land which has, or would have, significant direct views of the mining operations on site during the project, the Proponent shall implement additional visual impact mitigation measures (such as landscaping treatments or vegetation screens) to reduce the visibility of these mining operations from the residences on their properties.

These mitigation measures must be reasonable and feasible, and must be implemented within a reasonable timeframe.

If the Proponent and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

Notes:

- *The additional visual impact mitigation measures must be aimed at reducing the visibility of the mining operations on site from significantly affected residences, and do not require measures to reduce the visibility of the mining operations from other locations on the affected properties;*
- *The additional visual impact mitigation measures do not necessarily have to include the implementation of measures on the affected property itself (i.e. the additional measures could involve the implementation of measures outside the affected property boundary that provide an effective reduction in visual impacts); and*
- *Except in exceptional circumstances, the Director-General will not require additional visual impact mitigation to be undertaken for residences that are more than 5 kilometres from the mining operations.*

BUSHFIRE MANAGEMENT

72. The Proponent shall:
- (a) ensure that the project is suitably equipped to respond to any fires on site; and
 - (b) assist the Rural Fire Service and emergency services as much as possible if there is a fire in the vicinity of the site.

WASTE

73. The Proponent shall:
- (a) implement all reasonable and feasible measures to minimise the waste (including coal reject) generated by the project;
 - (b) ensure that the waste generated by the project is appropriately stored, handled and disposed of; and
 - (c) monitor and report on effectiveness of the waste minimisation and management measures in the Annual Review.

REHABILITATION

Rehabilitation Objectives

74. The Proponent shall rehabilitate the site to the satisfaction of the Executive Director, Mineral Resources in DRE. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EA (and depicted conceptually in the figures in Appendix 9), and comply with the objectives in Table 16.

Table 16: Rehabilitation Objectives

Feature	Objective
Mine site (as a whole), including the final void	Safe, stable & non-polluting
Surface infrastructure	To be decommissioned and removed, unless the Executive Director, Mineral Resources in DRE agrees otherwise
Other land	Establish at least: • 2,114 ha of Central Hunter Grey Box–Ironbark Woodland and/or Central Hunter Ironbark–Spotted Gum–Grey Box Forest; and • 218.5 ha of open woodland.
Community	Minimise the adverse socio-economic effects associated with mine closure

Progressive Rehabilitation

72. The Proponent shall rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance.

Note: It is accepted that some parts of the site that are progressively rehabilitated may be subject to further disturbance at some later stage of the project.

Rehabilitation Management Plan

73. The Proponent shall prepare and implement a Rehabilitation Management Plan to the satisfaction of the Executive Director, Mineral Resources in DRE. This plan must:
- (a) be prepared in consultation with the Department, NOW, OEH, Council and the CCC;
 - (b) be submitted to the Executive Director, Mineral Resources in DRE by the end of April 2012;
 - (c) be prepared in accordance with any relevant DRE guideline;
 - (d) describe how the rehabilitation of the site would be integrated with the implementation the biodiversity offset strategy;
 - (e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);
 - (f) describe the measures that would be implemented to ensure compliance with the relevant conditions of this approval, and address all aspects of rehabilitation including mine closure, final landform, and final land use;
 - (g) include a program to monitor and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and
 - (h) build to the maximum extent practicable on the other management plans required under this approval.
-

SCHEDULE 4 ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS/TENANTS

1. By the end of December 2011, the Proponent shall:
 - (a) notify in writing the owners of:
 - the land listed in Table 1 of schedule 3 that they have the right to require the Proponent to acquire their land at any stage during the project;
 - any residence on the land listed in Table 1 and 2 of schedule 3 that they have the right to request the Proponent to ask for additional noise and/or air quality mitigation measures to be installed at their residence at any stage during the project; and
 - any privately-owned land within 2 kilometres of the approved open cut mining pit/s that they are entitled to ask for an inspection to establish the baseline condition of any buildings or structures on their land, or to have a previous property inspection report updated;
 - (b) notify the tenants of any mine-owned land of their rights under the statement of commitments of this approval; and
 - (c) send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the owners and/or existing tenants of any land (including mine-owned land) where the predictions in the EA identify that dust emissions generated by the project are likely to be greater than the relevant air quality criteria in schedule 3 at any time during the life of the project.
2. Prior to entering into any tenancy agreement for any land owned by the Proponent that is predicted to experience exceedances of the recommended dust and/or noise criteria, or for any of the land listed in Table 1 that is subsequently purchased by the Proponent, the Proponent shall:
 - (a) advise the prospective tenants of the potential health and amenity impacts associated with living on the land, and give them a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time); and
 - (b) advise the prospective tenants of the rights they would have under the statement of commitments of this approval, to the satisfaction of the Director-General.
3. As soon as practicable after obtaining monitoring results showing:
 - (a) an exceedance of the relevant criteria in schedule 3, the Proponent shall notify the affected landowner in writing of the exceedance, and provide regular monitoring results to each of these parties until the project is complying with the relevant criteria again; and
 - (b) an exceedance of the relevant air quality criteria schedule 3, the Proponent shall send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and/or existing tenants of the land (including the tenants of any mine-owned land).

INDEPENDENT REVIEW

Landowners

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

If the Director-General is satisfied that an independent review is warranted, then within 2 months of the Director-General's decision, the Proponent shall:

- (a) commission a suitably qualified, experienced and independent expert, whose appointment has been approved by the Director-General, to:
 - consult with the landowner to determine his/her concerns;
 - conduct monitoring to determine whether the project is complying with the relevant impact assessment criteria in schedule 3; and
 - if the project is not complying with these criteria then:
 - o determine if the more than one mine is responsible for the exceedance, and if so the relative share of each mine regarding the impact on the land;
 - o identify the measures that could be implemented to ensure compliance with the relevant criteria; and
 - (b) give the Director-General and landowner a copy of the independent review.
5. If the independent review determines that the project is complying with the criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.

If the independent review determines that the project is not complying with the relevant criteria in schedule 3, and that the project is primarily responsible for this non-compliance, then the Proponent shall:

- (a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent expert, and conduct further monitoring until the project complies with the relevant criteria; or
 - (b) secure a written agreement with the landowner to allow exceedances of the relevant impact assessment criteria,
- to the satisfaction of the Director-General.

If the independent review determines that the project is not complying with the relevant acquisition criteria, and that the project is primarily responsible for this non-compliance, then upon receiving a written request from the landowner, the Proponent shall acquire all or part of the landowner's land in accordance with the procedures in condition 8-9 below.

6. If the independent review determines that the relevant criteria are being exceeded, but that more than one mine is responsible for this exceedance, then together with the relevant mine/s the Applicant shall:
 - (a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent expert, and conduct further monitoring until there is compliance with the relevant criteria; or
 - (b) secure a written agreement with the landowner and other relevant mine/s to allow exceedances of the relevant impact assessment criteria,
 to the satisfaction of the Director-General.

If the independent review determines that the development is not complying with the relevant acquisition criteria in schedule 3, but that more than one mine is responsible for this non-compliance, then upon receiving a written request from the landowner, the Applicant shall acquire all or part of the landowner's land on as equitable a basis as possible with the relevant mine/s, in accordance with the procedures in conditions 8-9 below.

Biodiversity & Heritage

7. If a person has good reason to believe the Proponent is not implementing the biodiversity and/or heritage conditions in schedule 3 satisfactorily, then he/she may ask the Director-General in writing for an independent review of the matter.

If the Director-General is satisfied that an independent review is warranted, then within 2 months of the Director-General's decision, the Proponent shall:

- (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to:
 - consult with the person and/or any relevant agencies;
 - investigate the person's complaints/claims;
 - review the environmental performance of the Proponent;
 - determine whether the Proponent's performance is satisfactory or not; and if necessary
 - recommend measures to improve the Proponent's performance; and
- (b) give the Director-General and complainant a copy of the independent review.

LAND ACQUISITION

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

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

Upon receiving such a request, the Director-General will request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer to:

- consider submissions from both parties;
- determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (a)-(c) above;
- prepare a detailed report setting out the reasons for any determination; and
- provide a copy of the report to both parties.

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

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

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

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

9. The Proponent shall pay all reasonable costs associated with the land acquisition process described in condition 8 above, including the costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of this plan at the Office of the Registrar-General.

SCHEDULE 5

ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Proponent shall prepare and implement an Environmental Management Strategy for the Mt Thorley–Warkworth mine complex to the satisfaction of the Director-General. This strategy must:
 - (a) be submitted to the Director-General for approval by the end of June 2012;
 - (b) provide the strategic framework for environmental management of the mine complex;
 - (c) identify the statutory approvals that apply to the mine complex;
 - (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the mine complex;
 - (e) describe the procedures that would be implemented to:
 - keep the local community and relevant agencies informed about the operation and environmental performance of the mine complex;
 - receive, handle, respond to, and record complaints;
 - resolve any disputes that may arise;
 - respond to any non-compliance;
 - respond to emergencies; and
 - (f) include:
 - copies of any strategies, plans and programs approved under the conditions of this approval; and
 - a clear plan depicting all the monitoring to be carried out in relation to the project.

Management Plan Requirements

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

Annual Review

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

Revision of Strategies, Plans and Programs

4. Within 3 months of the submission of an:
 - (a) annual review under condition 3 above;
 - (b) incident report under condition 7 below;
 - (c) audit under condition 9 below; and
 - (d) any modification to the conditions of this approval,the Proponent shall review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Director-General.

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

Management of Cumulative Impacts

5. In conjunction with the owners of nearby mines (including the Bulga, Wambo and Hunter Valley Operations mines), the Proponent shall use its best endeavours to minimise the cumulative impacts of the project and these mines on the surrounding area to the satisfaction of the Director-General.

Community Consultative Committee

6. The Proponent shall establish and operate a new Community Consultative Committee (CCC) for the Mt Thorley-Warkworth mine complex to the satisfaction of the Director-General. This CCC must be operated in general accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects* (Department of Planning, 2007, or its latest version), and operating by the end of March 2012.

Notes:

- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval; and*
- *In accordance with the Department's guideline, the CCC should be comprised on an independent chair and appropriate representation from the Proponent, Council, recognised environmental groups and the local community.*

REPORTING

Incident Reporting

7. The Proponent shall notify, at the earliest opportunity, the Director-General and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the project, the Proponent shall notify the Director-General and any other relevant agencies as soon as practicable after the Proponent becomes aware of the incident. Within 7 days of the date of the incident, the Proponent shall provide the Director-General and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Regular Reporting

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

INDEPENDENT ENVIRONMENTAL AUDIT

9. By the end of March 2014, and every 3 years thereafter, unless the Director-General directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the Mt Thorley – Warkworth mine complex. This audit must:
 - (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Director-General;
 - (b) include consultation with the relevant agencies;
 - (c) assess the environmental performance of the Mt Thorley – Warkworth mine complex and assess whether it is complying with the requirements in this approval, and any other relevant approvals, relevant EPL/s and/or Mining Lease (including any assessment, plan or program required under these approvals);
 - (d) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals; and
 - (e) recommend measures or actions to improve the environmental performance of the Mt Thorley – Warkworth mine complex, and/or any strategy, plan or program required under these approvals.

Note: This audit team must be led by a suitably qualified auditor, and include experts in noise, air quality, ecology, Aboriginal heritage and any other fields specified by the Director-General.

10. Within 3 months of commissioning this audit, or as otherwise agreed by the Director-General, the Proponent shall submit a copy of the audit report to the Director-General, together with its response to any recommendations contained in the audit report.

ACCESS TO INFORMATION

11. The Proponent shall:
- (a) make the following information publicly available on its website:
 - the EA;
 - current statutory approvals for the project;
 - approved strategies, plans or programs required under the conditions of this approval;
 - a comprehensive summary of the monitoring results of the project, which have been reported in accordance with the various plans and programs approved under the conditions of this approval;
 - a complaints register, which is to be updated on a monthly basis;
 - minutes of CCC meetings;
 - the last five annual reviews;
 - any independent environmental audit, and the Proponent's response to the recommendations in any audit;
 - any other matter required by the Director-General; and
 - (b) keep this information up to date, to the satisfaction of the Director-General.
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**APPENDIX 1
SCHEDULE OF LAND**

Lot	Portion	Part	DP	Property Owner	Notes
146			970755	Coal & Allied Operations Pty Limited	
4			113342	Coal & Allied Operations Pty Limited	
1			129808	Coal & Allied Operations Pty Limited	
143			755267	Coal & Allied Operations Pty Limited	
142			755267	Coal & Allied Operations Pty Limited	
135			755267	Coal & Allied Operations Pty Limited	
1			129806	Coal & Allied Operations Pty Limited	
2			129806	Coal & Allied Operations Pty Limited	
708			749857	Miller Pohang Coal Company	
1			45576	Hodano (Miller Pohang Coal Company Pty Limited)	
1			42614	Miller Pohang Coal Company	
271			260663	Miller Pohang Coal Company Pty Limited	
	36		755270	Miller Pohang Coal Company Pty Limited	
37			248429	Miller Pohang Coal Company Pty Limited	
38			248429	Miller Pohang Coal Company Pty Limited	
39			248429	Miller Pohang Coal Company Pty Limited	
4			247340	Miller Pohang Coal Company Pty Limited	
2			42614	Miller Pohang Coal Company	
3			247340	Miller Pohang Coal Company Pty Limited	
2			247340	Miller Pohang Coal Company Pty Limited	
1			247340	Miller Pohang Coal Company Pty Limited	
	56		755270	Miller Pohang Coal Company Pty Limited	
555			609997	Hodano Pty Limited	
1			136594	Miller Pohang Coal Company Pty Limited	
36			248429	Miller Pohang Coal Company Pty Limited	
35			248429	Miller Pohang Coal Company Pty Limited	
34			248429	Miller Pohang Coal Company Pty Limited	
33			248429	Miller Pohang Coal Company Pty Limited	
32			248429	Miller Pohang Coal Company Pty Limited	
40			248429	Miller Pohang Coal Company Pty Limited	
99			755270	Miller Pohang Coal Company Pty Limited	
6			587986	Miller Pohang Coal Company Pty Limited	
551			569597	Miller Pohang Coal Company	
17			658927	Miller Pohang Coal Company Pty Limited	
18			247340	Miller Pohang Coal Company Pty Limited	
11			247340	Miller Pohang Coal Company Pty Limited	
41			248429	Miller Pohang Coal Company Pty Limited	
42			248429	Miller Pohang Coal Company Pty Limited	
43			248429	Miller Pohang Coal Company Pty Limited	
16			247340	Miller Pohang Coal Company Pty Limited	
17			247340	Miller Pohang Coal Company Pty Limited	
31			248429	Miller Pohang Coal Company Pty Limited	
30			248429	Miller Pohang Coal Company Pty Limited	

Lot	Portion	Part	DP	Property Owner	Notes
29			248429	Miller Pohang Coal Company Pty Limited	
10			247340	Miller Pohang Coal Company Pty Limited	
5			247340	Miller Pohang Coal Company Pty Limited	
6			247340	Miller Pohang Coal Company Pty Limited	
12			247340	Miller Pohang Coal Company Pty Limited	
13			247340	Miller Pohang Coal Company Pty Limited	
61			755270	Miller Pohang Coal Company Pty Limited	
35			755270	Warkworth Mining Limited	
3			42614	Miller Pohang Coal Company	
2			610376	Miller Pohang Coal Company Pty Limited	
15			247340	Miller Pohang Coal Company Pty Limited	
14			247340	Miller Pohang Coal Company Pty Limited	
8			247340	Miller Pohang Coal Company Pty Limited	
9			247340	Miller Pohang Coal Company Pty Limited	
19			247339	Miller Pohang Coal Company Pty Limited	
44			248429	Miller Pohang Coal Company Pty Limited	
45			248429	Miller Pohang Coal Company Pty Limited	
46			248429	Miller Pohang Coal Company Pty Limited	
341			612684	Miller Pohang Coal Company Pty Limited	
7			247340	Miller Pohang Coal Company Pty Limited	
28			248429	Miller Pohang Coal Company Pty Limited	
271			600747	Miller Pohang Coal Company Pty Limited	
272			600747	Miller Pohang Coal Company Pty Limited	
	24		755270	Warkworth Mining Limited	
6			251238	State Rail Authority Of New South Wales	
35			260056	Warkworth Mining Limited	
272			260663	Warkworth Mining Limited	
273			260663	Miller Pohang Coal Company Pty Limited	
36			260056	Warkworth Mining Limited	
5			43383	Warkworth Mining Limited	
140			248186	Warkworth Mining Limited	
139			248186	Warkworth Mining Limited	
21			113342	Warkworth Mining Limited	
136			755267	Warkworth Mining Limited	
71			755270	Warkworth Mining Limited	
1			610376	Warkworth Mining Limited	
129			755267	Warkworth Mining Limited	
166			657481	Warkworth Mining Limited	
19			113342	Warkworth Mining Limited	
B			182301	Warkworth Mining Limited	
162			755267	Warkworth Mining Limited	
18			113342	Warkworth Mining Limited	
105			755267	Warkworth Mining Limited	
16			113342	Warkworth Mining Limited	

Lot	Portion	Part	DP	Property Owner	Notes
17			113342	Warkworth Mining Limited	
102			755267	Warkworth Mining Limited	
154			755267	Warkworth Mining Limited	
91			755267	Warkworth Mining Limited	
104			755267	Warkworth Mining Limited	
185			755267	Warkworth Mining Limited	
170			755267	Warkworth Mining Limited	
A			182301	Warkworth Mining Limited	
165			755267	Warkworth Mining Limited	
164			755267	Warkworth Mining Limited	
161			755267	Warkworth Mining Limited	
144			755267	Warkworth Mining Limited	
2			804245	Warkworth Mining Limited	
1			804245	Warkworth Mining Limited	
191			755267	Warkworth Mining Limited	
87			755267	Warkworth Mining Limited	
97			755267	Warkworth Mining Limited	
16			755267	Warkworth Mining Limited	
190			755267	Warkworth Mining Limited	
6			248570	Warkworth Mining Limited	
130			755267	Warkworth Mining Limited	
6			113342	Warkworth Mining Limited	
182			755267	Warkworth Mining Limited	
13			113342	Warkworth Mining Limited	
179			755267	Warkworth Mining Limited	
103			755267	Warkworth Mining Limited	
138			248186	Warkworth Mining Limited	
137			248186	Warkworth Mining Limited	
5			113342	Warkworth Mining Limited	
135			248186	Warkworth Mining Limited	
141			573290	Warkworth Mining Limited	
142			573290	Warkworth Mining Limited	
143			573290	Warkworth Mining Limited	
1B			37572	Warkworth Mining Limited	
841			531116	Warkworth Mining Limited	
40			587922	Energy Australia	
2			602169	Trustees of Church Property for the Diocese of Newcastle	
1			949066	Warkworth Mining Limited	
2			43383	Warkworth Mining Limited	
136			248186	Warkworth Mining Limited	
134			248186	Warkworth Mining Limited	
133			248186	Warkworth Mining Limited	
184			755267	Warkworth Mining Limited	
12			113342	Warkworth Mining Limited	

Lot	Portion	Part	DP	Property Owner	Notes
106			755267	Warkworth Mining Limited	
22			113342	Warkworth Mining Limited	
89			755267	Warkworth Mining Limited	
46			755267	Warkworth Mining Limited	
183			755267	Warkworth Mining Limited	
15			113342	Warkworth Mining Limited	
48			755267	Warkworth Mining Limited	
14			113342	Warkworth Mining Limited	
189			755267	Warkworth Mining Limited	
110			755267	Warkworth Mining Limited	
180			755267	Warkworth Mining Limited	
187			755267	Warkworth Mining Limited	
7			248570	Warkworth Mining Limited	
3			43383	Warkworth Mining Limited	
132			248186	Warkworth Mining Limited	
131			248186	Warkworth Mining Limited	
144			573290	Warkworth Mining Limited	
130			248186	Warkworth Mining Limited	
203			704466	Warkworth Mining Limited	
2			705493	Warkworth Mining Limited	
1			130275	Warkworth Mining Limited	
27			755267	Warkworth Mining Limited	
1			573286	Warkworth Mining Limited	
172			755267	Warkworth Mining Limited	
200			755267	Warkworth Mining Limited	
		47	1096589	Warkworth Mining Limited	
	90		755267	Warkworth Mining Limited	
	134		755267	Warkworth Mining Limited	
10			113342	Warkworth Mining Limited	
2			1097294	Warkworth Mining Limited	
1			227280	Warkworth Mining Limited	
2			227280	Warkworth Mining Limited	
3			227280	Warkworth Mining Limited	
1			176095	Warkworth Mining Limited	
1			130276	Warkworth Mining Limited	
178			755267	Warkworth Mining Limited	
	167		755267	Warkworth Mining Limited	
	1		755267	Warkworth Mining Limited	
177			755267	Warkworth Mining Limited	
63			755267	Warkworth Mining Limited	
7			113342	Warkworth Mining Limited	
111			755267	Warkworth Mining Limited	
132			755267	Warkworth Mining Limited	
168			755267	Warkworth Mining Limited	

