



WAMBO COAL PTY LTD

NORTH WAMBO UNDERGROUND MINE

EXTRACTION PLAN
LONGWALLS 8 TO 10A

APPENDIX D
HERITAGE MANAGEMENT PLAN

WAMBO COAL PTY LTD
NORTH WAMBO UNDERGROUND MINE

HERITAGE MANAGEMENT PLAN
LONGWALLS 8 - 10A



PREPARED BY
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Title	Heritage Management Plan for North Wambo Underground Mine Longwalls 8 to 10A
General Description	Management of potential environmental consequences on heritage sites or values for mining of Longwalls 8 to 10A at North Wambo Underground Mine.
Key Support Documents	Wambo Homestead Complex Mine Management Plan Wambo Coal Mine Salvage and Management Programme

Revisions

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Approvals

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1 INTRODUCTION

The Wambo Coal Mine is an open cut and underground coal mining operation located approximately 15 kilometres west of Singleton, near the village of Warkworth, New South Wales (NSW) (**Figure 1**). The Wambo Coal Mine is owned and operated by Wambo Coal Pty Limited (WCPL), a subsidiary of Peabody Energy Australia Pty Limited.

The North Wambo Underground Mine is a component of the approved Wambo Coal Mine. The North Wambo Underground Mine commenced in 2005 and involves extraction of coal by longwall mining methods from the Wambo Seam within Mining Lease (ML) 1402, ML 1594, Coal Lease (CL) 397 and Consolidated Coal Lease (CCL) 743 (**Figure 2**).

The potential environmental impacts of the existing Wambo Coal Mine were assessed in the *Wambo Development Project Environmental Impact Statement* (the Wambo Development Project EIS) (WCPL, 2003). Development Consent DA 305-7-2003 for the Wambo Coal Mine was granted on 4 February 2004 by the then NSW Minister for Urban Affairs and Planning under Part 4 of the NSW *Environmental Planning and Assessment Act, 1979*.

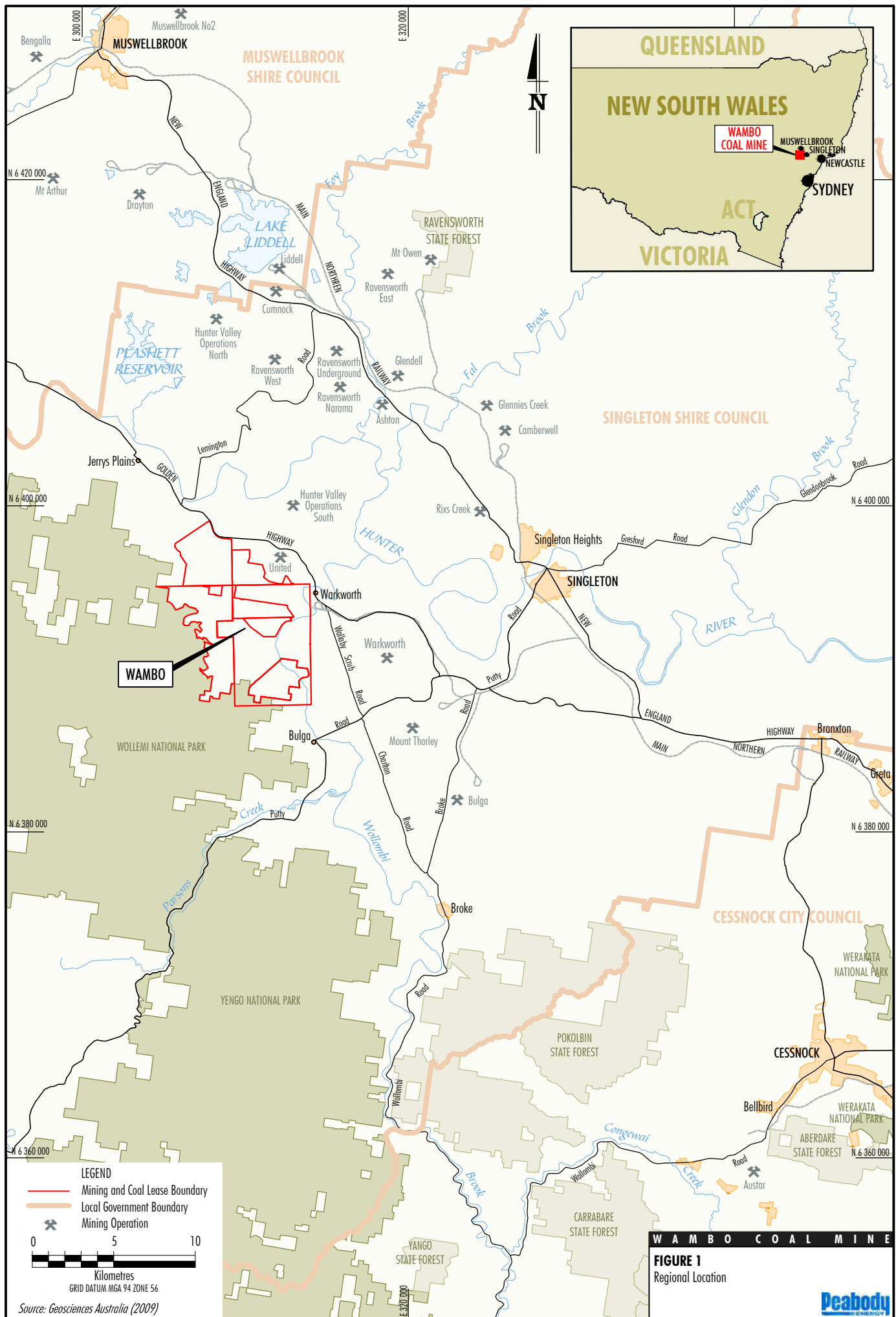
An application to modify the Development Consent (DA 305-7-2003 MOD 2) was lodged in January 2005 to facilitate the re-orientation of the North Wambo Underground Mine longwall panels and allow access to the Wambo Seam via the open cut highwall and was approved on 4 May 2005. The application was accompanied by the *Wambo Development Project – Wambo Seam Underground Mine Modification Statement of Environmental Effects* (North Wambo SEE) (WCPL, 2005).

A subsequent application to modify the Development Consent (DA 305-7-2003 MOD 13) was lodged in December 2012 to allow an extension to the approved North Wambo Underground Mine to include two additional longwalls (Longwalls 9 and 10) and was approved on 8 July 2013. The application was accompanied by the *North Wambo Underground Mine Modification Environmental Assessment* (North Wambo Modification EA) (WCPL, 2012).