Lot	Portion	Part	DP	Property Owner	Notes
1			43383	Warkworth Mining Limited	
196			755267	Warkworth Mining Limited	
6			245850	Warkworth Mining Limited	
7			245850	Warkworth Mining Limited	
8			245850	Warkworth Mining Limited	
	157		755267	Warkworth Mining Limited	
	156		755267	Warkworth Mining Limited	
	155		755267	Warkworth Mining Limited	
	150		755267	Warkworth Mining Limited	
1			1097294	Warkworth Mining Limited	
1			326244	Warkworth Mining Limited	
1			326245	Warkworth Mining Limited	
1			248570	Warkworth Mining Limited	
197			657482	Warkworth Mining Limited	
173			755267	Warkworth Mining Limited	
1			245850	Warkworth Mining Limited	
2			245850	Warkworth Mining Limited	
3			245850	Warkworth Mining Limited	
2			248570	Warkworth Mining Limited	
159			755267	Warkworth Mining Limited	
137			755267	Warkworth Mining Limited	
5			248570	Warkworth Mining Limited	
4			248570	Warkworth Mining Limited	
9			246201	Warkworth Mining Limited	
10			246201	Warkworth Mining Limited	
11			246201	Warkworth Mining Limited	
12			246201	Warkworth Mining Limited	
1			129800	Warkworth Mining Limited	
5			246201	Warkworth Mining Limited	
5			245850	Warkworth Mining Limited	
152			755267	Warkworth Mining Limited	
4			245850	Warkworth Mining Limited	
21			625709	Warkworth Mining Limited	
2			130264	Warkworth Mining Limited	
1			130264	Warkworth Mining Limited	
4			43383	Warkworth Mining Limited	
2			129822	Warkworth Mining Limited	
2			827333	Warkworth Mining Limited	
120			1089243	Warkworth Mining Limited	
151			755267	Warkworth Mining Limited	
131			755267	Warkworth Mining Limited	
1			129822	Warkworth Mining Limited	
3			129819	Warkworth Mining Limited	
2			129819	Warkworth Mining Limited	

Lot	Portion	Part	DP	Property Owner	Notes
1			129819	Warkworth Mining Limited	
1			129812	Warkworth Mining Limited	
3			129811	Warkworth Mining Limited	
2			129811	Warkworth Mining Limited	
1			129811	Warkworth Mining Limited	
8			246201	Warkworth Mining Limited	
2			129799	Warkworth Mining Limited	
1			129799	Warkworth Mining Limited	
3			246201	Warkworth Mining Limited	
2			246201	Warkworth Mining Limited	
1			246201	Warkworth Mining Limited	
1			705493	Warkworth Mining Limited	
11			113342	Warkworth Mining Limited	
22			625709	Warkworth Mining Limited	
1			43422	Miller Pohang Coal Company Pty Limited	
3			1026900	Road	
8			1026900	Warkworth Mining Limited	
3			705493	Crown Land	
4			658759	Warkworth Mining Limited	
1			1041796	Warkworth Mining Limited	
			0	Crown (Miller Pohang Coal Company)	Enclosure Permit - (Miller Pohang) - Crown road
			0	Pastures Protection Board	Travelling Stock & Camping Reserve 21
	6		247820	Warkworth Mining Limited	
	7		247820	Warkworth Mining Limited	
0			0	Warkworth Mining Limited	Enclosure permit - 51260 (Warkworth Mining) - Crown road
371			1026537	The Council Of The Shire Of Singleton	
5			1026900	Singleton Shire Council	
96			755267	Warkworth Mining Limited	
95			755267	Warkworth Mining Limited	
94			755267	Warkworth Mining Limited	
93			755267	Warkworth Mining Limited	
92			755267	Warkworth Mining Limited	
28			255730	The Council Of The Municipality Of Singleton	
29			255730	The Council Of The Municipality Of Singleton	
372			1026537	Daracon Engineering Pty Limited	
1			1043120	Olga Janene Henderson	
			0	Crown (Coal & Allied Operations Pty Limited)	Enclosure Permit - 51200 coal & allied - Crown road
22			755267	Cec M Hawkes Pty Ltd	
1			910550	Peter Glen Stuart	
23			3030	Wambo Mining Corporation Pty Limited	
74			755267	Peter Glen Stuart	
75			755267	Peter Glen Stuart	
126			665628	Peter Glen Stuart	

Lot	Portion	Part	DP	Property Owner	Notes
99			755267	Cec.M. Hawkes Pty. Limited	
1			1086834	The State Of New South Wales	TSR 97817, gazetted 14/6/1985 folio 2731-2732 RLPB have care, control & management
2			1086834	Wambo Coal Terminal Pty Ltd	
7	0	0	3030	Wambo Mining Corporation Pty Ltd	
36			755267	Cec M Hawkes Pty Ltd	
35			755267	Cec M Hawkes Pty Ltd	
201			755267	Crown Land	Reserved for future public requirements R90421 Gov Gaz 19/4/74 folio 1475
20			113342	Warkworth Mining Limited	
2			735566	Warkworth Mining Limited	
11			1121154	Warkworth Mining Limited	
10			1121154	Singleton Shire Council - Putty Road	
12			1121154	Warkworth Mining Limited	
9			1121154	Singleton Shire Council - Putty Road	
450			1119428	Redbank Projects Pty Ltd	
451			1119428	Wambo Coal Terminal Pty Ltd	
	26		755270	Warkworth Mining Limited	
	25		755270	Warkworth Mining Limited	
22			263943	Miller Pohang Coal Company Pty Limited	
8			251238	Miller Pohang Coal Company Pty Limited	
151			715597	Miller Pohang Coal Company Pty Limited	
83			755270	Miller Pohang Coal Company Pty Limited	
82			755270	Miller Pohang Coal Company Pty Limited	
95			755270	Miller Pohang Coal Company Pty Limited	

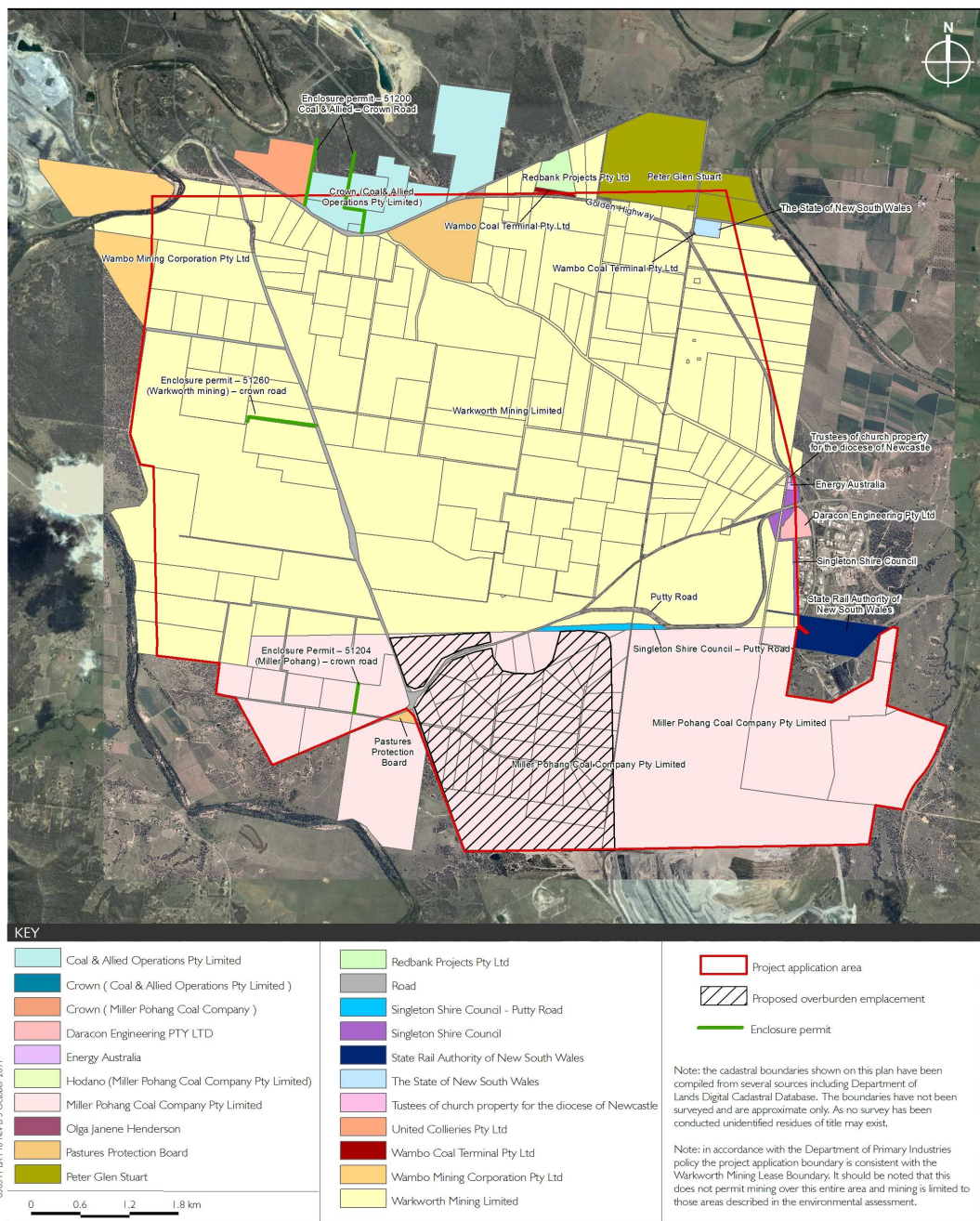


Figure 1: Land Ownership Plan Within the Project Application Area

APPENDIX 2 MT THORLEY-WARKWORTH MINE COMPLEX

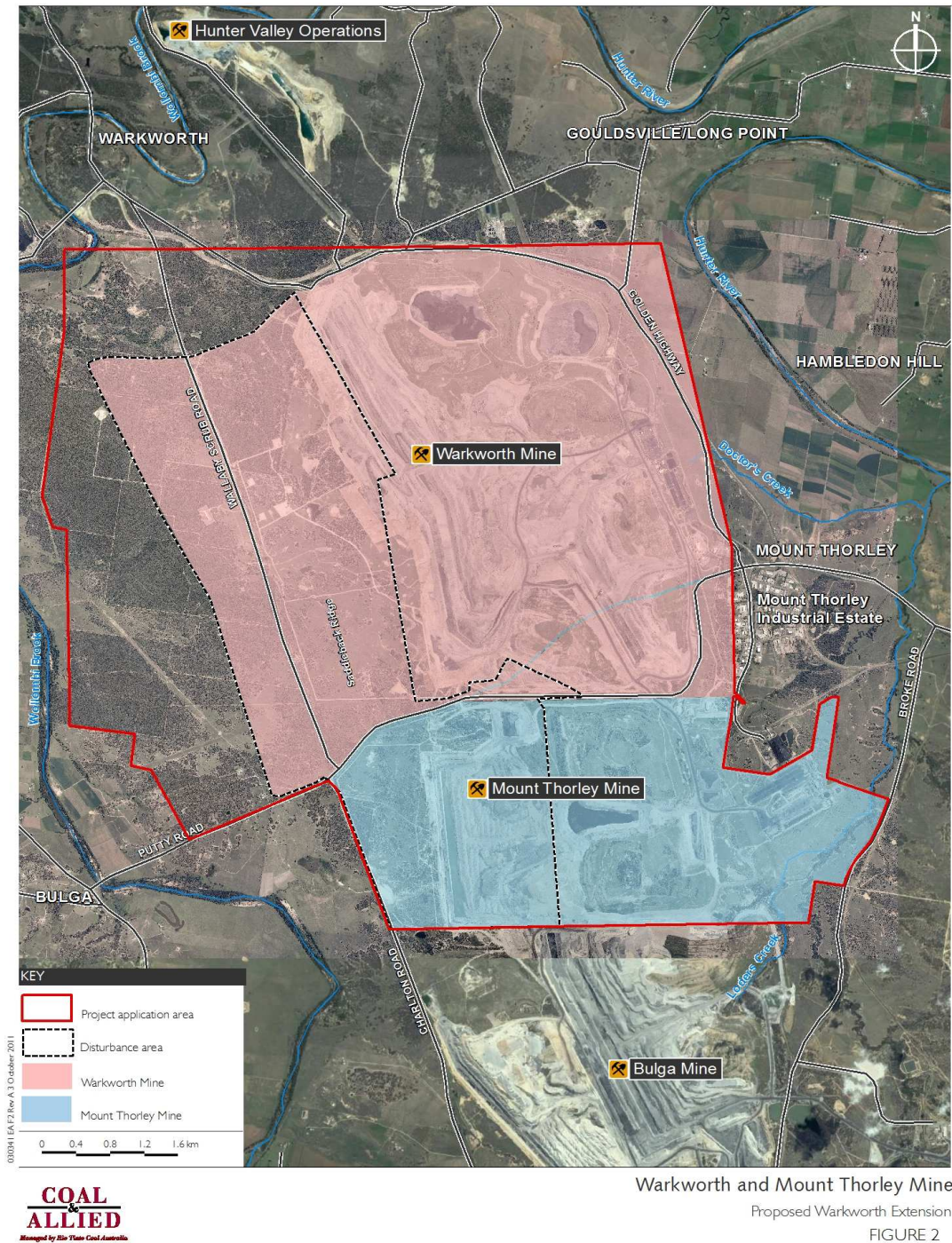
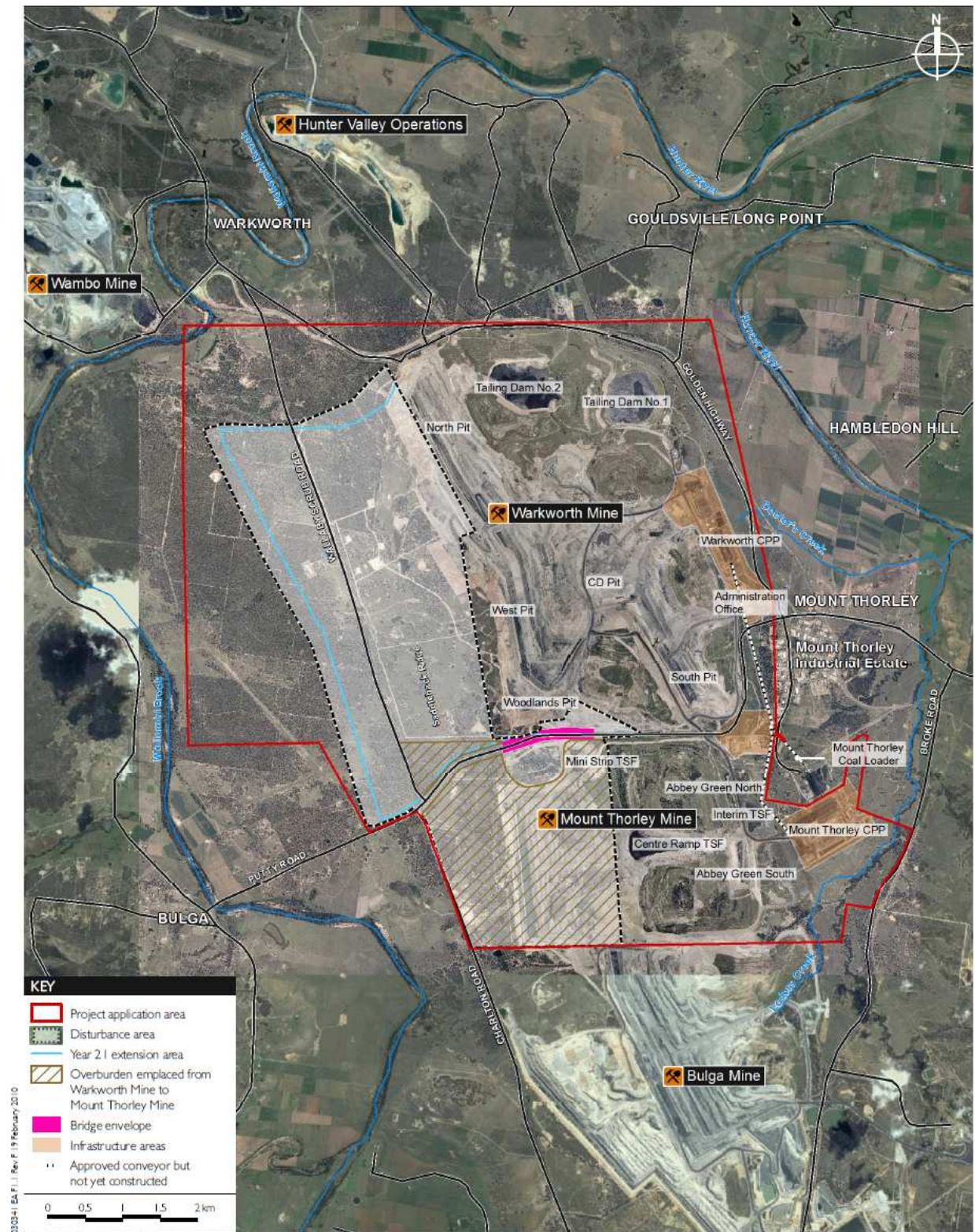


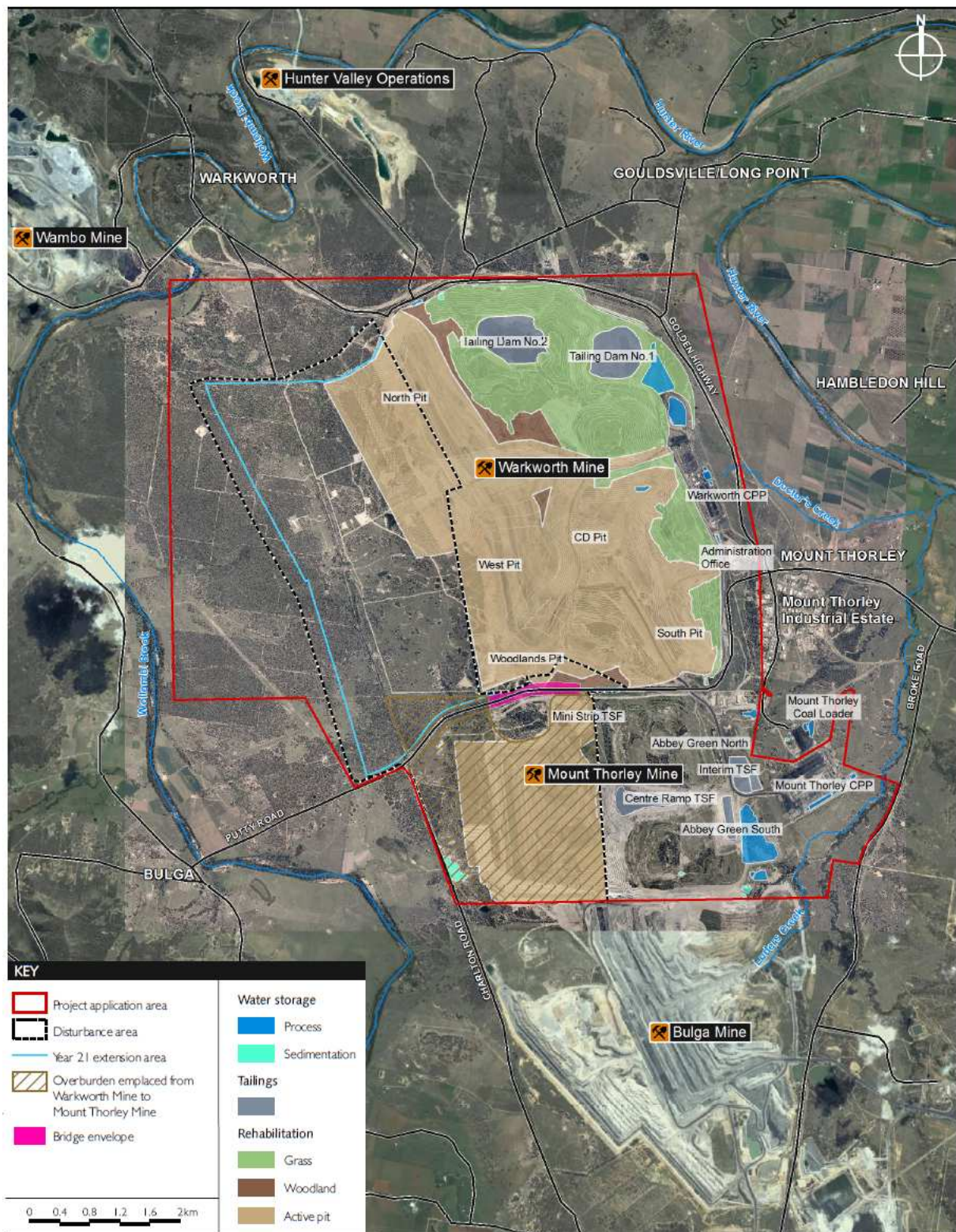
Figure 2: The Mt Thorley-Warkworth Mine Complex

APPENDIX 3 PROJECT LAYOUT PLANS



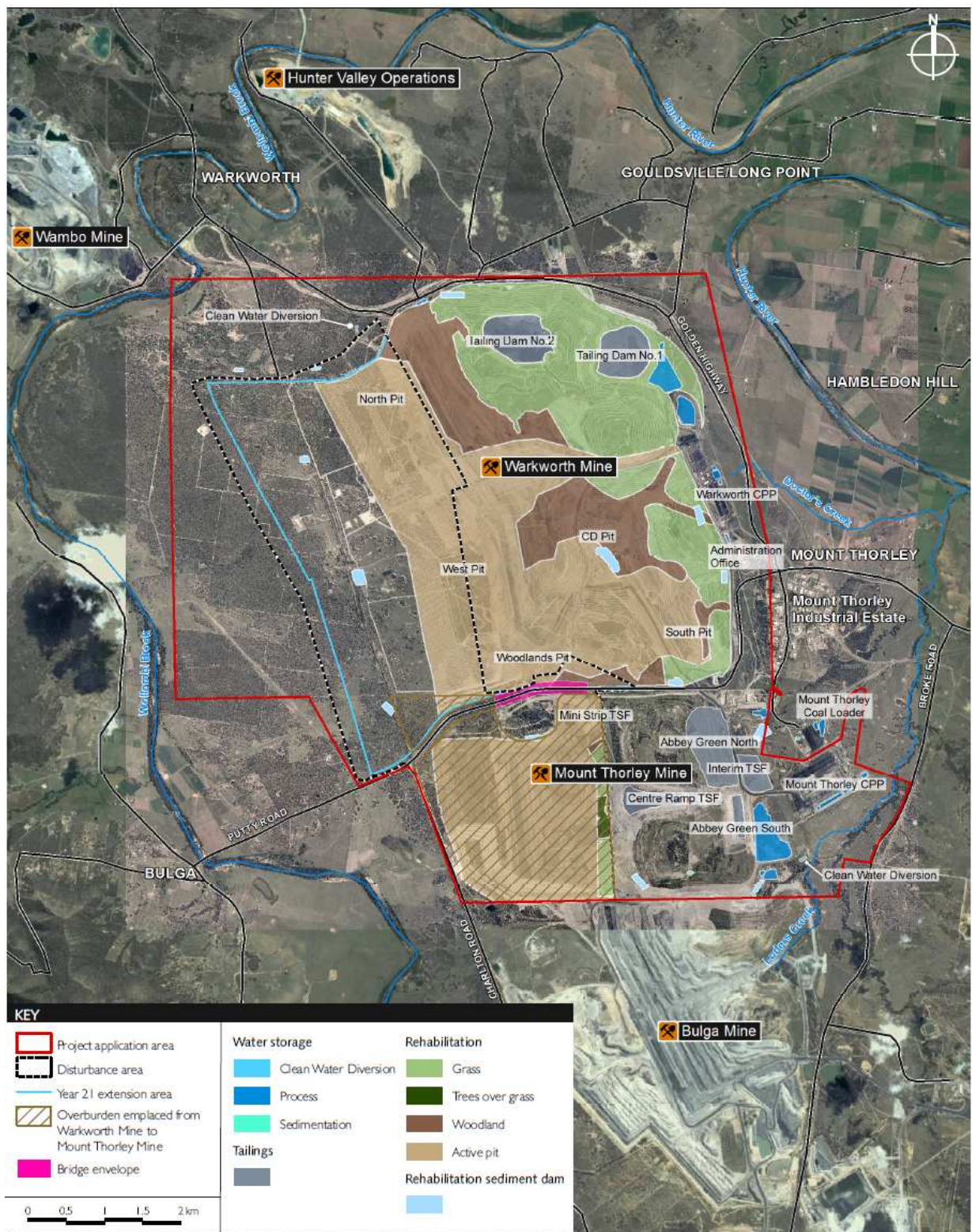
Proposed Warkworth Extension
Proposed Warkworth Extension
FIGURE I.1

Figure 3: Project Layout



Year 2 Mine Plan
Proposed Warkworth Extension
FIGURE 5.2

Figure 4: Conceptual Mine Plan – Year 2



Year 9 Mine Plan
Proposed Warkworth Extension
FIGURE 5.3

Figure 5: Conceptual Mine Plan - Year 9

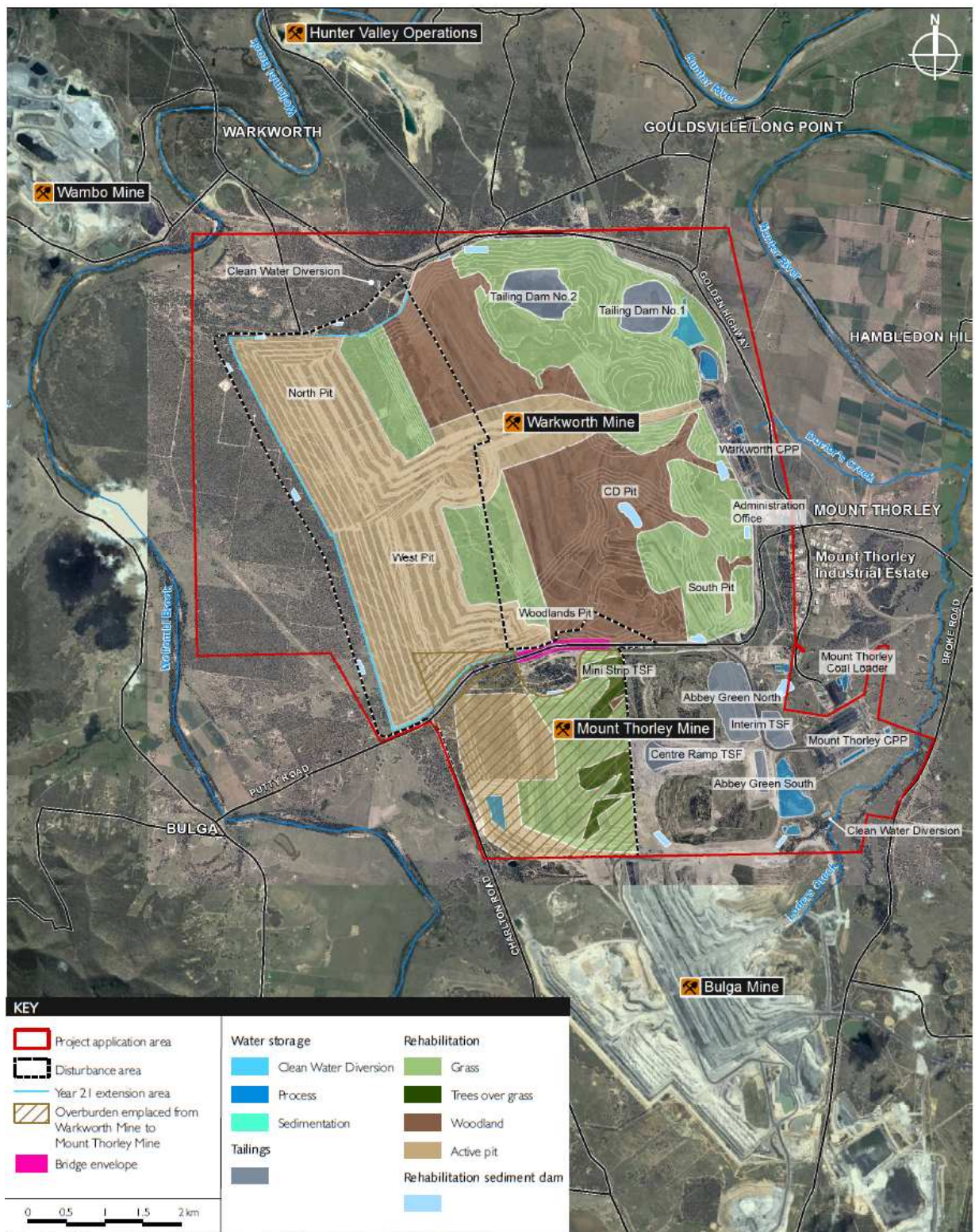


Figure 6: Conceptual Mine Plan – Year 21

APPENDIX 4 STATEMENT OF COMMITMENTS

20 Revised Environmental Management and Commitments

20.1 Introduction

This chapter describes the revised commitments made by WML throughout the life of the proposed Warkworth Extension to manage potential impacts identified within the EA. Commitments include management, mitigation and/or monitoring measures.

Environmental management at Warkworth Mine has been discussed in general in **Chapter 4.10** which includes management under the ISO:14001 [2004] certified EMS. The EMS will continue to be implemented across Warkworth Mine and MTW. The relevant plans, procedures and monitoring programmes contained within the EMS will be reviewed and modified to incorporate the commitments outlined below and reflect the changes to operations resulting from the proposal. As such, existing management, mitigation and monitoring measures undertaken by WML to manage impacts identified in previous environmental assessments [such as the 2002 EIS] will still be maintained but reviewed and modified, if required.

Commitments are provided generally and for each environmental aspect considered in this EA.

20.2 General

WML will undertake the following general commitments:

- Should Project Approval be granted by the Minister for Planning for the proposal and subject to appropriate conditions, WML will surrender the current Warkworth development consent at the appropriate time as agreed between WML and DoP;
- WML will carry out the proposed Warkworth Extension generally in accordance with the systems, plans and mitigation measures identified throughout the EA, Response to Submissions and [the Preferred Project Report](#); and
- WML will obtain and maintain all permits, licences and approvals required throughout the life of the proposal, as required. These commitments do not replace any obligations WML has under statutory requirements.

20.3 Ecology

In addition to management and mitigation measures undertaken at Warkworth Mine for ecology as described in the EMS procedures, the following commitments specific to the proposal would be undertaken. Some commitments are already undertaken under the EMS. Furthermore:

- WML commits to an offset strategy to compensate for the disturbance of EECs consisting of the following:
 - Southern Biodiversity Area - long term protection of some 977.5ha of land including the re-establishment of 38.6 ha Warkworth Sands Woodland (WSW) and 277.9ha Central Hunter Grey box-Ironbark-Spotted Gum Communities. [State and Commonwealth];

- Northern Biodiversity Area – long term protection of some 342ha of land including re-establishment and enhancement of 195.8 ha WSW and 23.1 ha [Central Hunter Grey box-Ironbark-Spotted Gum Communities](#) [State];
 - Goulburn River Biodiversity Area – long term protection of some 1,299.3ha of land [State and Commonwealth];
 - Seven Oaks Biodiversity Area – long term protection of some 523ha of land with enhancement of 168.7ha of Cassinia/Acacia shrubland and derived native grassland [State and Commonwealth];
 - Putty Biodiversity Area – long term protection of some 379ha of land with enhancement of 12.2 ha of derived native grassland [State];
 - Bowditch Biodiversity Area – long term protection of some 520ha with enhancement of 2.3ha of derived native grassland [State];
 - Additional strategic offset properties (subject to commercial discussions) for long term protection of 750ha of woody vegetation to the acceptance of Office of Environment and Heritage [OE] [within 12 months of project approval](#); and
 - Rehabilitation of mined lands – progressively establish some [2,114ha of](#) Central Hunter Grey Box-Ironbark-Spotted Gum woodland communities, 218.5ha of trees on grassland and the residual being rehabilitated to grassland [State and Commonwealth].
- The Warkworth Biodiversity Management Plan which will be updated following confirmation of the offset package and replace the existing Warkworth Coal Mine Green Offsets FFMP [2008], has been prepared which describes the management strategies, performance criteria and monitoring for the proposed biodiversity areas. The Warkworth BMP is intended to be a live document that would respond to site specific research [see below] and best practice;
 - Continue the existing five-year research programme being undertaken by the University of New England [UNE] on best practice for re-establishing the WSW community and the further commitment of an additional \$500,000 to the UNE for research into the re-establishment of WSW;
 - A commitment to contributing to and resourcing of a recovery plan for the WSW in consultation with the OE;
 - Trials to rehabilitate an old quarry and revegetation of WSW on the old quarry site (approximately 1ha) within the Southern Biodiversity Area. The old quarry would be backfilled with material, including a sand layer, sourced from the extension area and the profile would be reconstructed and shaped with regard to the surrounding landscape. A revegetation trial of key WSW species would follow with guidance provided by University of New England;
 - A commitment contributing \$500,000 to research aimed at improving rehabilitation of ground stratum plant species of the Central Hunter Grey Box-Ironbark-Spotted Gum communities; and
 - Pre-clearance surveys would be conducted within areas to be cleared and where possible, threatened flora and fauna detected would be translocated into protected habitat.

20.4 Aboriginal Cultural Heritage

In addition to management and mitigation measures undertaken at Warkworth Mine for Aboriginal cultural heritage as described in the EMS procedures, the following commitments specific to the proposal would be undertaken. Some commitments are already undertaken under the EMS.

20.4.1 Management within Land Disturbed by Mining

- Aboriginal cultural heritage sites that would be directly disturbed by the proposal would be managed in accordance with an ACHMP;
- Double scarred tree Site MTW321 [WE16] would be excluded from the mining disturbance zone and incorporated into the Wollombi Brook Aboriginal Cultural Heritage Conservation Area;
- Mitigation salvage would be staged over time;
- Scarred trees at Sites MTW8, MTW70 and MTW80 would be managed in situ and where required removed accordance with the Rio Tinto Coal Australia Scarred Tree Management Procedure and ACHMP protocols;
- Relocation of grinding grooves site PN10 as per the salvage requirements of AHIP s.90 consent #2801;
- Investigate feasibility of moving grinding grooves Site M including more detailed recording of site attributes, final management and salvage measures to be determined in consultation with CHWG and DECCW;
- Controlled collection [gridded collection] of artefact scatter Sites MTW60 & MTW65;
- Other artefact scatters and isolated finds would be mitigated by standard salvage collection measures in accordance with the ACHMP;
- All cultural materials collected would be stored in the temporary cultural heritage storage facility at Hunter Valley Services under an approved Care and Control Permit; and
- Develop a protocol for pre-disturbance testing of additional areas west of Wallaby Scrub Road that may comprise geomorphological features that are commonly described as the Warkworth Sands which may include Ground Penetrating Radar surveys and test auguring. Where areas are identified with potential to hold sub-surface stratified cultural deposits then further investigation activities would be developed in consultation with the CHWG and DECCW.

20.4.2 Wollombi Brook Aboriginal Cultural Heritage Conservation Area

- WML commits to establish the Wollombi Brook Aboriginal Cultural Heritage Conservation Area on WML owned lands within and adjacent to Warkworth Mine lease along the eastern side of Wollombi Brook which would include a significant portion [eastern] of the highly culturally significant Bulga Bora Ground area;
- The core Conservation Area would be protected permanently from mining and associated development disturbance;
- Provide for the protective management and cultural maintenance of the Bulga Bora Ground, associated cultural landscapes and sites situated within the Conservation Area;

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- Sites in the proposed Conservation Area would be managed in situ in accordance with the management strategy that is currently under development for the Conservation Area with the CHWG and other stakeholders including DECCW and DoP;
- Support would be provided to assist active Aboriginal role in both cultural heritage and environmental management activities, including training and employment development opportunities;
- Establish strictly controlled non-access zones and protocols around culturally sensitive areas as determined in consultation with the CHWG;
- Establish areas for active cultural heritage and landscape management;
- Establish areas and protocols for use by Aboriginal people for cultural and community purposes;
- Implement a consultation process through the CHWG to develop an appropriate management agreement or accord for the co-management of the Conservation Area with the Aboriginal community;
- Engage with Wambo Coal Pty Limited to discuss options for developing a collaborative management protocol for the portion of the Bulga Bora Ground and associated cultural sites that are located on lands owned by Wambo Coal adjacent to the Conservation Area; and
- Rio Tinto Coal Australia and Coal & Allied would continue to resource the development of the management strategy for the Conservation Area.

20.4.3 Management of Other Lands within the Mining Leases

- Aboriginal Cultural heritage sites on land that is within the LOM plan that would be potentially disturbed by mining in the future would be managed for their protection in situ for long-term protective management and to minimise future disturbance for the foreseeable future in accordance with the Rio Tinto Coal Australia CHMS procedures until such time that an approval for mining in that area is granted;
- Sites that are assessed as vulnerable to damage due to proximity to roads and tracks or other operational infrastructure should be appropriately buffered and barricaded in accordance with existing site protection protocols;
- The scarred trees at sites MTW43 and MTW223 should be buffered and monitored regularly; and
- Where development activities cannot be conducted on an Aboriginal cultural heritage sites avoidance basis due to valid technical, safety or any other legitimate reasons, then alternative mitigation measures including cultural salvage of sites would be developed in consultation with the CHWG and DECCW.

20.5 Noise and Vibration

In addition to management and mitigation measures undertaken at Warkworth Mine for noise and vibration as described in the EMS procedures, the following commitments specific to the proposal would be undertaken.

- WML commit to managing operations in such a way that modelled noise levels at private receivers are not exceeded. Management of operations may include any combination of things such as:

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- optimisation of mobile plant and equipment type, quantities and locations. This includes positioning of plant in less exposed areas, where practicable;
- investigation of attenuation of haul trucks. WML has been working with the suppliers of its haul fleet to develop a noise attenuation package. All new trucks, dozers, drills & excavators purchased for use across Warkworth and Mount Thorley Mines will be commissioned as suppressed units. A programme of fitting attenuation packages on some existing Warkworth and Mount Thorley Mines haul fleet has also been developed. Based on the above:
 - o 40% of truck fleet will be attenuated by end of Year 1 (nominally 2012 assuming approval 2011).
 - o 50% of truck fleet attenuated by end of Year 2 (nominally 2013).
 - o 60% of truck fleet attenuated by end of Year 5 (nominally 2016).
 - o 80% of truck fleet attenuated by end of Year 6 (nominally 2017).
- cladding or similar attenuation of the Warkworth CPP. The effect of this mitigation measure is a nominal 8dB reduction in noise from the CPP towards residences located to the east; and
- further use of real- time noise monitoring and investigation into correlation with real-time weather monitoring for use, where possible, to pre-emptively manage noise generated by mining operations [see below];
- The real time noise monitoring network would be expanded and improved such that the noise data can be correlated with real-time weather data and used to improve existing noise management techniques. This will be implemented as follows:
 - o Maintaining monitoring devices at suitable locations determined by an acoustic specialist. The suitability of locations will be reviewed by an acoustic specialist based on the project approval conditions. Preference, where practical, will be given to properties that ensure the minimisation and possible elimination of contaminated data from extraneous sources in the direction of the mine. The improvement of the monitoring network will allow for additional low pass frequency filtering to eliminate high frequency sounds such as insects and birds. The noise level from the direction of the site and other mines will be isolated to better understand the contributions from each area.
 - o Data will be communicated directly to Warkworth Mine via the Supervisory Control and Data Acquisition (SCADA) system.
- The system will include the use of Trigger Alarms from real-time noise monitors. An alarm will be set at an appropriate trigger level for receivers based on the project approval conditions. The trigger alarm system is currently being developed and trialled as a management tool and includes a two phase alarm based on the INP guidelines and incorporates real time meteorological and noise data. This system can assist management in making informed decisions to maintain noise levels within acceptable limits, for example:
 - o When noise levels reach the trigger level an alarm would be sent via SMS and/or email or similar to the supervisory site personnel at Warkworth Mine.
 - o In the event of an alarm, the supervisory site personnel will be notified and operational practices reviewed to minimise the potential for noise increasing beyond compliance levels or obtain suitable agreement from receivers.

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- In the assessment of the need for the noise attenuation of equipment, WML commit to develop a noise trigger action response plan [TARP] that sets the operational noise level trigger for action. Action would include such things as analysis of real time monitoring, other monitoring, SPL testing and modelling of current operations if required. A hierarchy of actions will be developed and include such things as:
 - Where available meteorological data forecasts inversions and/or adverse winds are likely for the coming night period, where possible alternative operations will be identified in anticipation;
 - In the event of unfavourable meteorological conditions and where monitoring suggests noise levels are approaching limits, where possible alternative operations will be identified such as plant being relocated to lower areas of the mine and noise levels will continue to be monitored closely. The aim of this is to avoid noise exceedances during the more sensitive night time period;
 - Where noise limits are noncompliant with the project approval criteria limits, a protocol of identifying causes of the non compliance and offending sources/activities will be implemented with the view to modifying such activities to ensure noise levels return to within limits.
 - Where the pre-emptive noise modelling or monitoring identifies residents to be affected above acquisition criteria WML will investigate and consider reviewing equipment locations; or adopt pre-emptive acquisition.
 - Where the noise modelling or monitoring identifies residents to be affected below acquisition but above impact criteria, WML will investigate and consider reviewing equipment locations; or adopt pre-emptive mitigation measures at receiver.
- Pro-active mine planning, as informed by pre-emptive modelling, will also be implemented to plan for contingency events, such as during prevailing wind conditions that have the potential to increase noise beyond acceptable levels.
- Where agreement can be obtained from nearby landowners for predicted or actual exceedance of mine noise limits, changes to operations as outlined above would not be required.