An application to modify the Development Consent (DA 305-7-2003 MOD 14) was lodged in September 2014 to allow a minor extension to the approved North Wambo Underground Mine to include an additional longwall (Longwall 10A). The application was accompanied by the *North Wambo Underground Mine Longwall 10A Modification Environmental Assessment* (North Wambo Longwall 10A Modification EA) (WCPL, 2014).

A Subsidence Management Plan (SMP) for Longwalls 1 to 6 at the North Wambo Underground Mine (WCPL, 2006) was approved by the NSW Department of Primary Industries – Mineral Resources on 11 December 2006. An Extraction Plan for Longwalls 7 and 8 was approved by the Department of Planning and Infrastructure for Longwall 7 on 16 May 2013 and for Longwall 8 on 24 September 2013. Subsequently, an Extraction Plan for Longwalls 7 to 10 was approved by the Department of Planning and Environment (DP&E) on 4 July 2014.

The approved Extraction Plan for Longwalls 7 to 10 has been revised to include the remaining longwall within the North Wambo Underground Mine extent (Longwall 10A) for a consolidated Extraction Plan for Longwalls 8 to 10A (**Figure 2**).



1.1 PURPOSE AND SCOPE

Purpose: This Heritage Management Plan for Longwalls 8 to 10A (HMP) outlines the management of potential environmental consequences of the proposed secondary workings described in the Extraction Plan on heritage sites or values.

Scope: This HMP covers heritage sites and values within the Longwalls 8 to 10A Application Area (**Figure 3**).

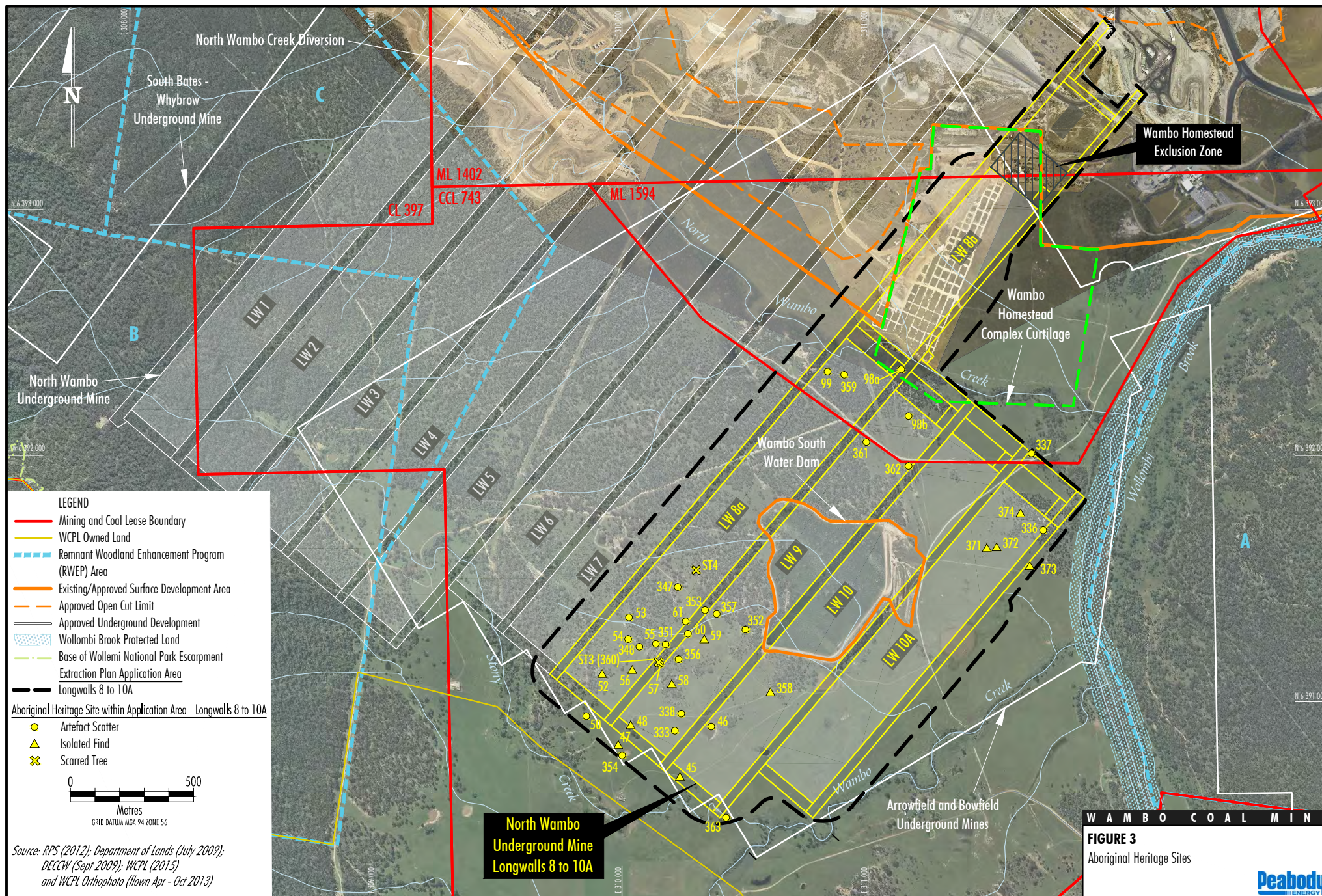
This HMP has been prepared in accordance with Condition 22C(h) of Schedule 4 of the Development Consent (DA 305-7-2003) as a component of the North Wambo Underground Mine Longwalls 8 to 10A Extraction Plan.

Management plan requirements applicable to the preparation of this HMP, and where each of these requirements is addressed within this HMP, are summarised in **Table 1**.

This HMP has been prepared by WCPL, with assistance from Resource Strategies. The appointment of the team of suitably qualified and experienced experts has been endorsed by the Secretary of the DP&E.