20.6 Air Quality

In addition to management and mitigation measures undertaken at Warkworth Mine for air quality and dust as described in the EMS, the following commitments specific to the proposal may be undertaken. Some commitments are already undertaken under the EMS.

- WML will provide a copy of the NSW Health fact sheet entitled 'Mine Dust and You' to landowners and tenants in mine owned residences identified in the predictions in the EA that dust emissions generated from the project are likely to be greater than the relevant air quality criteria at any time during the life of the project;
- Tenancy agreements for WML owned residences will include acknowledgement of mining impacts, including dust and health impacts, in the terms of agreement. The agreements also facilitate the temporary vacation of WML owned residence if required due to mining impacts. WML will enable tenants to terminate their tenancy agreement without compensation based on mining impacts given reasonable notice;

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- WML will provide quarterly air quality monitoring reports on the Coal & Allied website and commit to providing the report to tenants where requested;
- Disturb only the minimum area of land necessary for mining. Reshape, topsoil and rehabilitate completed overburden emplacement areas as soon as practicable after the completion of overburden tipping;
- Maintain coal handling areas and coal stockpiles in a condition that minimises wind-blown and traffic-generated dust;
- Undertake overburden emplacement on smallest area required for emplacement;
- Have available water sprays on ROM coal stockpiles and use sprays to reduce airborne dust, as required;
- All roads and trafficked areas would be watered as required using water trucks to minimise the generation of dust;
- All haul roads would have edges clearly defined with marker posts or equivalent to control their locations, especially when crossing large overburden emplacement areas;
- Development of minor roads would be limited and the locations of these would be clearly defined;
- Minor roads used regularly for access etc would be watered;
- Obsolete roads would be ripped and re-vegetated;
- Access tracks used by topsoil stripping equipment during their loading and unloading cycle would be watered;
- Long term topsoil stockpiles, not used for over three months would be re-vegetated;
- Dust aprons would be lowered during drilling;
- Drills would be equipped with dust extraction cyclones, or water injection systems;
- Water injection or dust suppression sprays would be used on drills when high levels of dust are being generated;
- Adequate stemming would be used at all times. Restriction of blasting during unfavourable weather conditions would occur, where practicable;
- Attach a PM10 monitoring head to the existing HVAS TSP monitor nominally at WML TSP3;
- Relocate Mount Thorley Industrial Estate PM10 HVAS monitor and WML-HV1 TSP monitor further north, away from any dust generating activities in the industrial estate, near Receiver 128; and
- Install a new HVAS with PM₁₀ monitoring head in the southern areas of Bulga village.

20.7 Greenhouse Gas

In addition to management and mitigation measures undertaken at Warkworth Mine for greenhouse gas, specific initiatives to be implemented include:

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- Implementation of a detailed energy monitoring programme. This would include monitoring the electricity and diesel usage on-site to identify the main sources of greenhouse gas emissions and apply appropriate reduction mechanisms where possible;
- Regular maintenance of diesel powered equipment to ensure operation at peak efficiency; and Funding of research programs to develop advanced technology focusing on reducing greenhouse gas emissions and carbon capture technologies.

20.8 Visual

The following commitments are specifically made in relation to visual amenity.

- A Visual Management Plan would be prepared to identify the privately-owned land that is likely to experience visual impacts during the proposed Warkworth Extension. It will describe the mitigation measures that could be implemented to reduce the visibility of the mine from these properties (including mitigation measures identified in Section 6 of Annex I of the EA Volume 4), as well as the timing for implementation of the strategies;
- The Visual Management Plan would also identify where planting could be undertaken on public land, including road reserves and other public spaces, to reduce visual impacts of the proposed Warkworth Extension, subject to the consent of the appropriate authority. These plantings on public land may also assist in screening Warkworth Mine from private properties. Any proposal to undertake planting on public land would be undertaken in consultation with Council, RTA and Bulga residents;
- WML commit to conducting site specific visual assessments for significantly affected landowners at elevated locations at Bulga;
- Where the site specific assessment confirms the potential for significant impact, develop on site mitigation on consultation with the landholder, which may include such measures as on site visual screening;
- Overburden will be rehabilitated with grasses and woodland. Woodland planting will be extended on the eastern face to achieve a similar mosaic to the existing rehabilitation on the landscape;
- The overburden heights will be maintained on average at current consent limits, which are RL 160m AHD for Warkworth Mine and RL 155m AHD for Mount Thorley Mine; and
- Annual survey of overburden heights and rehabilitation areas as part of the annual operating plan.

20.9 Groundwater

In addition to management and mitigation measures undertaken at Warkworth Mine for groundwater as described in the EMS, the following commitments specific to the proposal may be undertaken.

A comprehensive monitoring and mitigation program will be implemented to ensure that any unpredicted changes to groundwater quality and monitoring are responded to to minimise impacts. Mitigation and potential responses include:

- The construction of monitoring bores at a further three sites in the Wollombi Brook alluvial aquifer and underlying Permian overburden to the west of the proposed Warkworth Extension to monitor the depressurisation of the shallow coal measures strata and subsequent drawdown in the overlying alluvial aquifers and any changes in groundwater quality as a result of depressurisation. The sites are shown in Figure 13.6 and were selected to complement the existing monitoring bore network,

including those operated by other mines, to enable comprehensive monitoring across the potentially impacted area. Water levels and salinity will be monitored electronically using data loggers installed in each bore to provide a record of changes. Field analysis of pH and electrical conductivity will be undertaken on a quarterly basis and samples collected from each bore on a six-monthly cycle for a full laboratory analysis;

- WML will liaise with adjacent mining operations, including Wambo Mine and HVO, regarding access to groundwater monitoring data to the north and north west of the proposed Warkworth Extension. Where provided, the data will be incorporated into groundwater assessment and reporting to ensure the regional impact of mining is understood;
- The continuation of the existing monitoring programme which includes 30 bores that have water level, and field measurements of pH and electrical conductivity on a quarterly basis and samples collected for a comprehensive laboratory analysis on an annual basis;
- The annual assessment of departures from identified monitoring data trends. If six consecutive monthly monitoring results depart from the established or predicted trend, then a detailed review of possible cause will be undertaken;
- Upon completion of the detailed review of possible cause suitable groundwater responses will be implemented where required. This may include more intensive monitoring and/or seeking professional advice in regards to model predictions and additional mitigation measures such as geotechnical investigations , structural assessments or consideration of changes to the mine plan if required;
- Formal review of measured depressurisation of coal measures and alluvial aquifers will be undertaken annually by a suitably qualified hydrogeologist. Every five years the model predictions will be re-assessed and if the data indicate significant divergence from the model predictions, an updated or new groundwater model will be constructed;
- Annual public reporting of all water level and water quality data as part of the AEMR process; and
- The predicted loss of water from the alluvial aquifer and from baseflow in Wollombi Brook will be offset by the purchase and retirement of an existing water licence from the appropriate water sharing plan that exceeds the maximum 73ML/year predicted to be lost from the system.WML would purchase and retire existing water licences from the Wollombi Brook Water Source Zone for the predicted loss of water from the alluvial aquifer and from baseflow in Wollombi Brook if required;
- WML would purchase and retire existing water licences from the Wollombi Brook Water Source Zone for the predicted loss of water from the alluvial aquifer and from baseflow in Wollombi Brook if required;
- A final void management plan [to be incorporated into the REMP] would be prepared, in consultation with the I&I NSW and other relevant agencies, which would outline the final design and future use of this void within five years of completion of mining ;
- Three new groundwater monitoring bores would be constructed in the Wollombi Brook alluvial aquifer to the west of the proposed operations to monitor the potential impact of depressurisation;
- Water levels and salinity would be monitored electronically using data loggers installed in each bore and provide a record of changes;
- If consecutive six monthly monitoring campaigns exhibit departure from the established or predicted trend, then such departures should initiate a detailed review of groundwater conditions. This may

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include a need to conduct more intensive monitoring or to seek professional advice to compare against model predictions and/or instigate mitigation measures;

- Installation of a network of shallow monitoring bores to the base of the sand sheet at the western edge of the approved disturbance area to measure groundwater levels, hydraulic gradients, flow rates, and the permeability of the sands. This baseline information would be used to assess whether any mitigation is required. The network can also be used during mining operations to monitor groundwater levels in the sand sheet; and
- A formal review of the depressurisation of coal measures and alluvial aquifers would be undertaken annually by a suitably qualified hydrogeologist. Every five years the validity of the model predictions would be re-assessed and if the data indicate significant divergence from the model predictions, an updated or new groundwater model would be constructed for simulation of mining.

20.10 Traffic and Transportation

The following commitment specific to the proposal would be undertaken:

- WML commit to further discussion with SC regarding the closure of Wallaby Scrub Road. WML further commit to mitigation in the event of closure. Potential mitigation options may include [subject to negotiation with Council]:
 - The provision of development contributions [through a VPA] to fund community services or to conduct work in lieu under Part 4, Division 6 of the EP&A Act in consultation and agreement with SC;
 - Development of a road closure management plan in conjunction with relevant stakeholders such as the local community, emergency services, RFS and SC to develop strategies to minimise potential impacts;
 - Installation of speed advisory and curve warning signs on the approach and through the curve on Putty Road, just west of its intersection with Golden Highway;
 - Improvements to the channelisation at the Putty Road and Golden Highway southbound intersection; and
 - WML proposes to make a contribution (dollars at the time of payment) to the RTA of up to \$1,000,000 towards the upgrade of the Broke Road and Golden Highway Intersection in the event of closure of Wallaby Scrub Road without relocation.
- An option to relocate Wallaby Scrub Road has been assessed in **Annex Q** which the proponent would undertake if this is determined as the preferred option by the relevant administering authorities informed by community feedback. WML commit to undertake further consultation with the RTA and Council to discuss the configuration and design of the relocated road, should the project approval require the road to be relocated.
- Temporary road closures for blasting will continue to be managed in accordance with Coal & Allied's established protocols and procedures.
- All works will be undertaken, where relevant, in accordance with the RTA's Road Design Guide, Guide to Traffic Generating Developments, Austroads Guidelines and relevant Australian Standards.

20.11 Surface Water

In addition to management and mitigation measures undertaken at Warkworth Mine for surface water as described in the EMS, the following commitments specific to the proposal may be undertaken. Some commitments are already undertaken under the EMS.

- Dam 34N would be enlarged to 720ML;
- Sediment dams would be maintained or constructed as required and would be designed in accordance with relevant design standards [DECC 2008];
- Additional intake water of up to 700ML per annum may be required during extended dry periods. The demands on additional intake water would be mitigated through a combination of:
 - Water sharing between MTW and HVO;
 - Reduced HRSTS discharge which is supported by the additional out of pit water storage capacity that is currently under construction; or
 - Extraction of water via a bore from abandoned Lemington underground workings.
- Ongoing water balance modelling will be undertaken to enable the identification of water sharing efficiencies at MTW and HVO; and
- Additional water licences or water allocations will be sourced if required to ensure that MTW's water allocation is not exceeded.

20.12 Soils

In addition to management measures undertaken at Warkworth for soils as described in the EMS, WML commit to leading practise of soils, commitments apply generally to woodland and grassland areas and alternative strategies may be used for WSW depending on the outcomes of UNE research.

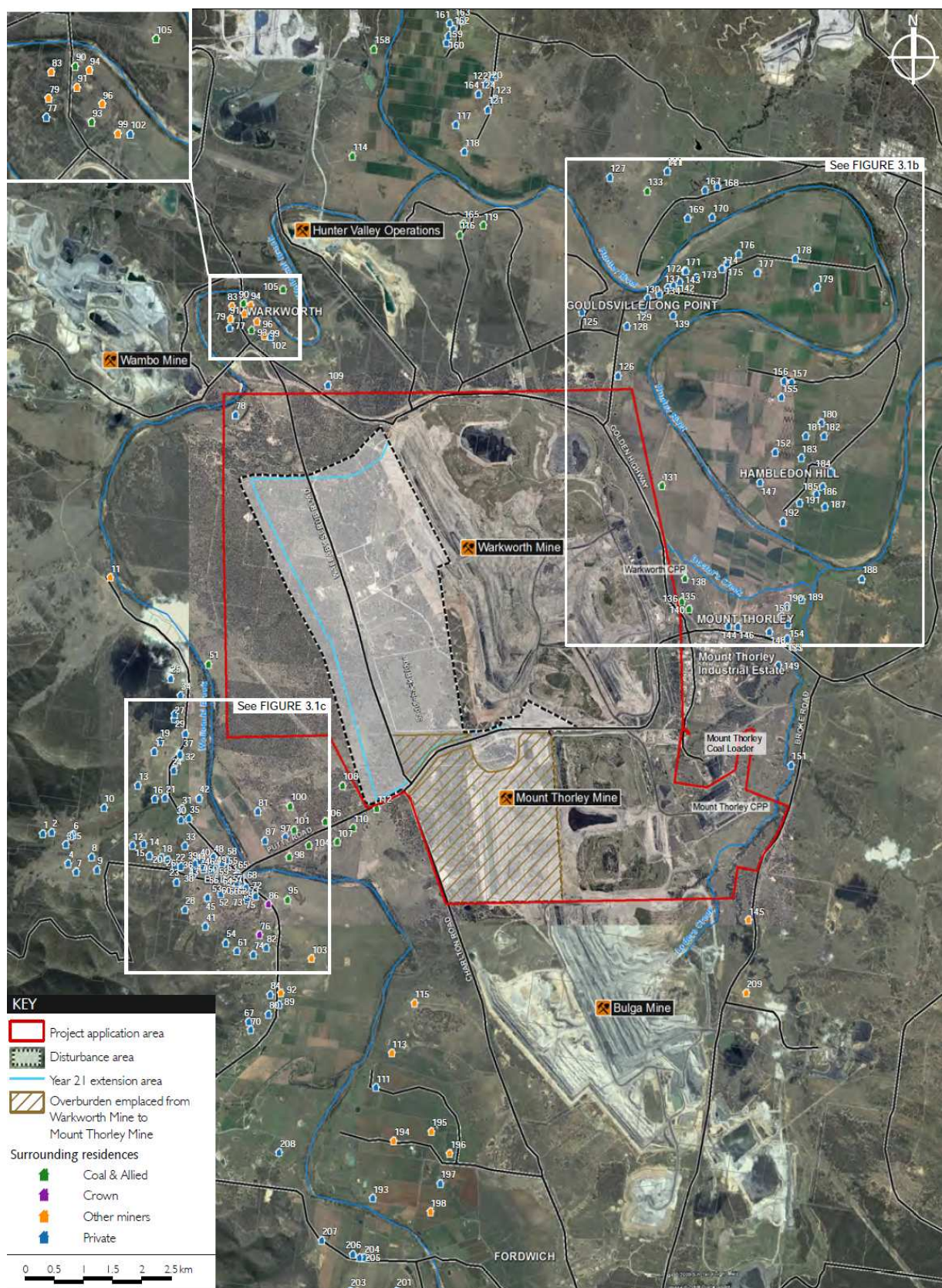
20.13 European Heritage

In relation to European heritage, all remaining elements of the former RAAF base would be recorded to NSW Heritage Office standards to record its historical significance and document the use and function of the kitchen building and demolished to its footings. Additionally, copies of the report would then be lodged with the Singleton Historical Society and the Australian War Memorial as a record of the site's history.

20.14 Community Consultation

Community and stakeholder consultation specific to the proposal may continue throughout the proposal timeframe from submission of this EA to the Minister for Planning's determination. Ongoing communication techniques utilised by Coal & Allied would be implemented as appropriate.

APPENDIX 5 LAND REFERENCE PLANS



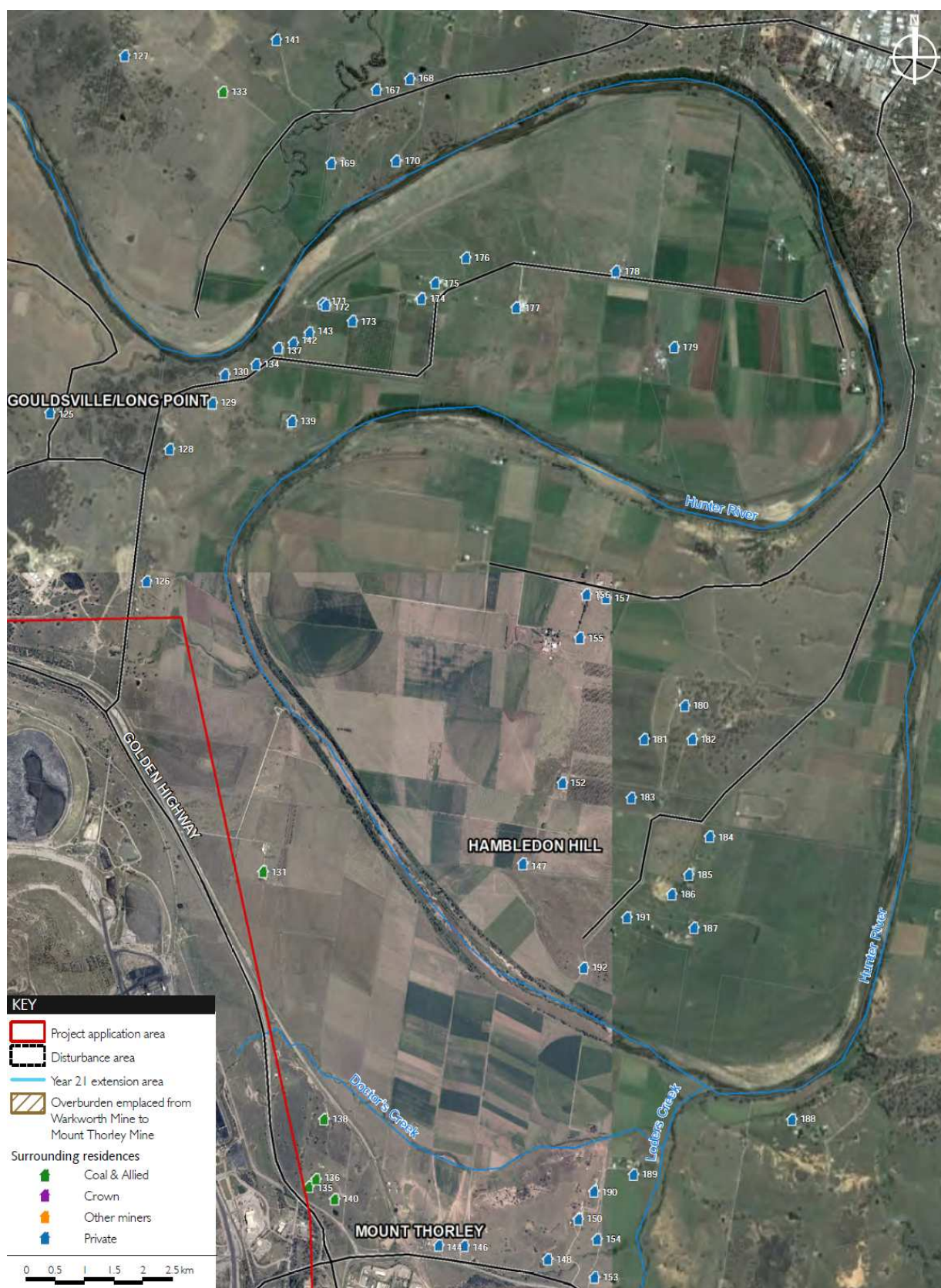
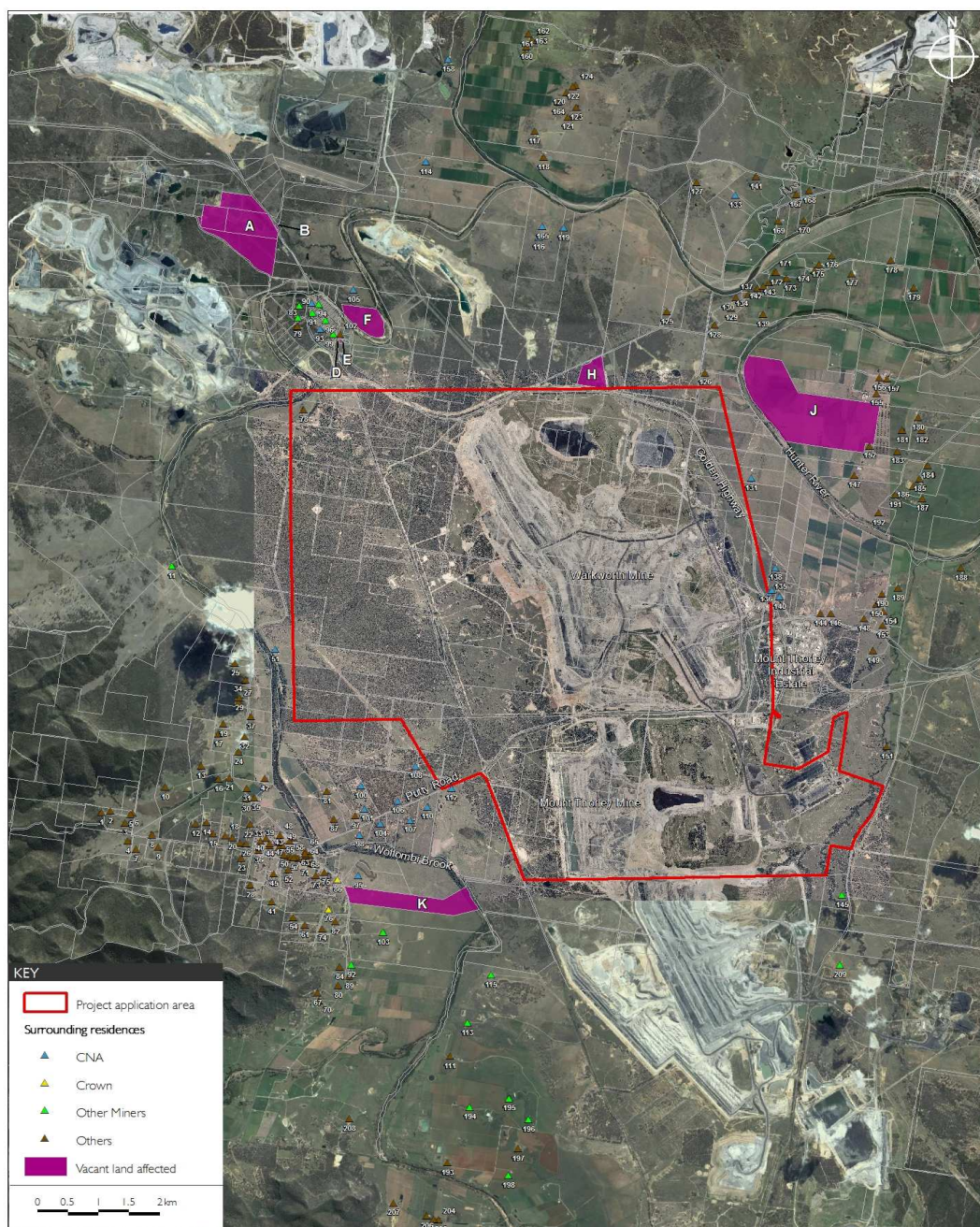