Table 1
Heritage Management Plan Requirements

Development Consent (DA 305-7-2003) Condition	HMP Section
<p>Condition 22C(h) of Schedule 4</p> <p>22C. The Applicant shall prepare and implement an Extraction Plan for the second workings within each seam to be mined to the satisfaction of the Secretary. Each Extraction Plan must:</p> <p>...</p> <p>(h) include a:</p> <p>...</p> <ul style="list-style-type: none"> Heritage Management Plan, which has been prepared in consultation with OEH and relevant stakeholders for Aboriginal and non-Aboriginal heritage, to manage the potential environmental consequences of the proposed second workings on heritage sites or values; and <p>...</p>	<p>Management of potential impacts and/or environmental consequences on heritage site or values are addressed in Table 2.</p> <p>Performance measures relevant to heritage are presented in Section 2.</p> <p>Performance indicators relevant to heritage are presented in Section 4.</p>
<p>Condition 22D of Schedule 4</p> <p>22D. The Applicant shall ensure that the management plans required under condition 22C(h) above include:</p> <p>(a) an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this consent;</p> <p>(b) a detailed description of the measures that would be implemented to remediate predicted impacts; and</p> <p>(c) a contingency plan that expressly provides for adaptive management.</p>	<p>Addressed in Section 3.</p> <p>Addressed in Table 2.</p> <p>Addressed in Section 5.</p>



1.2 STRUCTURE OF THE HERITAGE MANAGEMENT PLAN

This HMP forms part of WCPL's Environmental Management System for the Wambo Coal Mine. The relationship of this HMP to the Wambo Coal Mine Environmental Management System is shown on **Figure 4**.

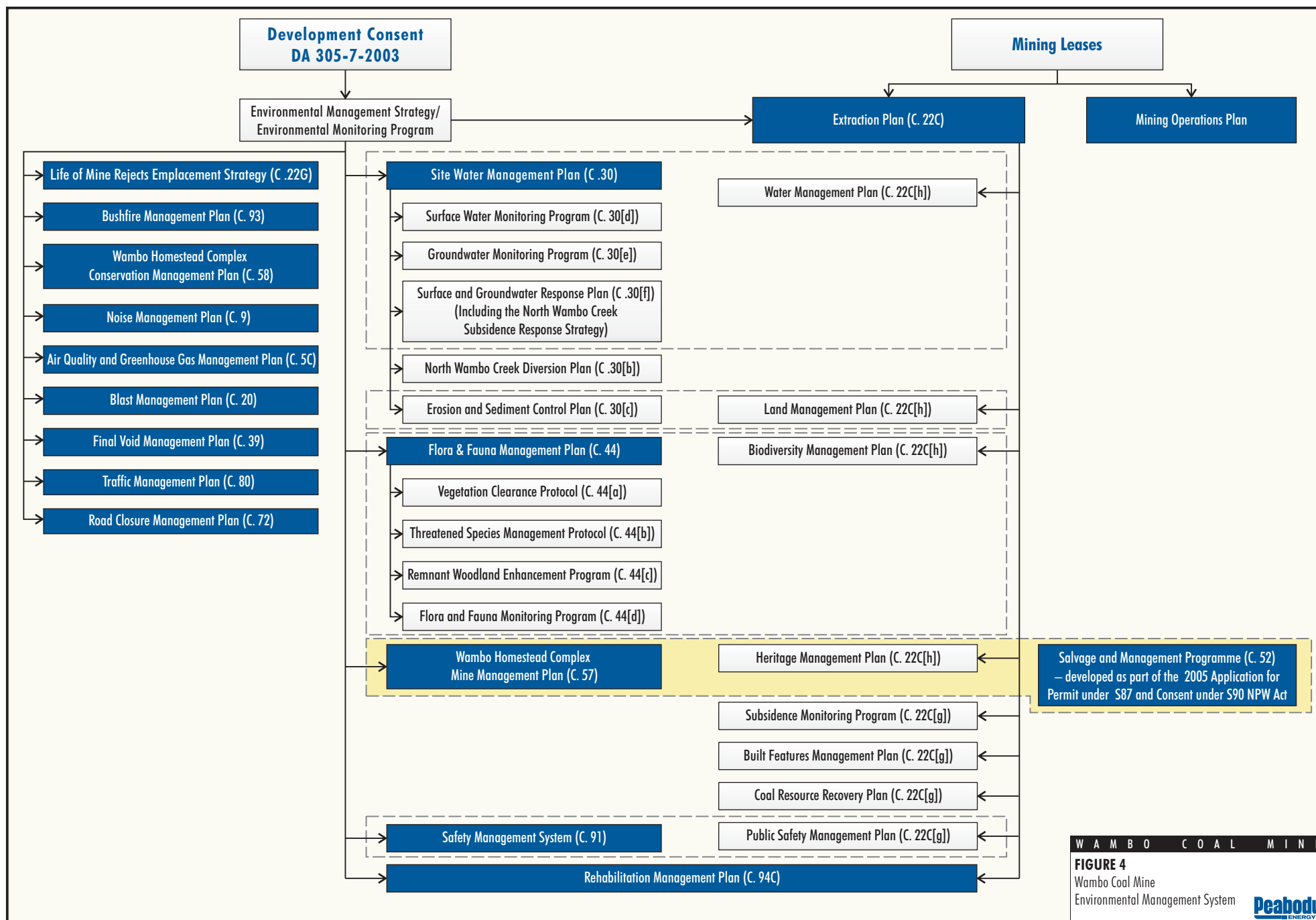
To avoid duplication of existing Environmental Management Plans this HMP references components of the existing Wambo Homestead Complex (WHC) Mine Management Plan (WHCMMP) (Godden Mackay Logan Heritage Consultants [GML], 2012) and the Salvage and Management Programme (S&MP) (Navin Officer Heritage Consultants, 2005). The sections of the WHCMMP and S&MP relevant to the HMP are summarised in **Table 2**. The WHCMMP and S&MP are included as **Attachment 2** and **Attachment 3** respectively.