Figure 8: Surrounding Residences – North West



Figure 9: Surrounding Residences – South West (Bulga)



APPENDIX 6 OFFSET STRATEGY

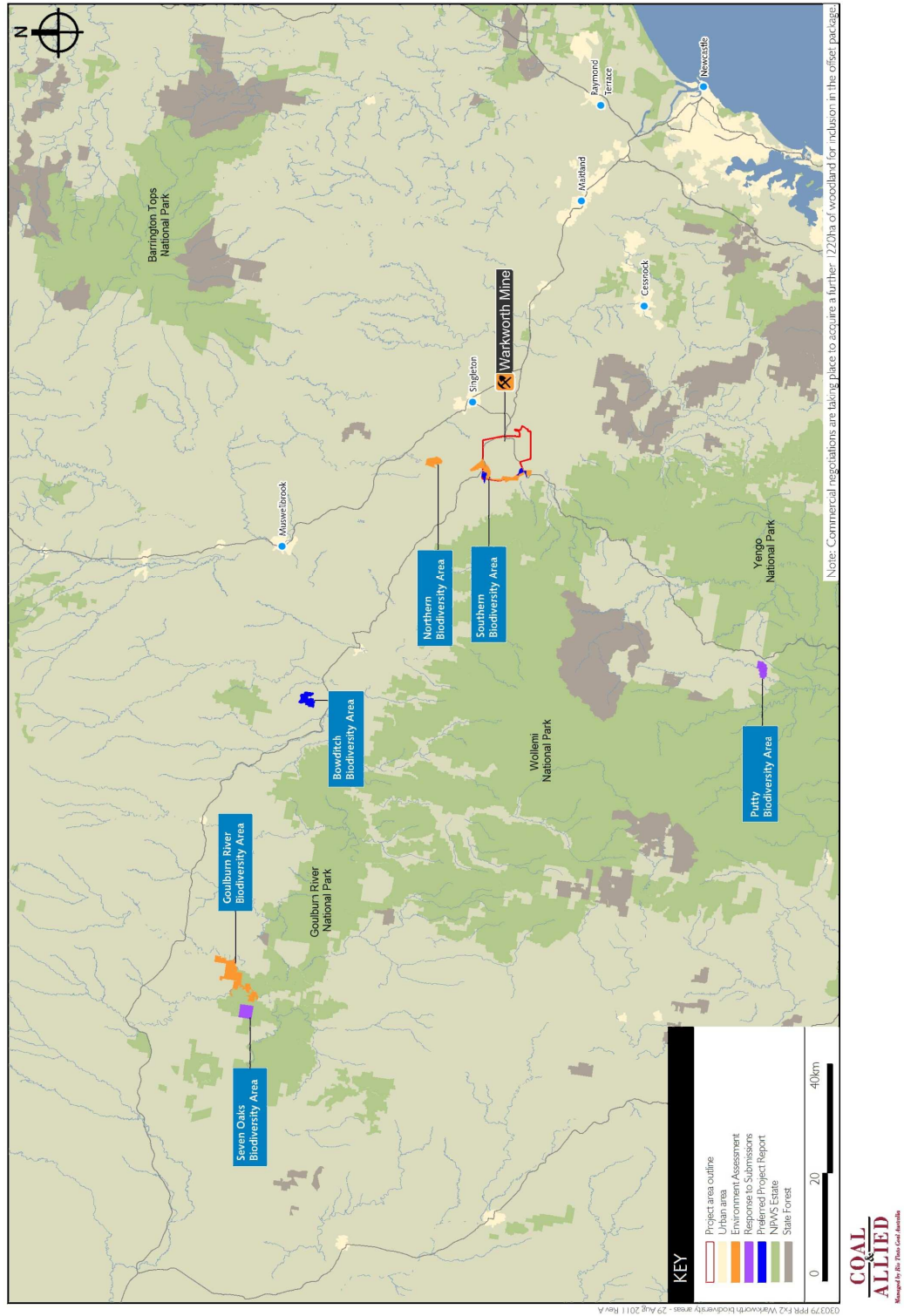
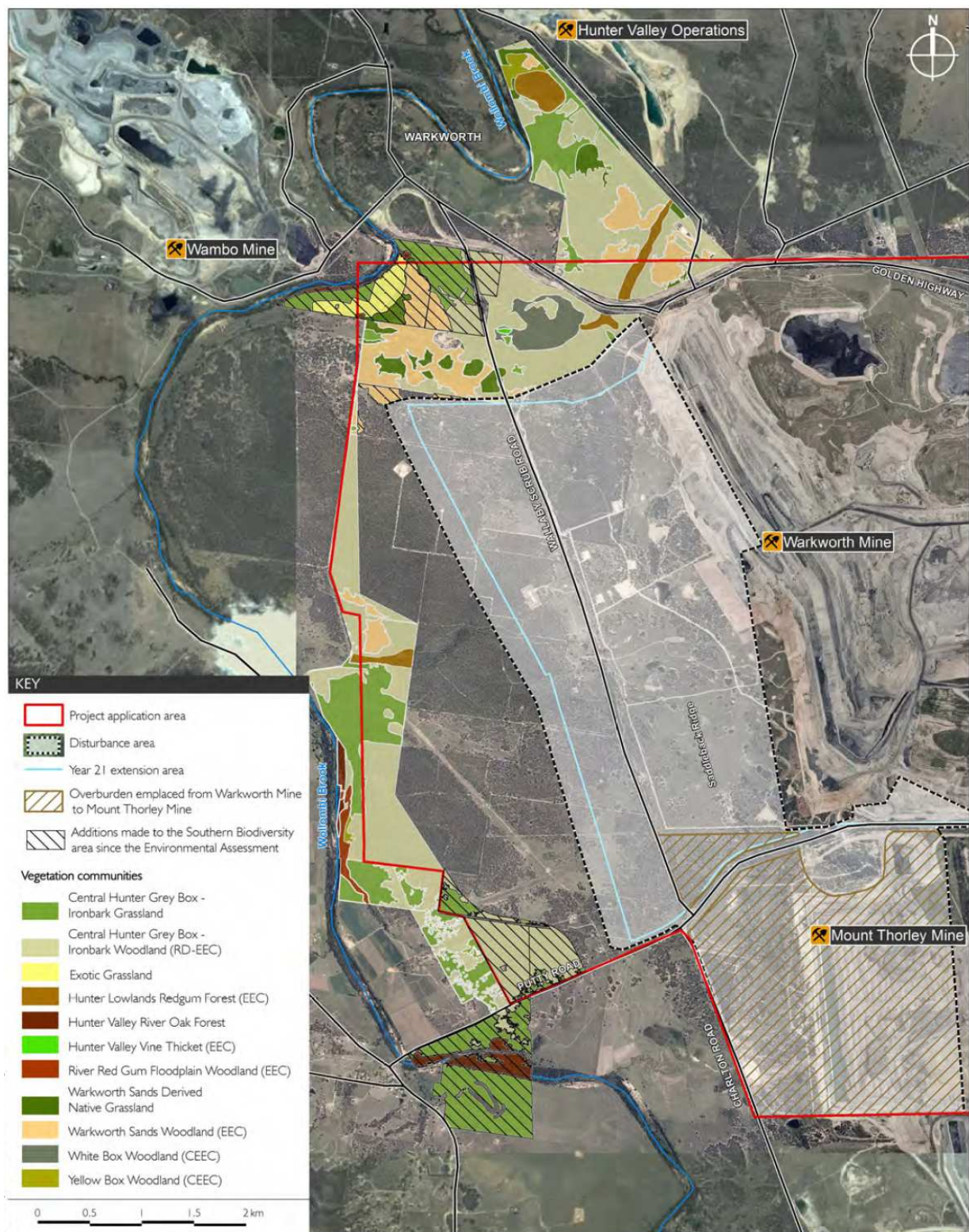


Figure 11: Location of Biodiversity Areas in Relation To The Mt Thorley-Warkworth Mine Complex



Vegetation Communities within the Southern Biodiversity Area
Proposed Warkworth Extension - Preferred Project Report

FIGURE 3.2

Figure 12: Southern Biodiversity Area (Including the Road Relocation Additions)