Table 2
Supporting Documents - Reference Summary

HMP Component	WHCMMP/S&MP Reference	Section Description
Description of the existing environment ¹	WHCMMP Section 2 – WHC S&MP Section 2 – Archaeological Sites	Section 2 of the WHCMMP includes an overview of the existing environment. Section 2 of the S&MP includes an overview of existing archaeological sites in the area.
Management Measures	WHCMMP Section 2.3 – WCPL Management of the Homestead Complex	Section 2.3 of the WHCMMP details the existing management measures including extensive stabilisation and conservation works.
	WHCMMP Section 5 – Management Measures to Avoid and Minimise Harm	Section 5 of the WHCMMP includes an overview of management measures and details ongoing maintenance and conservation works.
	WHCMMP Section 5.1 – Overview	Section 5.1 of the WHCMMP provides both general and specific Heritage management measures to minimise any subsidence impacts on the WHC.
	WHCMMP Section 5.2 – Ongoing Maintenance and Conservation Works	Section 5.2 of the WHCMMP details the ongoing activities that will be continued by WCPL to minimise subsidence impacts, including the identification of priority works.
	S&MP Section 3.1 – Aboriginal Participation	Section 3.1 of the S&MP details the participation of Aboriginal people in the salvage programme.
	S&MP Section 3.3 – Surface Salvage	Section 3.3 of the S&MP details the process for collection of surface artefacts.
	S&MP Section 3.4 – Subsurface Salvage	Section 3.4 of the S&MP details the process for collection of subsurface artefacts.
	S&MP Section 3.5 – Management of Recovered Aboriginal Objects	Section 3.5 of the S&MP details the process for archaeological analysis and keeping of artefactual material.
Monitoring	WHCMMP Section 5 – Management Measures to Avoid and Minimise Harm	The Heritage monitoring program includes three main components, visual and photographic inspections, 3D subsidence monitoring of Pegs HM1 to HM24 on a monthly basis during active subsidence development ² and review of the performance of the Wambo Homestead Exclusion Zone (WHEZ).
	WHCMMP Section 6 – Evaluation of Impacts and Management Measures	

¹ Not a specific requirement of this HMP under Condition 22C(h) of Schedule 4 of the Development Consent (DA 305-7-2003).

² Subsidence monitoring would also occur in accordance with the Subsidence Monitoring Program, and therefore occurs more frequently than monthly during active subsidence.



An overview of the main text sections and attachments of this HMP is presented below:

Section 1	Provides an introduction to the HMP, including the purpose and scope of the HMP and the context of the HMP in relation to WCPL's Environmental Management System for the Wambo Coal Mine.
Section 2	Describes the performance measures relevant to heritage.
Section 3	Summarises the predicted subsidence impacts and environmental consequences resulting from the extraction of Longwalls 8 to 10A.
Section 4	Describes how monitoring data will be used to assess the extraction of Longwalls 8 to 10A against the relevant performance indicators and performance measures.
Section 5	Provides a Contingency Plan to manage any unpredicted impacts and their consequences.
Section 6	Describes the heritage management responsibilities of specific WCPL personnel.
Section 7	Lists the documents referred to in Sections 1 to 6 of this HMP.
Attachment 1	Provides a Trigger Action Response Plan (TARP) for this HMP which is a simple and transparent snapshot of the monitoring of environmental performance and where required the implementation of management and/or contingency measures.
Attachment 2	Provides a copy of the existing WHCMMP.
Attachment 3	Provides a copy of the existing S&MP.
Attachment 4	Provides a summary of the consultation undertaken with the Aboriginal community as a component of the Aboriginal Heritage Impact Permit (AHIP) #2222 Application.
Attachment 5	Provides a summary of the consultation undertaken with the Aboriginal community as a component of the 2013 AHIP #2222 Variation Application.
Attachment 6	Provides a summary of the consultation undertaken with the Aboriginal community as a component of the 2015 AHIP #2222 Variation Application.
Attachment 7	Provides a copy of AHIP #2222, including copies of the Notice of Issue and the Notice of Variation for AHIP #2222.
Attachment 8	Provides the subsidence predictions for Aboriginal heritage sites within the Longwalls 8 to 10A Application Area.
Attachment 9	Provides a copy of Care and Control Permit #3130.

2 PERFORMANCE MEASURES

This HMP has been developed to manage the potential environmental consequences of the proposed secondary workings described in the Extraction Plan on heritage sites or values in accordance with Condition 22C of Schedule 4 of Development Consent (DA 305-7-2003). In accordance with Condition 22 and 22A of Schedule 4 of Development Consent (DA 305-7-2003), WCPL must ensure that there is no exceedance of the subsidence impact performance measures listed in Tables 14A and 14B of Schedule 4 of Development Consent (DA 305-7-2003).

The performance measure specified in Table 14A of Schedule 4 of Development Consent (DA 305-7-2003) relevant to heritage sites and values is listed in **Table 3** below.

Table 3
Heritage Performance Measure

Feature	Subsidence Impact Performance Measure
WHC	Negligible impact on heritage values, unless approval has been granted by the Heritage Branch and/or the Minister.

Source: Table 14A of Schedule 4 of Development Consent (DA 305-7-2003).

Section 4 provides a summary of the analysis of monitoring data that will be undertaken to assess the impact of Longwalls 8 to 10A against the performance measure.

3 PREDICTED SUBSIDENCE IMPACTS AND ENVIRONMENTAL CONSEQUENCES

3.1 WAMBO HOMESTEAD COMPLEX

3.1.1 Background

The WHC is the only site considered of heritage significance in accordance with the *NSW Heritage Manual* (NSW Department of Urban Affairs and Planning, 1996) located within the Longwalls 8 to 10A Application Area.

The WHC is located on the western side of Wollombi Brook and comprises eight distinct buildings and the remnants of barns with many fences to mounting yards and paddocks still in existence. The WHC curtilage is the boundary of the State Heritage Register of NSW listing (**Figure 3**).

3.1.2 Revised Assessment of Potential Subsidence Impacts and Environmental Consequences

Development Consent (DA 305-7-2003) excluded open cut mining from the WHC and curtilage, however underground mining in the North Wambo, Arrowfield and Bowfield Seam Underground Mines beneath the curtilage is included in Development Consent (DA 305-7-2003).

Condition 57 of Schedule 4 of Development Consent for (DA 305-7-2003):

57. *An application under section 60 of the Heritage Act must be submitted to and approved by the Heritage Council prior to the commencement of any development on land within the State Heritage Register listing boundary for the Wambo Homestead Complex. In this regard a mine management plan shall be required to accompany the application which demonstrates that the proposed underground mining shall not have adverse heritage impacts on the WHC due to land subsidence.*

In accordance with Condition 57 of Schedule 4 of Development Consent (DA 305-7-2003), the WHCMMP has been developed to manage impacts of the North Wambo Underground Mine such that mining will not have adverse heritage impacts on the WHC due to subsidence.

As described in Section 2.1 of the Extraction Plan, the magnitude of the tilt and strain predictions for Longwalls 8 to 10A are generally consistent with those presented in the Wambo Development Project EIS, North Wambo SEE, North Wambo Modification EA and the North Wambo Longwall 10A Modification EA.

Longwall 8

Ditton Geotechnical Services (DgS) (2012) predicts the extraction of Longwalls 7 and 8 will result in cumulative subsidence for Buildings 1 to 7 of the WHC ranging from 2 millimetres (mm) to 30 mm (**Table 4**).

There is the potential for Longwalls 7 and 8 to impact on the stability of the earlier workings of the Whybrow Seam below the Stud Master's Cottage (Building 6 of the WHC). To reduce the risk of impacts to the heritage value of the WHC, historical workings of the Homestead Mine in the Whybrow Seam, in the vicinity of the Stud Master's Cottage, will be bulk filled with low strength grout in accordance with the WHCMMP.

Table 4
Predicted Subsidence Impacts on the Wambo Homestead Complex

Building No.	Distance from LW7 in Wambo Seam	Angle of Draw Range (Degrees)	Subsidence (mm)	Tilt (mm/m)	Curvature (km ⁻¹)	Horizontal Strain (mm/m)
Predicted Subsidence Effects due to Wambo Seam Only (Longwalls 1 to 8)						
1	130 – 155	63 – 67	2	0.2	0.05	0.5
2	110 – 134	59 – 63	10	1	0.05	0.5
3	106 – 117	58 – 60	10	1	0.05	0.5
4	85 – 102	52 – 57	15	1	0.05	0.5
5	71 – 59	41 – 48	20	1.5	0.05	0.5
6	20 – 38	17 – 30	15 – 30	1 – 1.5	0.05 – 0.08	1 – 1.5
7	110 – 114	59 – 60	10	1	0.05	0.5
8	5 – 21	4 – 17	30 – 70	1 – 4	0.15 – 0.20	1 – 2
9	21 – 23	17 – 25	15 – 29	1 – 15	0.05 – 0.08	1 – 3
Measured Subsidence Effects due to Arrowfield Seam LWs (United Longwalls 1 to 7)						
1	134	29	40 – 60	0.7 – 1.5	-0.05 – 0.0	-0.5 – 0.0
2	115	26	56 – 84	0.7 – 1.7	-0.06 – 0.1	-0.6 – 1.0
3	111	25	71 – 92	1.5 – 2.0	-0.06 – 0.1	-0.6 – 1.0
4	75	17	86 – 100	1.2 – 1.8	-0.06 – 0.1	-0.6 – 1.0
5	34	8	143 – 159	1.9 – 2.7	-0.19 – 0.0	-1.5 – 1.5
6	28	7	121 – 151	0.5 – 3.5	-0.15 – 0.13	-1.5 – 1.5
7	107	25	55	0.5	0.05	0.5
8	-23	-6	270 – 420	11	0.2 – 0.25	2 – 3
9	-6	-2	200 – 250	8	0.1 – 0.2	1 – 2
Predicted Cumulative Subsidence Effects due to Wambo & Arrowfield Seams						
1	130 – 155	63 – 67	42 – 62	0.9 – 1.7	0 – 0.05	0 – 0.5
2	110 – 134	59 – 63	66 – 94	1.5 – 2.2	0 – 0.05	0 – 0.5
3	106 – 117	58 – 60	81 – 102	2.0 – 2.5	0 – 0.05	0 – 0.5
4	85 – 102	52 – 57	67 – 72	1.7 – 2.3	0.05 – 0.1	0.5 – 1.0
5	71 – 59	41 – 48	163 – 179	3.4 – 4.2	0.05 – 0.1	0.5 – 1.0
6	20 – 38	17 – 30	136 – 181	1.5 – 5.0	0.15 – 0.21	1.5 – 2.0
7	110 – 114	59 – 60	65	1.5	0.05	0.5
8	5 – 21	4 – 17	300 – 490	12 – 15	0.35 – 0.5	3.5 – 4.0
9	21 – 31	17 – 25	215 – 519	9 – 10	0.15 – 0.28	1.5 – 2.8

Source: DgS (2012).

mm/m = millimetres per metre.

Cumulative impacts for Buildings 1 to 7 are predicted to range between 42 mm and 181 mm (**Table 4**). In relation to the impact this subsidence will have on the WHC buildings, DgS (2012) predicts that the majority of buildings will display negligible impacts (i.e. hairline cracks less than 0.1 mm wide) with a slight impact on the Stud Master's Cottage, Building 6 (i.e. 5 mm wide cracks).

The WHC buildings have been assessed to have already sustained negligible to moderate damage due to historical mining (i.e. United Mine) and the extraction of Longwalls 7 and 8 is not predicted to result in a change to the overall impact category given the proposed mitigation measures (e.g. grouting of historical workings under the Stud Master's Cottage) (Section 4.1.3 of the WHCMMP).

Longwalls 9 and 10

The main headings for Longwalls 9 and 10 are located within the curtilage of the WHC. These main headings would be designed to be stable and non-subsiding and are far removed from the WHC buildings (WPCL, 2012). There would be no secondary extraction of Longwalls 9 to 10 within the curtilage of the WHC (WCPL, 2012).

Mine Subsidence Engineering Consultants (MSEC) (2013) predicts that the extraction of Longwalls 9 and 10 would not result in any measurable subsidence within the curtilage of the WHC. Further, MSEC (2013) concluded that the extraction of Longwalls 9 and 10 would not result in significance subsidence (i.e. less than 20 mm vertical subsidence) within the curtilage of the WHC and therefore would not result in any adverse surface impacts.

GML (2013) concluded that due to the distance of Longwalls 9 and 10 from the WHC buildings and the negligible subsidence, there will be no adverse impacts on the fabric of the buildings which make up the WHC, and no adverse impacts on heritage values of the WHC either from subsidence or visual impact. GML (2013) also concluded that no update was required to the existing WHCMMP.

Longwall 10A

MSEC (2014b) concluded that no measurable subsidence is predicted to occur within the curtilage of the WHC as a result of the extraction of Longwall 10A. The curtilage for the complex is located at a minimum distance of 300 m from the finishing end of Longwall 10A, and associated buildings are located more than 1 km from Longwall 10A.

3.2 ABORIGINAL CULTURAL HERITAGE

3.2.1 Background

A number of Aboriginal cultural heritage surveys and assessments have previously been undertaken across Wambo Coal Mine and surrounding areas. The most recent large-scale Aboriginal cultural heritage survey and assessment was conducted by White (2003) as part of the Wambo Development Project EIS.

A total of 292 sites were identified across the wider study area by White (2003), which included the Longwalls 8 to 10A Application Area. Sites identified included:

- a carved tree/ceremonial site;
- grinding groove sites;
- scarred trees;
- potential archaeological deposits; and
- isolated objects and object scatters (open sites).