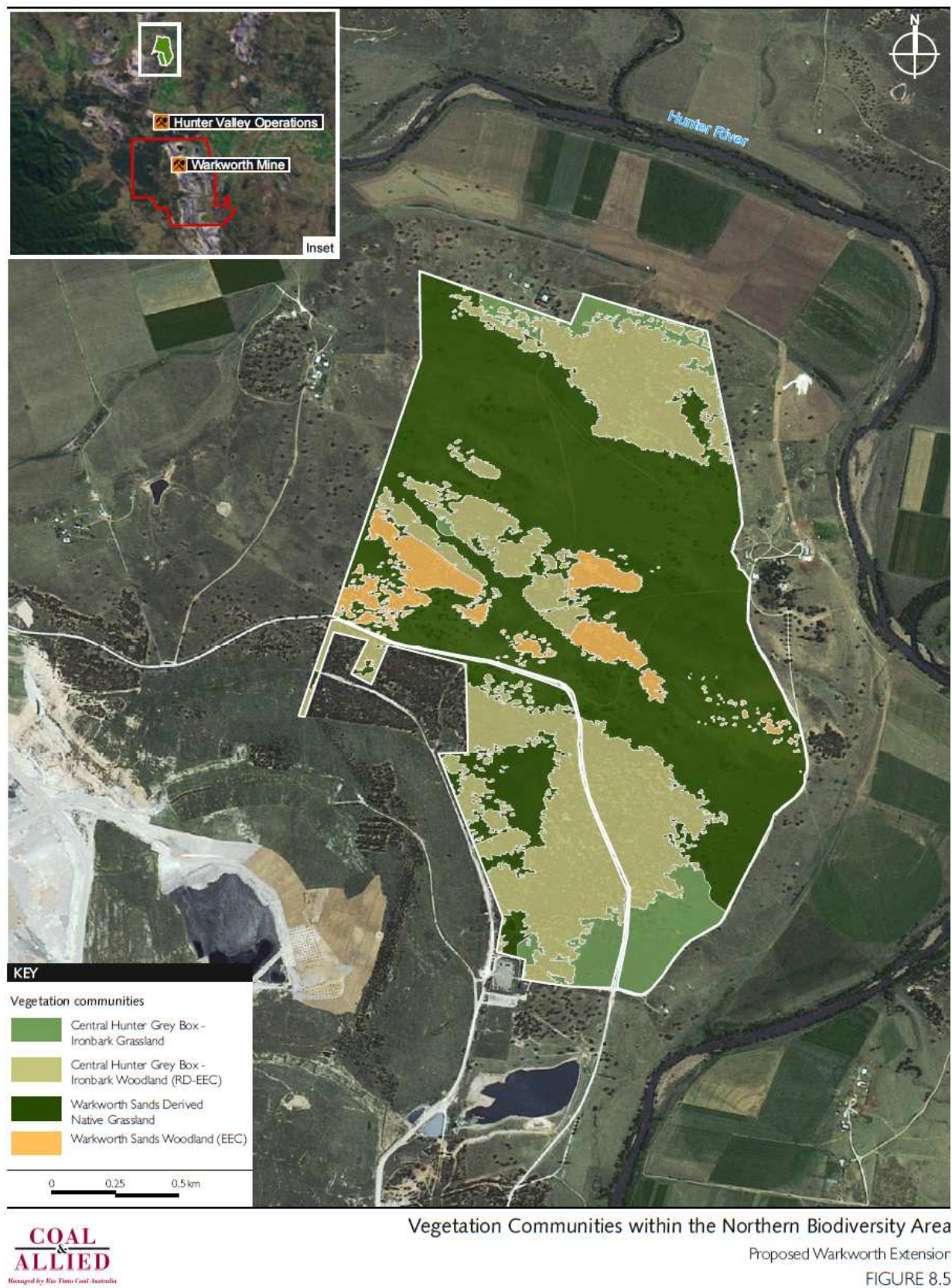


Figure 13: Northern Biodiversity Area

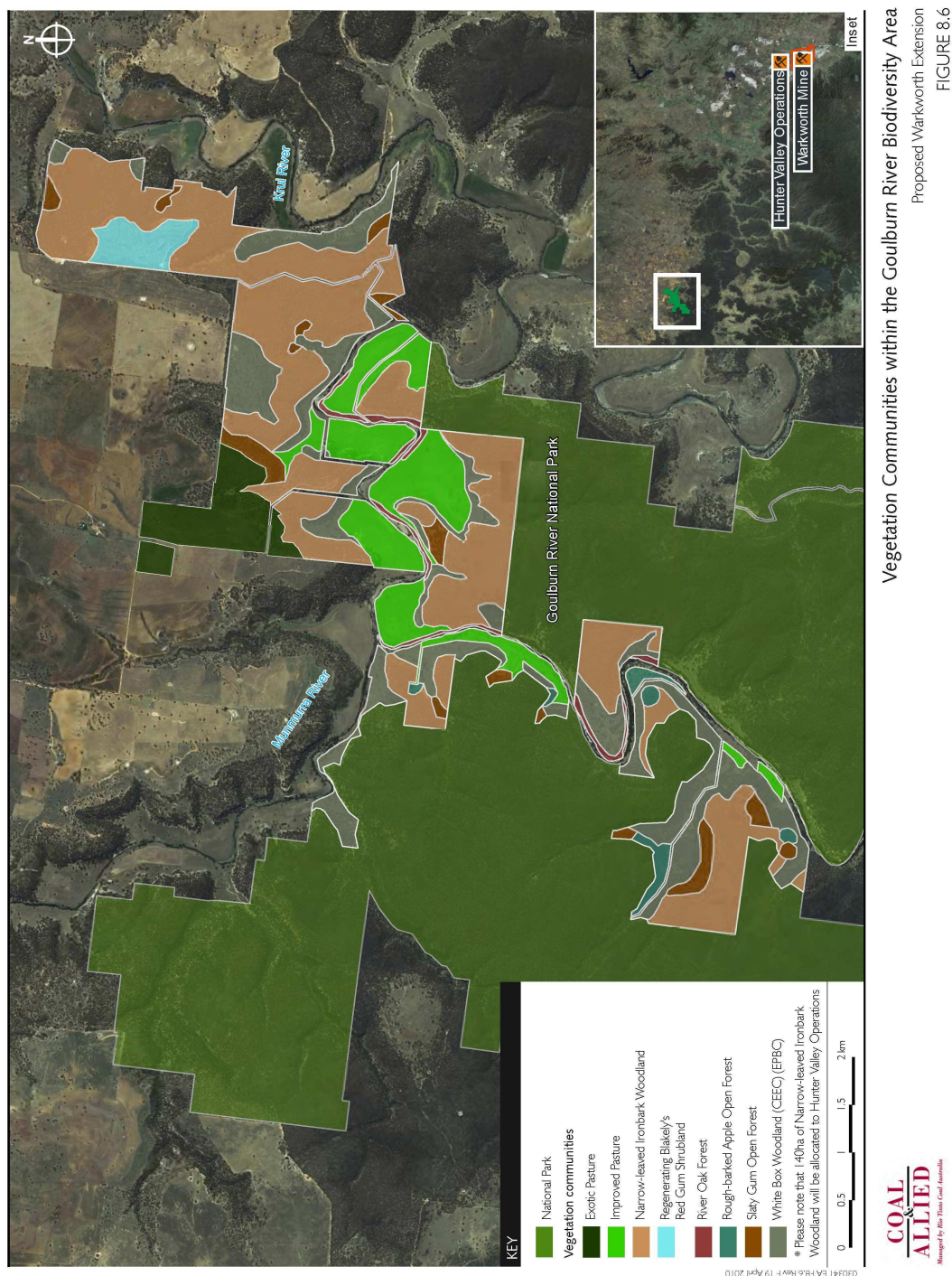


Figure 14: Goulburn River Biodiversity Area



Figure 15: Seven Oaks Biodiversity Area



Figure 16: Putty Biodiversity Area

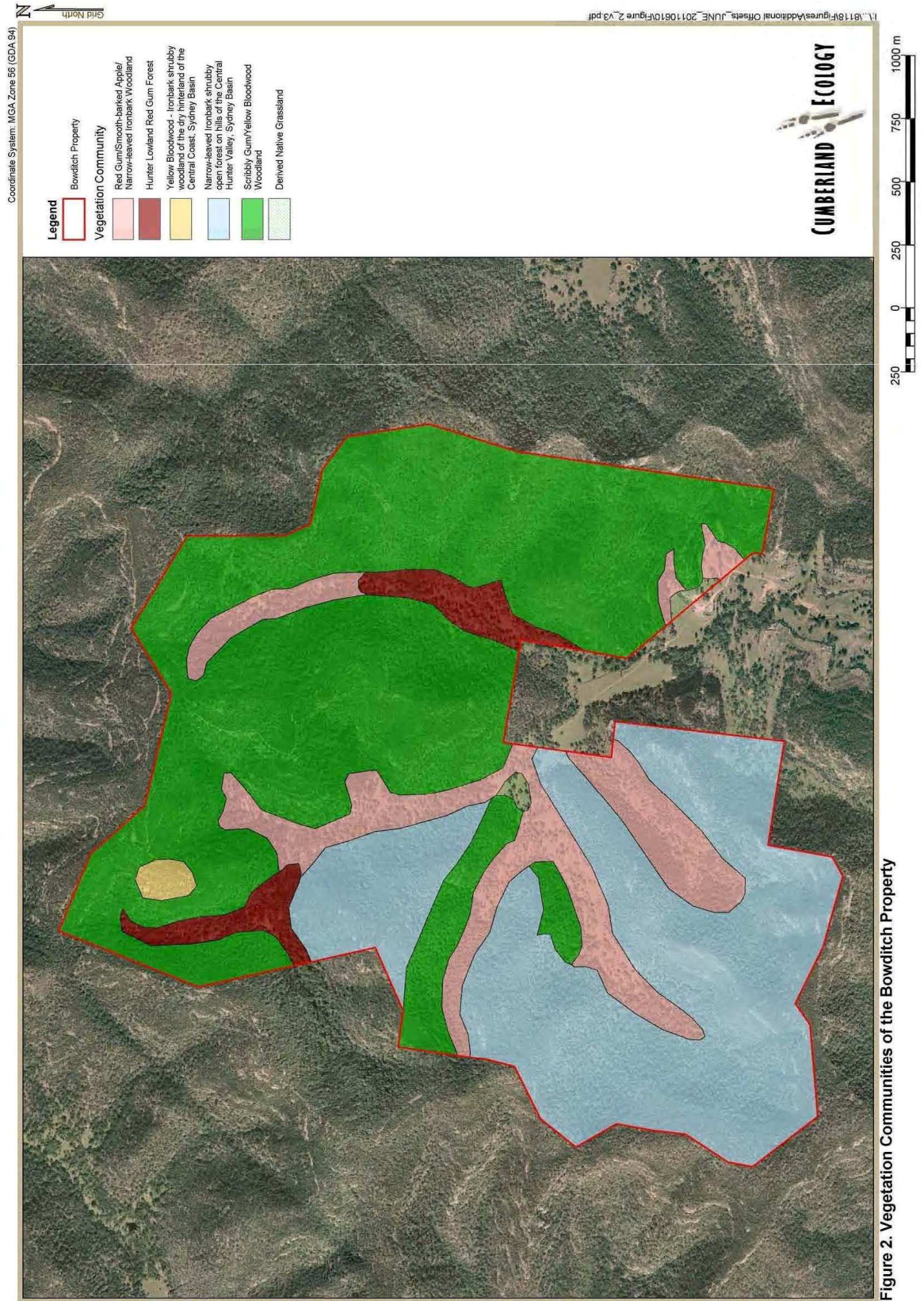


Figure 17: Bowditch Biodiversity Area

Figure 2. Vegetation Communities of the Bowditch Property

APPENDIX 7 ABORIGINAL HERITAGE

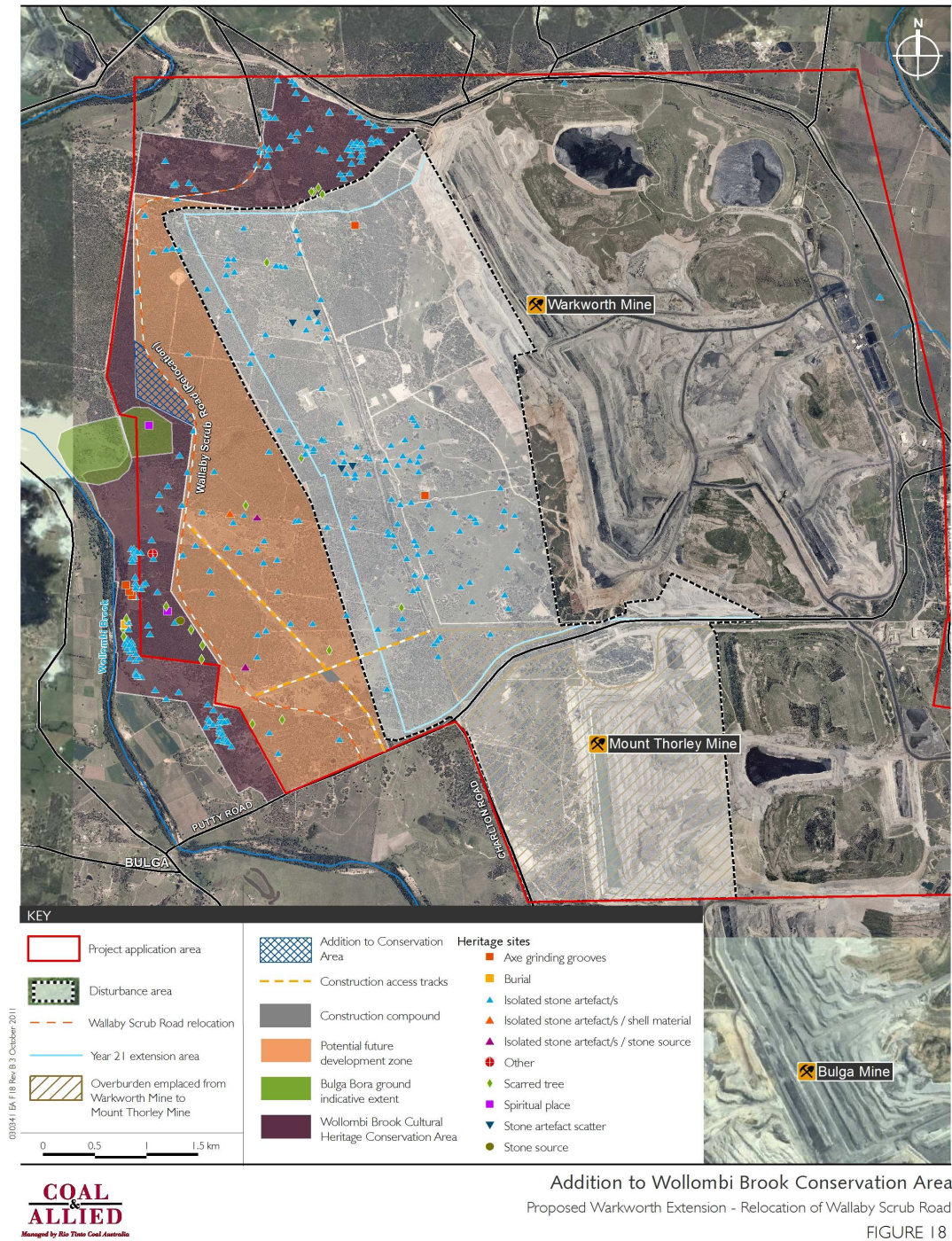


Figure 18: Addition to Wollombi Brook Conservation Area

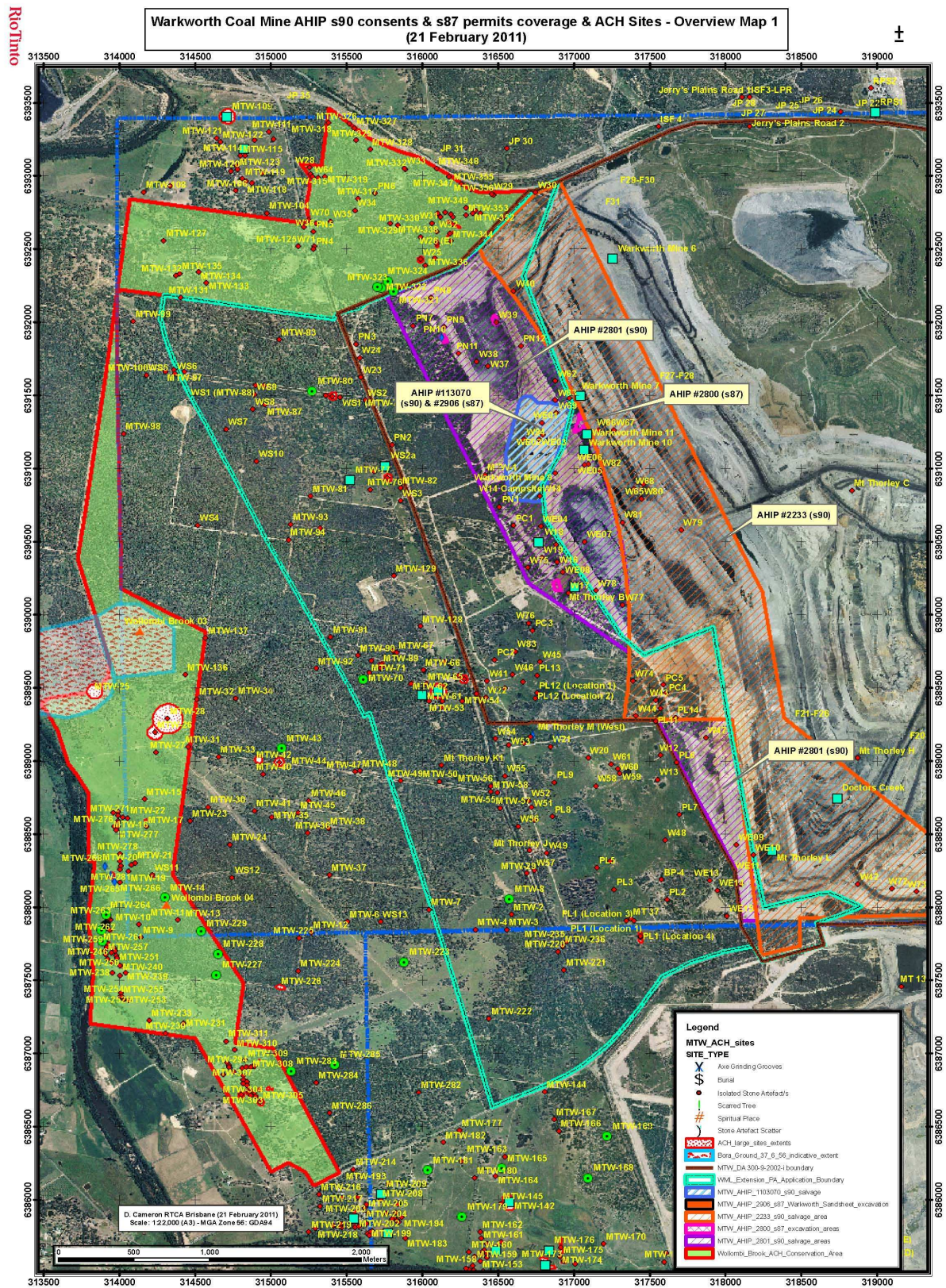


Figure 19: Heritage Items Identified in Tables 1 & 2 Below

Table 1: Heritage Items to be Protected

Site Name	AHIMS No	Site Type
Wollombi Brook 04 / Bulga Bora *	37-6-0055	Spiritual Place
Wollombi Brook 03 / Tree 2 *	37-6-0056	Scarred Tree / Spiritual Place
W70	37-6-1239	Isolated Stone Artefact/s
W71	37-6-1241	Isolated Stone Artefact/s
W32	37-6-1264	Isolated Stone Artefact/s
PN4	37-6-2705	Isolated Stone Artefact/s
PN5 [N]	37-6-2706	Isolated Stone Artefact/s
MTW-9	37-6-2308	Isolated Stone Artefact/s
MTW-10	37-6-2309	Isolated Stone Artefact/s
MTW-11	37-6-2310	Isolated Stone Artefact/s
MTW-13	37-6-2312	Stone Source
MTW-14	37-6-2313	Scarred Tree
MTW-15	37-6-2314	Isolated Stone Artefact/s
MTW-16	37-6-2315	Other (Stone Piles)
MTW-17	37-6-2316	Isolated Stone Artefact/s
MTW-18 [WS11] *	37-6-2317	Isolated Stone Artefact/s
MTW-19	37-6-2318	Isolated Stone Artefact/s
MTW-20	37-6-2319	Isolated Stone Artefact/s
MTW-21	37-6-2320	Isolated Stone Artefact/s
MTW-22	37-6-2321	Isolated Stone Artefact/s
MTW-25	37-6-2324	Isolated Stone Artefact/s / Stone Source
MTW-26	37-6-2325	Isolated Stone Artefact/s
MTW-27	37-6-2326	Isolated Stone Artefact/s
MTW-28	37-6-2327	Isolated Stone Artefact/s [PAD]
MTW-31	37-6-2330	Isolated Stone Artefact/s
MTW-124	37-6-2423	Isolated Stone Artefact/s
MTW-125	37-6-2424	Isolated Stone Artefact/s
MTW-126	37-6-2425	Isolated Stone Artefact/s
MTW-127	37-6-2426	Isolated Stone Artefact/s
MTW-132	37-6-2431	Isolated Stone Artefact/s
MTW-133	37-6-2432	Isolated Stone Artefact/s
MTW-134	37-6-2433	Isolated Stone Artefact/s
MTW-135	37-6-2434	Isolated Stone Artefact/s
MTW-136	37-6-2435	Isolated Stone Artefact/s
MTW-227 ~ WSW-09-33 #	37-6-2525	Scarred Tree
MTW-228 ~ WSW-09-34 #	37-6-2526	Scarred Tree
MTW-230 ~ WSW-09-55 #	37-6-2527	Isolated Stone Artefact/s
MTW-231 ~ WSW-09-56 #	37-6-2528	Isolated Stone Artefact/s
MTW-232 ~ WSW-09-20 #	37-6-2529	Isolated Stone Artefact/s [PAD]
MTW-233 ~ WSW-09-58 #	37-6-2530	Isolated Stone Artefact/s
MTW-237 ~ WSW-09-10 #	37-6-2534	Isolated Stone Artefact/s [PAD]
MTW-238 ~ WSW-09-10 #	37-6-2535	Isolated Stone Artefact/s [PAD]
MTW-239 ~ WSW-09-10 #	37-6-2536	Isolated Stone Artefact/s [PAD]
MTW-240 ~ WSW-09-10 #	37-6-2537	Isolated Stone Artefact/s [PAD]
MTW-241 ~ WSW-09-10 #	37-6-2538	Isolated Stone Artefact/s [PAD]
MTW-242 ~ WSW-09-10 #	37-6-2539	Isolated Stone Artefact/s [PAD]
MTW-243 ~ WSW-09-10 #	37-6-2540	Isolated Stone Artefact/s [PAD]
MTW-244 ~ WSW-09-? #	37-6-2541	Isolated Stone Artefact/s
MTW-245 ~ WSW-09-10 #	37-6-2542	Isolated Stone Artefact/s [PAD]
MTW-246 ~ WSW-09-10 #	37-6-2543	Isolated Stone Artefact/s [PAD]
MTW-247 ~ WSW-09-10 #	37-6-2544	Isolated Stone Artefact/s [PAD]
MTW-248 ~ WSW-09-10 #	37-6-2545	Isolated Stone Artefact/s [PAD]
MTW-249 ~ WSW-09-10 #	37-6-2546	Isolated Stone Artefact/s [PAD]
MTW-250 ~ WSW-09-10 #	37-6-2547	Isolated Stone Artefact/s [PAD]

MTW-251 ~ WSW-09-10 #	37-6-2548	Isolated Stone Artefact/s [PAD]
MTW-252 ~ WSW-09-20 #	37-6-2549	Isolated Stone Artefact/s [PAD]
MTW-253 ~ WSW-09-20 #	37-6-2550	Isolated Stone Artefact/s [PAD]
MTW-254 ~ WSW-09-20 #	37-6-2551	Isolated Stone Artefact/s [PAD]
MTW-255 ~ WSW-09-20 #	37-6-2552	Isolated Stone Artefact/s [PAD]
MTW-256 ~ WSW-09-22 #	37-6-2553	Isolated Stone Artefact/s [PAD]
MTW-258 ~ WSW-09-21 #	37-6-2554	Scarred Tree [PAD]
		Other (Possible Historic Hearth / Burial)
		[PAD]
MTW-260 ~ WSW-09-21 #	37-6-2555	Isolated Stone Artefact/s [PAD]
MTW-261 ~ WSW-09-21 #	37-6-2556	Isolated Stone Artefact/s [PAD]
MTW-262 ~ WSW-09-21 #	37-6-2557	Isolated Stone Artefact/s [PAD]
MTW-263 ~ WSW-09-21 #	37-6-2558	Isolated Stone Artefact/s [PAD]
MTW-264 ~ WSW-09-21 #	37-6-2559	Scarred Tree [PAD]
MTW-265 ~ WSW-09-22 #	37-6-2560	Isolated Stone Artefact/s [PAD]
MTW-266 ~ WSW-09-22 #	37-6-2561	Axe Grinding Grooves [PAD]
MTW-267 ~ WSW-09-22 #	37-6-2562	Axe Grinding Grooves [PAD]
MTW-268 ~ WSW-09-23 #	37-6-2563	Axe Grinding Grooves [PAD]
MTW-269 ~ WSW-09-24 #	37-6-2564	Isolated Stone Artefact/s [PAD]
MTW-270 ~ WSW-09-24 #	37-6-2565	Isolated Stone Artefact/s [PAD]
MTW-271 ~ WSW-09-24 #	37-6-2566	Isolated Stone Artefact/s [PAD]
MTW-272 ~ WSW-09-24 #	37-6-2567	Isolated Stone Artefact/s [PAD]
MTW-273 ~ WSW-09-24 #	37-6-2568	Isolated Stone Artefact/s [PAD]
MTW-274 ~ WSW-09-24 #	37-6-2569	Isolated Stone Artefact/s [PAD]
MTW-275 ~ WSW-09-24 #	37-6-2570	Isolated Stone Artefact/s [PAD]
MTW-276 ~ WSW-09-24 #	37-6-2571	Isolated Stone Artefact/s [PAD]
MTW-277 ~ WSW-09-24 #	37-6-2572	Isolated Stone Artefact/s [PAD]
MTW-278 ~ WSW-09-61 #	37-6-2573	Isolated Stone Artefact/s
MTW-279 ~ WSW-09-62 #	37-6-2574	Isolated Stone Artefact/s
MTW-280 ~ WSW-09-62 #	37-6-2575	Isolated Stone Artefact/s
MTW-281 ~ WSW-09-62 #	37-6-2576	Isolated Stone Artefact/s
MTW-287 ~ WSW-09-25 #	37-6-2582	Isolated Stone Artefact/s [PAD]
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MTW-289 ~ WSW-09-25 #	37-6-2584	Isolated Stone Artefact/s [PAD]
MTW-290 ~ WSW-09-25 #	37-6-2585	Isolated Stone Artefact/s [PAD]
MTW-291 ~ WSW-09-25 #	37-6-2586	Isolated Stone Artefact/s [PAD]
MTW-292 ~ WSW-09-25 #	37-6-2587	Isolated Stone Artefact/s [PAD]
MTW-293 ~ WSW-09-25 #	37-6-2588	Isolated Stone Artefact/s [PAD]
MTW-294 ~ WSW-09-25 #	37-6-2589	Isolated Stone Artefact/s [PAD]
MTW-295 ~ WSW-09-25 #	37-6-2590	Isolated Stone Artefact/s [PAD]
MTW-296 ~ WSW-09-25 #	37-6-2591	Isolated Stone Artefact/s [PAD]
MTW-297 ~ WSW-09-25 #	37-6-2592	Isolated Stone Artefact/s [PAD]
MTW-298 ~ WSW-09-25 #	37-6-2593	Isolated Stone Artefact/s [PAD]
MTW-299 ~ WSW-09-25 #	37-6-2594	Isolated Stone Artefact/s [PAD]
MTW-300 ~ WSW-09-25 #	37-6-2595	Isolated Stone Artefact/s [PAD]
MTW-301 ~ WSW-09-25 #	37-6-2596	Isolated Stone Artefact/s [PAD]
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MTW-310 ~ WSW-09-66 #	37-6-2605	Isolated Stone Artefact/s
MTW-311 ~ WSW-09-67 #	37-6-2606	Isolated Stone Artefact/s
MTW-312 [W35]*	37-6-1268	Isolated Stone Artefact/s
MTW-313	37-6-2607	Isolated Stone Artefact/s
MTW-314 [W28]*	37-6-1259	Isolated Stone Artefact/s

MTW-315 [W64]*	37-6-1300	Isolated Stone Artefact/s
MTW-316 [W36]*	37-6-1270	Isolated Stone Artefact/s
MTW-317	37-6-2608	Isolated Stone Artefact/s
MTW-318	37-6-2609	Isolated Stone Artefact/s
MTW-319	37-6-2610	Isolated Stone Artefact/s
MTW-320 [W34]*	37-6-1267	Isolated Stone Artefact/s
MTW-321 ~ WE16 #	37-6-2611	Scarred Tree
MTW-322	37-6-2612	Scarred Tree
MTW-323	37-6-2613	Scarred Tree
MTW-324	37-6-2614	Scarred Tree
MTW-325	37-6-2615	Isolated Stone Artefact/s
MTW-326	37-6-2616	Isolated Stone Artefact/s
MTW-327	37-6-2617	Isolated Stone Artefact/s
MTW-328	37-6-2618	Isolated Stone Artefact/s
MTW-329	37-6-2619	Isolated Stone Artefact/s
MTW-330	37-6-2620	Isolated Stone Artefact/s
MTW-331 [PN6]*	37-6-2621	Isolated Stone Artefact/s
MTW-332 [W33]*	37-6-1265	Isolated Stone Artefact/s
MTW-333 [W31]*	37-6-1262	Isolated Stone Artefact/s
MTW-334 [W26 West]*	37-6-1255	Isolated Stone Artefact/s
MTW-335	37-6-2622	Isolated Stone Artefact/s
MTW-336 [W25 East] *	37-6-1254	Isolated Stone Artefact/s
MTW-337 [W25 West] *	37-6-1254	Stone Artefact Scatter
MTW-338	37-6-2623	Isolated Stone Artefact/s
MTW-339	37-6-2624	Isolated Stone Artefact/s
MTW-340	37-6-2625	Isolated Stone Artefact/s
MTW-341	37-6-2626	Isolated Stone Artefact/s
MTW-342 [W27] *	37-6-1258	Isolated Stone Artefact/s
MTW-343 [W26 East] *	37-6-1255	Isolated Stone Artefact/s
MTW-344	37-6-2627	Isolated Stone Artefact/s
MTW-345	37-6-2628	Isolated Stone Artefact/s
MTW-346	37-6-2629	Isolated Stone Artefact/s
MTW-347	37-6-2630	Isolated Stone Artefact/s
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MTW-355	37-6-2638	Isolated Stone Artefact/s
MTW-356 [W29]*	37-6-1260	Isolated Stone Artefact/s
MTW-5 [WS13]	37-6-2304	Isolated Stone Artefact/s
MTW-6	37-6-2305	Isolated Stone Artefact/s
MTW-7	37-6-2306	Isolated Stone Artefact/s
MTW-12	37-6-2311	Isolated Stone Artefact/s
MTW-23	37-6-2322	Isolated Stone Artefact/s
MTW-24	37-6-2323	Isolated Stone Artefact/s
MTW-30	37-6-2329	Isolated Stone Artefact/s
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MTW-34	37-6-2333	Isolated Stone Artefact/s
MTW-35	37-6-2334	Isolated Stone Artefact/s
MTW-36	37-6-2335	Isolated Stone Artefact/s
MTW-37	37-6-2336	Isolated Stone Artefact/s
MTW-38	37-6-2337	Isolated Stone Artefact/s
MTW-39	37-6-2338	Isolated Stone Artefact/s / Shell Material
MTW-40	37-6-2339	Isolated Stone Artefact/s