An additional survey was undertaken across the Longwalls 9 and 10 Application Area as part of the North Wambo Underground Mine Modification Cultural Heritage Impact Assessment (RPS Australia East Pty Ltd [RPS], 2012). Similarly, a more recent survey was undertaken across the Longwall 10A Application Area as part of the North Wambo Underground Mine Longwall 10A Modification Cultural Heritage Impact Assessment (RPS, 2014). Aboriginal sites located within the Longwalls 8 to 10A Application Area are shown on **Figure 3**. **Table 5** presents those sites within the Longwalls 8 to 10A Application Area which may be potentially impacted as a result of the longwall mining.

Table 5
Aboriginal Sites within the Longwalls 8 to 10A Application Area Subject to Potential Impacts

Site/Figure Code	Site Type	Archaeological Significance	Location Description
45	Isolated Find	Low ²	Open site located between North Wambo Creek and Stony Creek.
46	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
47	Isolated Find	Low ²	Open site located between North Wambo Creek and Stony Creek.
48	Isolated Find	Low ^{1,2}	Open site located between North Wambo Creek and Stony Creek.
50	Artefact Scatter	Low ² /Moderate ¹	Open site located between North Wambo Creek and Stony Creek.
52	Isolated Find	Low ² /Moderate ¹	Open site located between North Wambo Creek and Stony Creek.
53	Artefact Scatter	Moderate ¹	Open site located between North Wambo Creek and Stony Creek.
54	Artefact Scatter	Low ² /Moderate ¹	Open site located between North Wambo Creek and Stony Creek.
55	Artefact Scatter	Low ² /Moderate ¹	Open site located between North Wambo Creek and Stony Creek.
56	Isolated Find	Low ² /Moderate ¹	Open site located between North Wambo Creek and Stony Creek.
57	Artefact Scatter	Moderate ^{1,2}	Open site located between North Wambo Creek and Stony Creek.
58	Isolated Find	Low ² /Moderate ¹	Open site located between North Wambo Creek and Stony Creek.
59	Isolated Find	Low ^{1,2}	Open site located between North Wambo Creek and Stony Creek.
60	Artefact Scatter	Low ² /Moderate ¹	Open site located between North Wambo Creek and Stony Creek.
61	Artefact Scatter	Low ² /Moderate ¹	Open site located between North Wambo Creek and Stony Creek.
98a	Artefact Scatter	Low ²	Open site located south of North Wambo Creek.
98b	Artefact Scatter	Low ²	Open site located south of North Wambo Creek.
99	Artefact Scatter	Moderate ¹	Open site located south of North Wambo Creek.
333	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
336	Artefact Scatter	Moderate ^{2,4}	Open site located between North Wambo Creek and Wambo Creek.
338	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
347	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
348	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
351	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
352	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
353	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
354	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
356	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
357	Artefact Scatter	Low ²	Open site located between North Wambo Creek and Stony Creek.
358	Isolated Find	Low ²	Open site located between North Wambo Creek and Stony Creek.
359	Artefact Scatter	Low ²	Open site located south of North Wambo Creek.
360 (ST3)	Scarred Tree	Moderate ²	Open site located between North Wambo Creek and Stony Creek.
361	Isolated Find	Low ²	Open site located south of North Wambo Creek.
362	Artefact Scatter	Low ²	Open site located south of North Wambo Creek.
363	Artefact Scatter	Low ²	Open site located north of Stony Creek.
371	Isolated Find	Low ³	Open site located between North Wambo Creek and Wambo Creek.

Table 5 (Continued)
Aboriginal Sites within the Longwalls 8 to 10A Application Area Subject to Potential Impacts

Site/Figure Code	Site Type	Archaeological Significance	Location Description
372	Isolated Find	Low ³	Open site located between North Wambo Creek and Wambo Creek.
373	Isolated Find	Low ³	Open site located between North Wambo Creek and Wambo Creek.
374	Isolated Find	Low ³	Open site located between North Wambo Creek and Wambo Creek.
ST4	Scarred Tree	Moderate ¹	Open site located between North Wambo Creek and Stony Creek.

After: WCPL (2003), RPS (2012, 2014), MSEC (2014a, 2014b, 2015).

¹ Archaeological significance determined in White (2003).

² Archaeological significance determined by RPS (2012).

³ Archaeological significance determined by RPS (2014).

⁴ This site is also considered to be of low significance at a regional level.

Note: Site 337 is not anticipated to be subject to potential impacts and therefore has not been included in this table (refer to Attachment 7).

The NSW *National Parks and Wildlife Act, 1974* (NPW Act) provides the primary basis for the legal protection and management of Aboriginal heritage in NSW. Implementation of the Aboriginal heritage provisions of the NPW Act is the responsibility of the NSW Office of Environment and Heritage (OEH). The aim of the NPW Act is to prevent unnecessary or unwarranted destruction of Aboriginal objects and to protect and conserve objects where such action is considered warranted.

Under section 86(4) of the NPW Act it is an offence for a person to harm or desecrate an Aboriginal place. Consents regarding impacts to Aboriginal objects are authorised by OEH under section 90 of the NPW Act and clauses 80D and 80E of the *National Parks and Wildlife Regulation, 2009*. **Section 3.2.3** provides further detail regarding the Wambo Coal Mine section 90 Consent.

3.2.2 Revised Assessment of Potential Subsidence Impacts and Environmental Consequences

DgS (2012) undertook a specific assessment of the potential impacts of Longwalls 7 and 8 on Aboriginal heritage sites (**Attachment 8**). Revised subsidence predictions for Longwalls 7 to 10 on Aboriginal heritage sites located within the Longwalls 8 to 10A Application Area have been undertaken by MSEC (2014a). Similarly, predictions for subsidence impacts on Aboriginal heritage sites from Longwall 10A located within the Longwalls 8 to 10A Application Area have been undertaken by MSEC (2014b, 2015). Stone artefacts and scarred trees are not particularly sensitive to subsidence movements and potential impacts to these site types are limited to direct disturbance from surface activities and impacts to soil associated with an artefact scatter or isolated find (i.e. localised soil cracking resulting in an artefact(s) falling into the subsoil).

Consent to destroy all sites located within the Longwalls 8 to 10A Application Area and the extent of subsidence has been sought under section 90 of the NPW Act (**Section 3.2.3**).

As a precaution, subsidence monitoring would be undertaken across the Longwalls 8 to 10A Application Area. Should monitoring indicate a greater than expected level of subsidence or potential impact to an Aboriginal heritage site (e.g. extensive soil cracking in the vicinity of a site), salvage of that site(s) would be considered in accordance with the approved S&MP (**Attachment 3**).

Regarding direct disturbance, WCPL would maintain the database of site locations and locate any surface activities to avoid impacts to Aboriginal sites where practicable. In the unlikely event that a site is to be impacted by surface activities, that site would be salvaged in accordance with the approved S&MP (**Attachment 3**).

Should a site require salvage or should monitoring detect a potential impact to a site, an Aboriginal Site Impact Recording Form would be prepared and lodged with OEH in accordance with section 89A of the NPW Act for registration on the Aboriginal Heritage Information Management System (AHIMS) database.

Any variations to the proposed management of Aboriginal heritage, as specified in the approved S&MP (**Attachment 3**), would only be made following consultation with the Aboriginal community.

Should any additional Aboriginal heritage sites (not yet recorded) be identified during the mining of Longwalls 8 to 10A, they would be managed in a consistent manner to the existing site types. If a new site type (i.e. a site type not previously recorded at the Wambo Coal Mine or a site type not considered in the development of the approved S&MP [**Attachment 3**]) is recorded within the Longwalls 8 to 10A Application Area, appropriate management would be developed by an appropriately qualified archaeologists in consultation with the Aboriginal community.

3.2.3 Existing Section 87/90 Consent – AHIP #2222

AHIP #2222 was issued to WCPL on the 20 June 2005 under sections 87 and 90 of the NPW Act. The AHIP allowed for the disturbance and/or salvage of all known and unknown Aboriginal objects within the 'Application Area', including Longwall 8. The 'Application Area' the subject of AHIP #2222 is shown on Figure 1 of **Attachment 3**.

The AHIP Application and associated consultation was undertaken in accordance with the *Guidelines for Aboriginal Heritage Impact Assessment in the Exploration and Mining Industries* (New South Wales National Parks and Wildlife Service, 1997) (i.e. the applicable guideline at the time of consultation/application). An extract from the 2005 AHIP Application, describing the consultation undertaken with respect to the Application between 2002 and 2005, is presented in **Attachment 4**.

The subsidence assessment undertaken for the North Wambo Underground Mine Modification concluded that subsidence effects may extend slightly beyond the boundary of the existing AHIP #2222 (MSEC, 2012). The Aboriginal Cultural Heritage Impact Assessment for the North Wambo Underground Mine Modification identified one stone artefact scatter in this area.

Consequently, WCPL submitted a variation application for AHIP #2222 in March 2013, to extend the boundary of AHIP #2222 to include Longwalls 9 and 10. On 2 August 2013, the OEH granted the variation for AHIP #2222. A summary of the consultation undertaken in accordance with the OEH *Aboriginal Cultural Heritage Consultation Requirement for Proponents 2010* (NSW Department of Environment, Climate Change and Water, 2010) with respect to the variation application for AHIP #2222 is provided in **Attachment 5**.

WCPL submitted a subsequent variation application for AHIP #2222 in March 2015, to extend the boundary of AHIP #2222 to include Longwall 10A. A summary of the consultation undertaken in consideration of the OEH *Aboriginal Cultural Heritage Consultation Requirement for Proponents 2010* (NSW Department of Environment, Climate Change and Water, 2010) with respect to the variation application for AHIP #2222 is provided in **Attachment 6**.

AHIP #2222 is scheduled to expire on 19 June 2015 and a copy is provided in **Attachment 7**, along with a copy of the Notice of Issue and the Notice of Variation. The March 2015 variation application for AHIP #2222 requests an extension to the expiry period of AHIP #2222.

In accordance with recommendations within the S&MP (**Attachment 3**), WCPL obtained a Care and Control Permit (#3130) for the temporary storage of salvaged artefacts until they can be replaced on the post mining rehabilitated landscape. A copy of Care and Control Permit #3130 is provided in **Attachment 9**.

3.2.4 Wambo Site 360 (ST3) Monitoring

The registered Aboriginal parties who participated in the field surveys for the North Wambo Underground Mine Modification (i.e. for Longwalls 9 and 10) inspected a number of trees with a similar girth and of similar type to the possible scar tree (Wambo Site 360 [ST3]) in an adjacent area which had been previously undermined by longwall mining and found that the previously undermined trees had not been adversely affected (RPS, 2012).

The Aboriginal stakeholders present at the surveys concluded that if the predicted subsidence is similar to that experienced in the other underground mining areas, then the tree should be left *in situ* and that regular monitoring of the site should be undertaken to monitor health of the tree (RPS, 2012).

RPS (2012) concluded that the North Wambo Underground Mine Modification would not substantially increase the cumulative impacts to Aboriginal heritage in the region, in consideration of the nature and scale of historic and ongoing land disturbance processes in the region (predominantly agricultural activities), the nature and extent of identified and likely Aboriginal sites, and the nature and scale of potential impacts associated with the Modification.

In accordance with the findings of RPS (2012), regular monitoring of the possible scar tree Wambo Site 360 (ST3) would be undertaken to routinely monitor the health of the tree. Monitoring of Wambo Site 360 (ST3) would be undertaken on an annual basis to identify any surface disturbances associated with potential subsidence impacts, to assess the level of disturbance to the scarred tree and to assess the condition and the health of the tree. Monitoring would be undertaken on a monthly basis when mining is taking place within Longwalls 8 and 9 within 100 m of the site. Photographs would also be taken to allow for a visual comparison of the health of the scarred tree over time.

Should there be evidence that Wambo Site 360 (ST3) has been adversely affected by subsidence a salvage and analysis protocol would be developed.

4 ASSESSMENT OF PERFORMANCE INDICATORS AND MEASURES

In accordance with Condition 22C(d) of Schedule 4 of the Development Consent (DA 305-7-2003) performance indicators have been developed for the performance measures listed in **Table 3**. The proposed performance indicators are summarised in **Table 6**. **Table 7** provides a summary of the analysis of monitoring data that will be undertaken to assess the impact of Longwalls 8 to 10A against the performance measures.

Table 6
Heritage Performance Measure and Performance Indicators

Performance Measure	Performance Indicator(s)
Negligible impact on heritage values at WHC, unless approval has been granted by the Heritage Branch and/or the Minister.	<ul style="list-style-type: none"> The performance indicators will be considered to have been exceeded if subsidence monitoring identifies an exceedance (or a trend to exceedance) of predicted values in Table 4. The performance indicators will be considered to have been exceeded if visual inspections identify an impact to the condition or structural integrity of a WHC building.