MTW-41	37-6-2340	Isolated Stone Artefact/s
MTW-42	37-6-2341	Isolated Stone Artefact/s
MTW-43	37-6-2342	Scarred Tree
MTW-44	37-6-2343	Isolated Stone Artefact/s / Stone Source
MTW-45	37-6-2344	Isolated Stone Artefact/s
MTW-46	37-6-2345	Isolated Stone Artefact/s
MTW-47	37-6-2346	Isolated Stone Artefact/s
MTW-48	37-6-2347	Isolated Stone Artefact/s
MTW-92	37-6-2391	Isolated Stone Artefact/s
MTW-96 [WS6]	37-6-2395	Isolated Stone Artefact/s
MTW-97	37-6-2396	Isolated Stone Artefact/s
MTW-98	37-6-2397	Isolated Stone Artefact/s
MTW-99	37-6-2398	Isolated Stone Artefact/s
MTW-100 [WS5]*	37-6-2399	Isolated Stone Artefact/s
MTW-101 [WS4] *	37-6-2400	Isolated Stone Artefact/s
MTW-137	37-6-2436	Isolated Stone Artefact/s
MTW-223 ~ WSW-09-32 #	37-6-2521	Scarred Tree
MTW-224 ~ WSW-09-53 #	37-6-2522	Isolated Stone Artefact/s
MTW-225 ~ WSW-09-54 #	37-6-2523	Isolated Stone Artefact/s
MTW-226 ~ WSW-09-8 #	37-6-2524	Isolated Stone Artefact/s / Stone Source
MTW-282 ~ WSW-09-63 #	37-6-2577	Isolated Stone Artefact/s
MTW-283 ~ WSW-09-36 #	37-6-2578	Scarred Tree
MTW-284 ~ WSW-09-64 #	37-6-2579	Isolated Stone Artefact/s
MTW-285 ~ WSW-09-37 #	37-6-2580	Scarred Tree
MTW-286 ~ WSW-09-65 #	37-6-2581	Isolated Stone Artefact/s

Table 2: Heritage Items to be Impacted by the Project

Site Name	AHIMS No	Site Type
Jerry's Plains Road 2	37-6-0611	Isolated Stone Artefact/s
Wark-2	37-6-0682	Isolated Stone Artefact/s
W22	37-6-1248	Isolated Stone Artefact/s
W24	37-6-1252	Isolated Stone Artefact/s
W76	37-6-1253	Isolated Stone Artefact/s
W83	37-6-1271	Isolated Stone Artefact/s
W41	37-6-1277	Isolated Stone Artefact/s
W45	37-6-1281	Isolated Stone Artefact/s
W46	37-6-1282	Isolated Stone Artefact/s
PC2	37-6-2292	Isolated Stone Artefact/s
PC3	37-6-2293	Isolated Stone Artefact/s
PC4	DSY	Isolated Stone Artefact/s
PC5	DSY	Isolated Stone Artefact/s
PL6	37-6-2701	Isolated Stone Artefact/s
PL12	37-6-2294	Stone Artefact Scatter
PL13	37-6-2297	Stone Artefact Scatter
PN2	37-6-2299	Isolated Stone Artefact/s
PN3	37-6-2300	Isolated Stone Artefact/s
Mt Thorley J	37-6-0160	Isolated Stone Artefact/s
Mt Thorley K1 & K2	37-6-0161	Isolated Stone Artefact/s
Mt Thorley M	37-6-0163	Grinding Grooves
BP-4	37-6-0979	Isolated Stone Artefact/s
W12	37-6-1234	Isolated Stone Artefact/s
W13	37-6-1235	Isolated Stone Artefact/s
W20	37-6-1244	Isolated Stone Artefact/s
W21	37-6-1247	Isolated Stone Artefact/s
W23	37-6-1250	Isolated Stone Artefact/s
W48	37-6-1284	Isolated Stone Artefact/s
W49	37-6-1285	Isolated Stone Artefact/s
W50	37-6-1286	Isolated Stone Artefact/s
W51	37-6-1287	Isolated Stone Artefact/s
W52	37-6-1288	Isolated Stone Artefact/s
W53	37-6-1289	Isolated Stone Artefact/s
W54	37-6-1290	Isolated Stone Artefact/s
W55	37-6-1291	Isolated Stone Artefact/s
W56	37-6-1292	Isolated Stone Artefact/s
W57	37-6-1293	Isolated Stone Artefact/s
W58	37-6-1294	Isolated Stone Artefact/s
W59	37-6-1295	Isolated Stone Artefact/s
W60	37-6-1296	Isolated Stone Artefact/s
W61	37-6-1297	Isolated Stone Artefact/s
WS3	37-6-2711	Isolated Stone Artefact/s
WS7	37-6-2713	Isolated Stone Artefact/s
WS9	37-6-2714	Isolated Stone Artefact/s
PL1 [MTW-234]	37-6-2531	Isolated Stone Artefact/s
PL2	37-6-2697	Isolated Stone Artefact/s
PL3	37-6-2698	Isolated Stone Artefact/s
PL4	37-6-2699	Isolated Stone Artefact/s
PL5	37-6-2700	Isolated Stone Artefact/s
PL7	37-6-2702	Isolated Stone Artefact/s
PL8	37-6-2703	Isolated Stone Artefact/s
PL9	37-6-2704	Isolated Stone Artefact/s
PL10	37-6-2695	Isolated Stone Artefact/s
PL11	37-6-2696	Isolated Stone Artefact/s

MTW-2	37-6-2301	Isolated Stone Artefact/s
MTW-3	37-6-2302	Isolated Stone Artefact/s
MTW-4	37-6-2303	Isolated Stone Artefact/s
MTW-8	37-6-2307	Scarred Tree
MTW-29	37-6-2328	Isolated Stone Artefact/s
MTW-49	37-6-2348	Isolated Stone Artefact/s
MTW-50	37-6-2349	Isolated Stone Artefact/s [PAD]
MTW-51	37-6-2350	Isolated Stone Artefact/s
MTW-52	37-6-2351	Isolated Stone Artefact/s
MTW-53	37-6-2352	Isolated Stone Artefact/s
MTW-54	37-6-2353	Isolated Stone Artefact/s
MTW-55	37-6-2354	Isolated Stone Artefact/s
MTW-56	37-6-2355	Isolated Stone Artefact/s
MTW-57	37-6-2356	Isolated Stone Artefact/s
MTW-58	37-6-2357	Isolated Stone Artefact/s
MTW-59	37-6-2358	Isolated Stone Artefact/s
MTW-60	37-6-2359	Stone Artefact Scatter [PAD]
MTW-61	37-6-2360	Stone Artefact Scatter
MTW-62	37-6-2361	Isolated Stone Artefact/s
MTW-63	37-6-2362	Isolated Stone Artefact/s
MTW-64	37-6-2363	Isolated Stone Artefact/s
MTW-65	37-6-2364	Isolated Stone Artefact/s [PAD]
MTW-66	37-6-2365	Isolated Stone Artefact/s
MTW-67	37-6-2366	Isolated Stone Artefact/s
MTW-68	37-6-2367	Isolated Stone Artefact/s
MTW-69	37-6-2368	Isolated Stone Artefact/s
MTW-70	37-6-2369	Scarred Tree
MTW-71	37-6-2370	Isolated Stone Artefact/s
MTW-72	37-6-2371	Isolated Stone Artefact/s
MTW-73	37-6-2372	Isolated Stone Artefact/s
MTW-74	37-6-2373	Isolated Stone Artefact/s
MTW-75 [WS2a] *	37-6-2374	Stone Artefact Scatter
MTW-76	37-6-2375	Isolated Stone Artefact/s
MTW-77	37-6-2376	Stone Artefact Scatter
MTW-78	37-6-2377	Isolated Stone Artefact/s
MTW-79	37-6-2378	Isolated Stone Artefact/s
		Scarred Tree / Isolated Stone Artefact/s
MTW-80	37-6-2379	
MTW-81	37-6-2380	Isolated Stone Artefact/s
MTW-82	37-6-2381	Isolated Stone Artefact/s
MTW-83	37-6-2382	Isolated Stone Artefact/s
MTW-84 [WS1]*	37-6-2383	Isolated Stone Artefact/s
MTW-85 [WS8]*	37-6-2384	Isolated Stone Artefact/s
MTW-86 [WS10]*	37-6-2385	Isolated Stone Artefact/s
MTW-87	37-6-2386	Isolated Stone Artefact/s
MTW-88	37-6-2387	Isolated Stone Artefact/s
MTW-89	37-6-2388	Isolated Stone Artefact/s
MTW-90	37-6-2389	Isolated Stone Artefact/s
MTW-91	37-6-2390	Isolated Stone Artefact/s
MTW-93	37-6-2392	Isolated Stone Artefact/s
MTW-94	37-6-2393	Isolated Stone Artefact/s
MTW-95	37-6-2394	Isolated Stone Artefact/s
MTW-102	37-6-2401	Isolated Stone Artefact/s
MTW-103	37-6-2402	Isolated Stone Artefact/s
MTW-128	37-6-2427	Isolated Stone Artefact/s
MTW-129	37-6-2428	Isolated Stone Artefact/s
MTW-130	37-6-2429	Isolated Stone Artefact/s
MTW-220 ~ WSW-09-50 #	37-6-2518	Isolated Stone Artefact/s

MTW-221 ~ WSW-09-51 #	37-6-2519	Isolated Stone Artefact/s
MTW-222 ~ WSW-09-52 #	37-6-2520	Isolated Stone Artefact/s
MTW-234 ~ WSW-09-9 #	37-6-2531	Isolated Stone Artefact/s
MTW-235 ~ WSW-09-59 #	37-6-2532	Isolated Stone Artefact/s
MTW-236 ~ WSW-09-60 #	37-6-2533	Isolated Stone Artefact/s

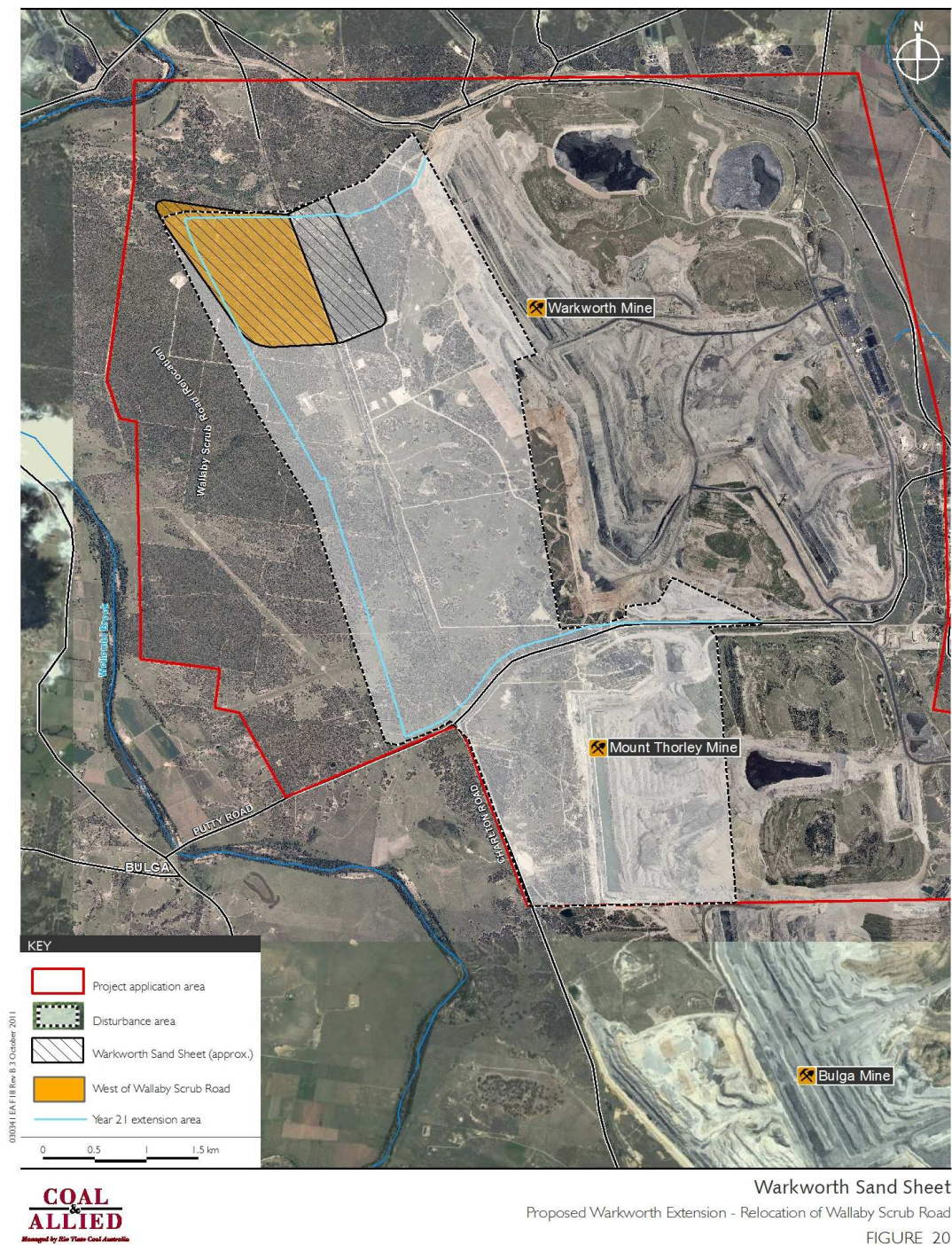


Figure 20: Warkworth Sand Sheet – Archaeological Excavation Program

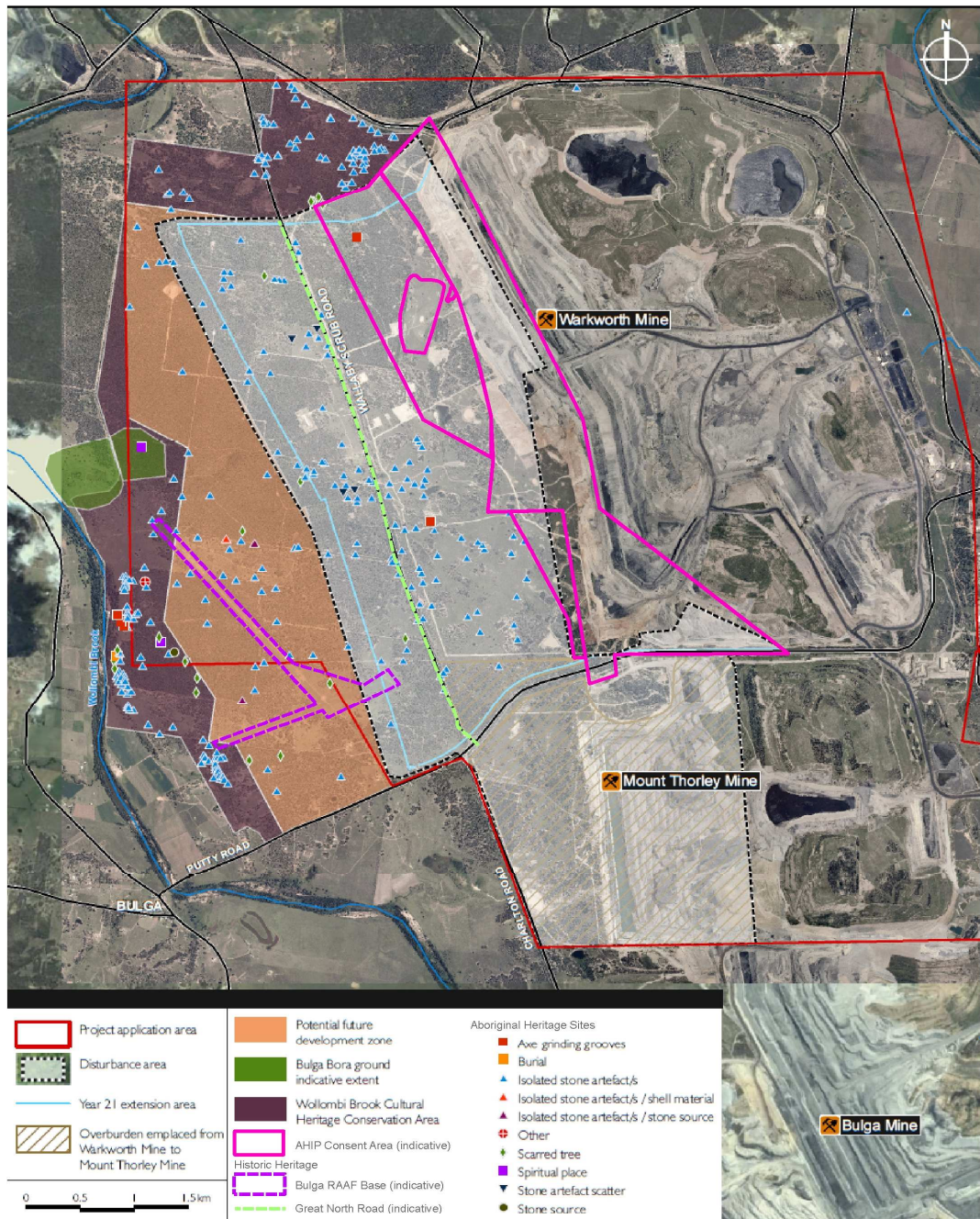


Figure 21: Historic Heritage Items

APPENDIX 8 PRIMARY VIEW CATCHMENT

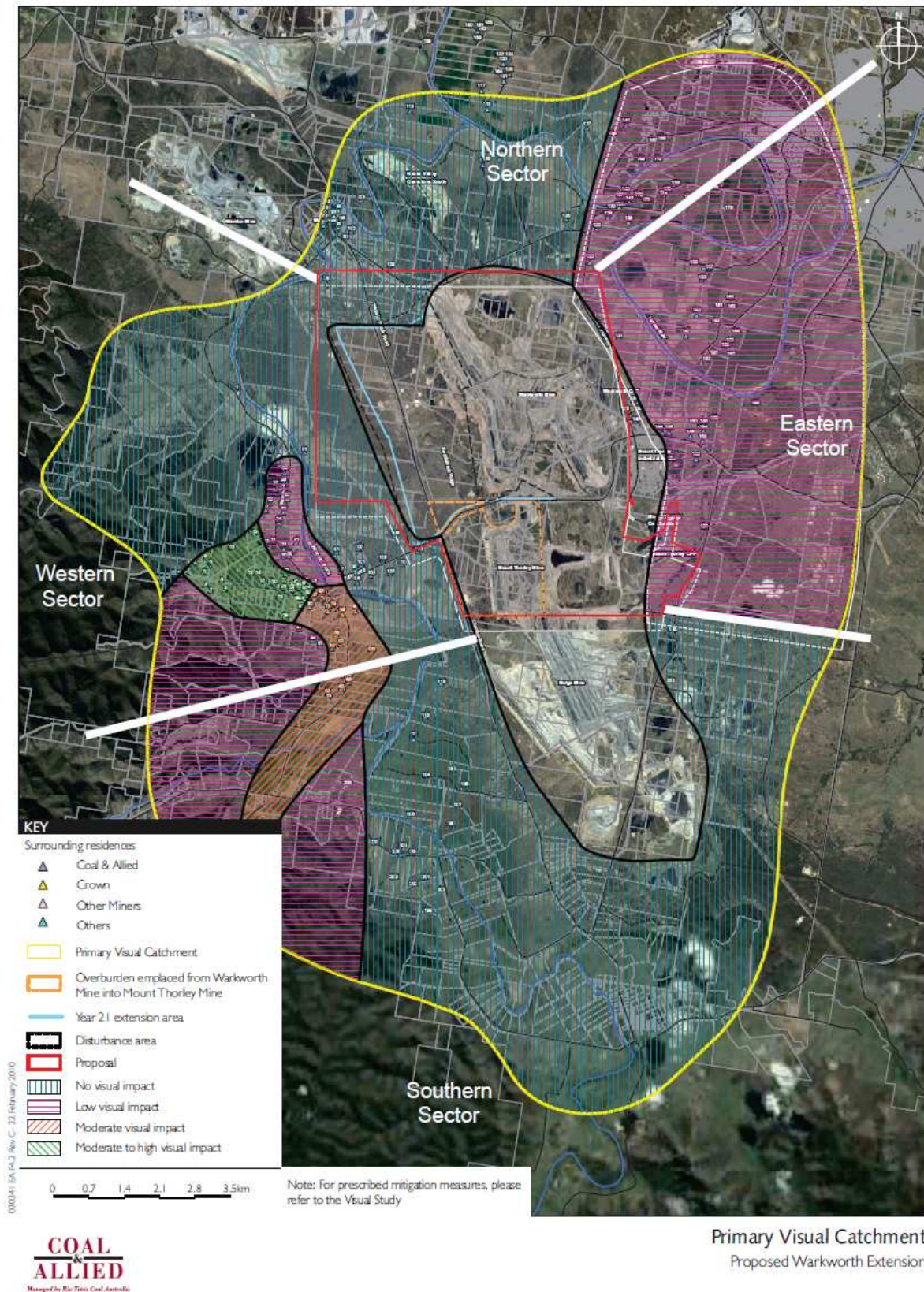
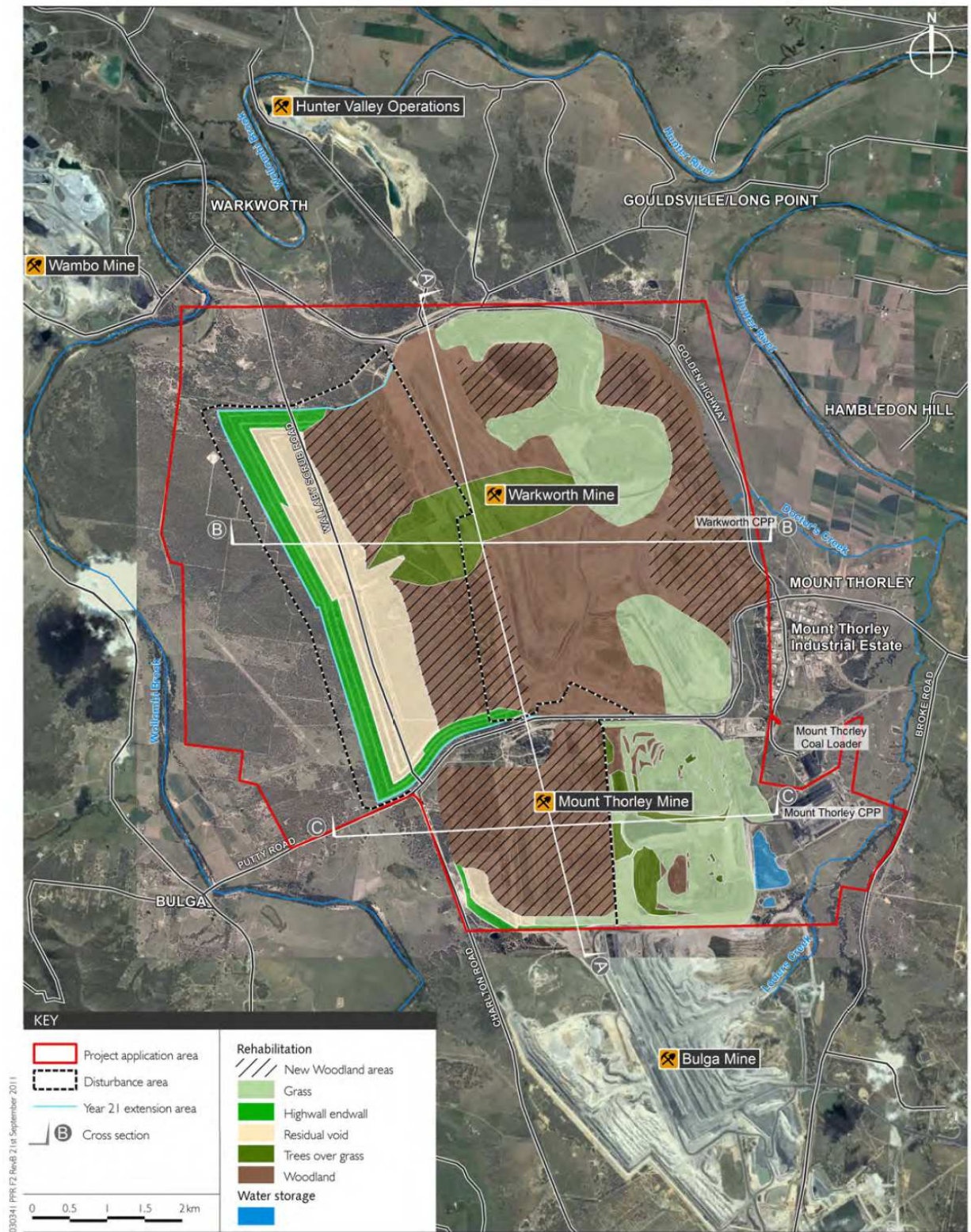


Figure 21: Primary Visual Catchment

APPENDIX 9 REHABILITATION PLANS



Indicative final landform

Proposed Warkworth Extension - Preferred Project Report

FIGURE 2.1

Figure 22: Indicative Final Landform

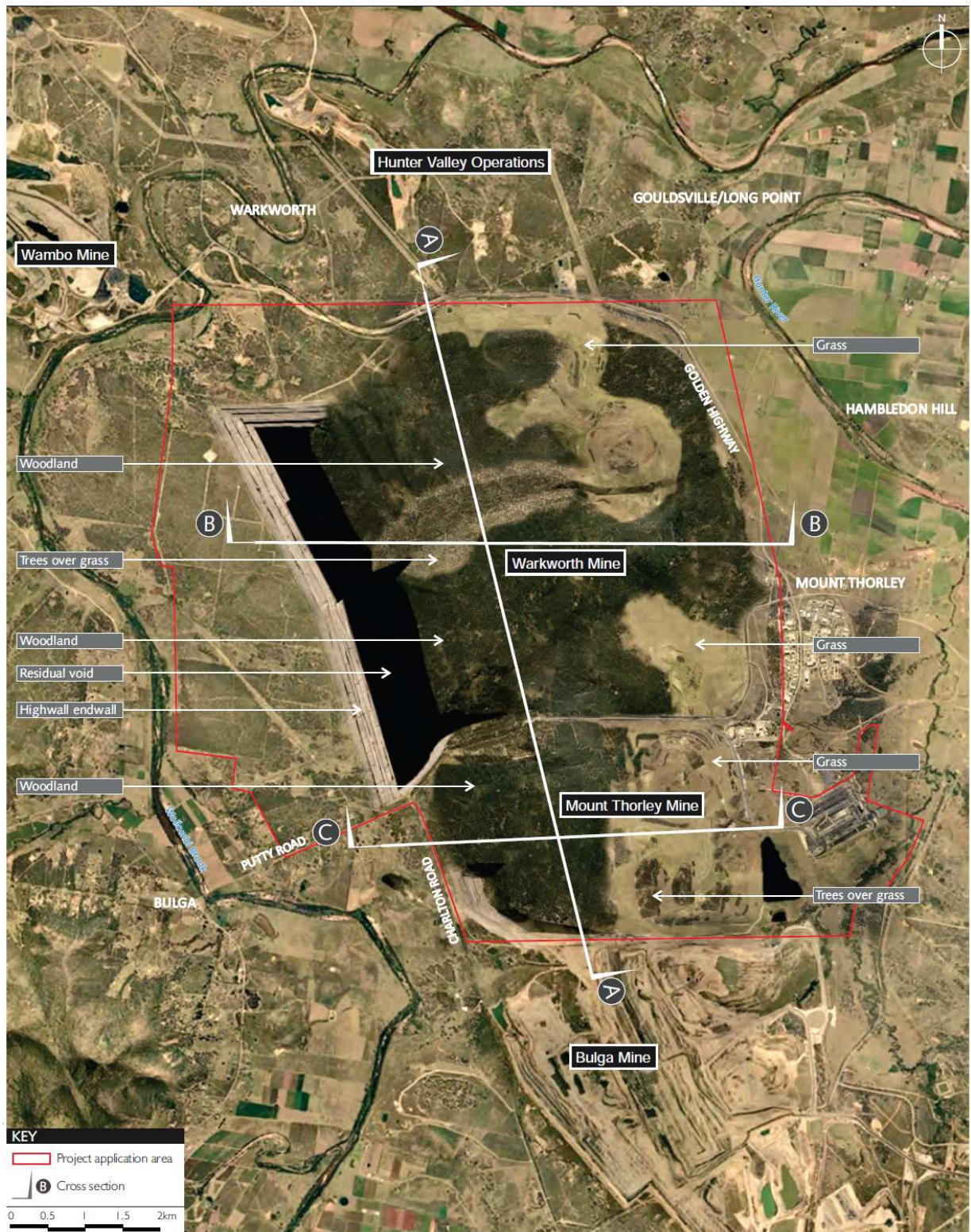


Figure 23: Conceptual Rehabilitation

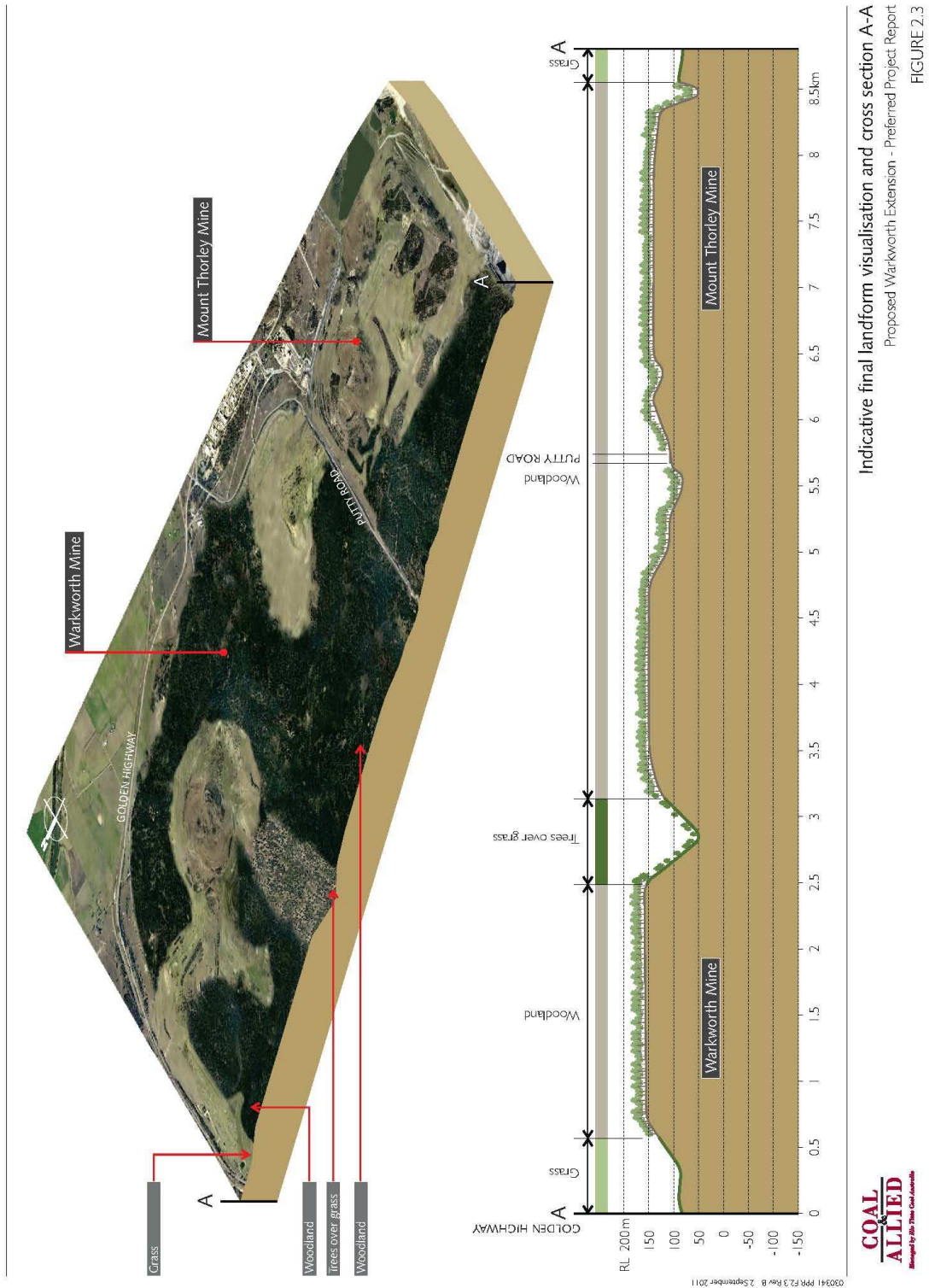


Figure 24: Indicative Final Landform – Cross Section A

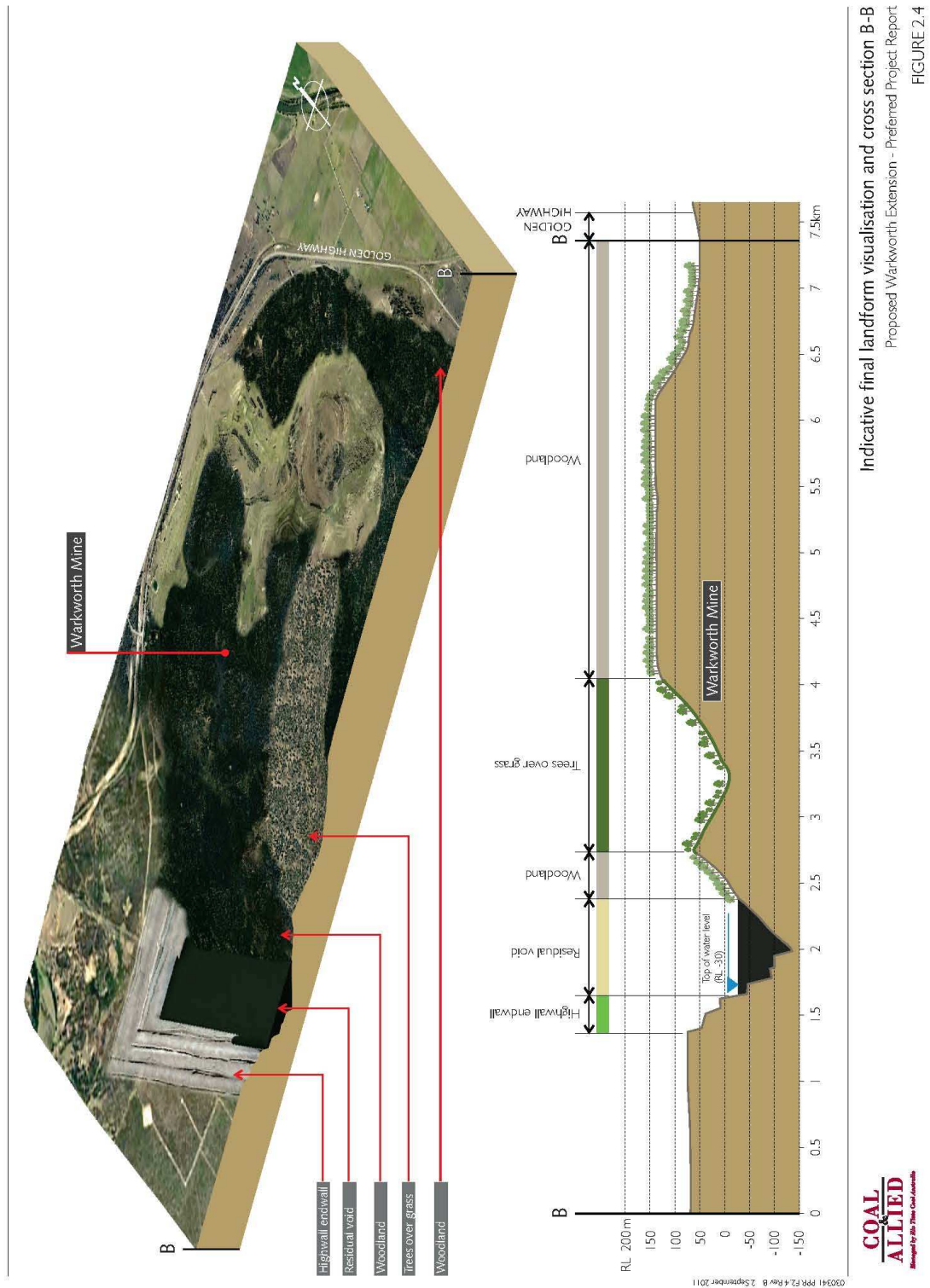


Figure 25: Indicative Final Landform – Cross Section B

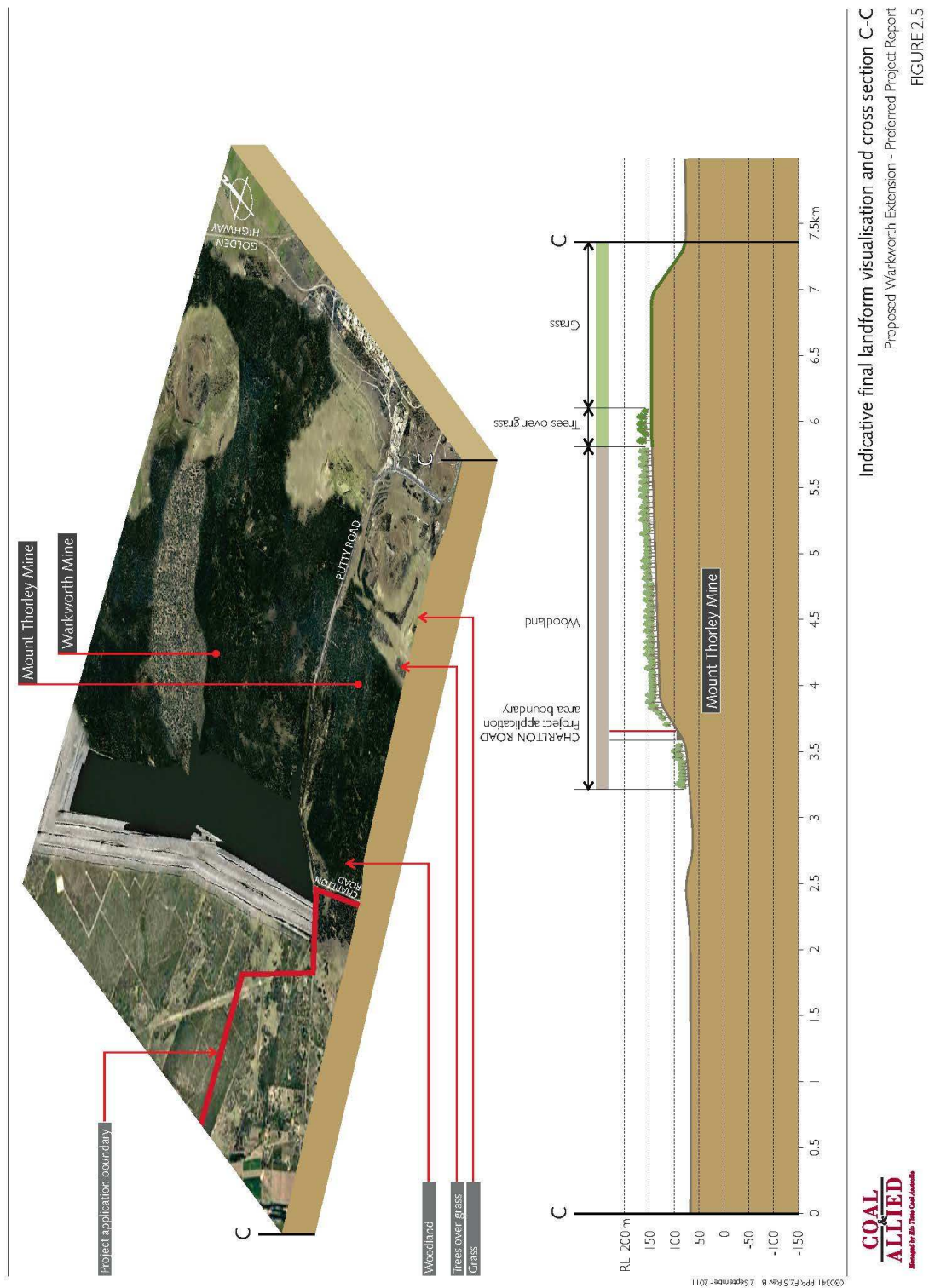


Figure 26: Indicative Final Landform – Cross Section C