The monitoring conducted to inform the assessment of the performance indicators for heritage is outlined in Section 3.5 of the Extraction Plan.

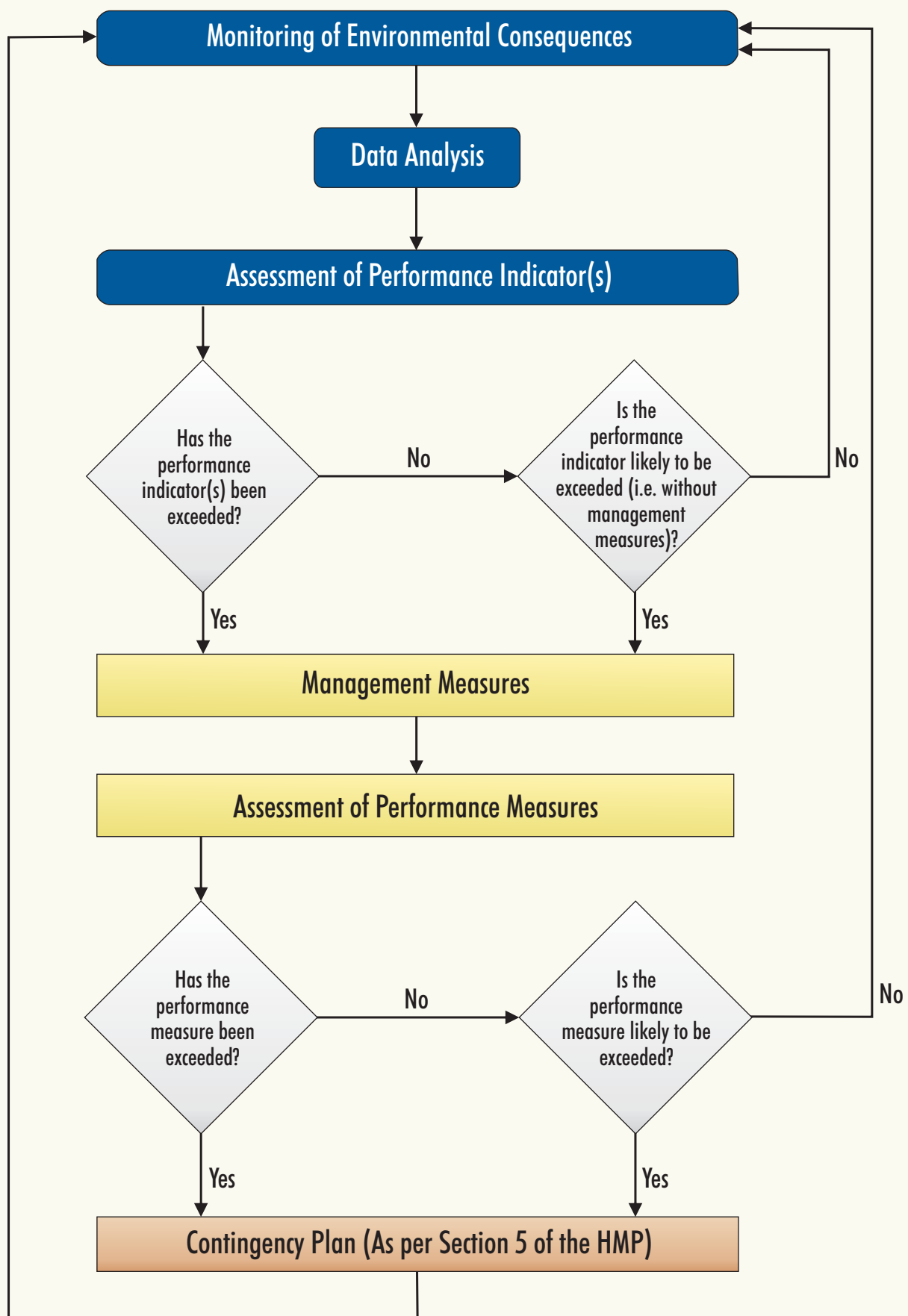
The monitoring results will be used to assess the extraction of Longwalls 8 to 10A against the Performance Indicators and Performance Measures as detailed in **Table 6**. The monitoring process and subsequent assessment of performance indicators and measures is outlined on **Figure 5**.

If data analysis indicates a performance indicator has been exceeded or is likely to be exceeded, an assessment will be made against the performance measure. If a performance measure is considered to have been exceeded, the Contingency Plan will be implemented (**Section 5**). If data analysis indicates that the performance measure has not been exceeded, WCPL will continue to monitor.

Table 7
Monitoring of Environmental Consequences against Performance Indicators and Measure

Performance Measure	Monitoring of Environmental Consequence			Data Analysis to Assess against Performance Indicator(s)	Performance Indicator(s)	Assessment of Performance Indicator(s)	Assessment of Performance Measure	Relevant Management and Contingency Measure
	Site	Parameter	Frequency					
Negligible impact on heritage values at WHC, unless approval has been granted by the Heritage Branch and/or the Minister.	<ul style="list-style-type: none"> Longwalls 8 to 10A subsidence monitoring line(s). 	<ul style="list-style-type: none"> Subsidence. Tilt. Tensile strain. Compressive strain. 	<ul style="list-style-type: none"> As per the Subsidence Monitoring Program (Appendix H of the Extraction Plan). 	<ul style="list-style-type: none"> Subsidence data for Building 6 analysed after each survey. Other subsidence data analysed monthly. 	<ul style="list-style-type: none"> Measured subsidence parameters are within the predicted values in Table 4 and there is no trend towards an exceedance. 	<ul style="list-style-type: none"> The performance indicators will be considered to have been exceeded if subsidence monitoring identifies exceedances of predicted values in Table 4 (or a trend to exceedance). If data analysis indicates the performance indicators have been exceeded, an assessment will be made against the performance measure (Figure 5). 	<ul style="list-style-type: none"> The performance measure is exceeded if structural and heritage review and analysis indicate development of Longwalls 8 to 10A has resulted in greater than negligible heritage impact to the WHC. The above analysis will be peer reviewed by a specialist approved by the DP&E. 	<ul style="list-style-type: none"> Additional monitoring (e.g. increase in monitoring frequency). Implement management measures identified in Section 5 of the WHCMMP in consideration of the WHC Conservation Management Plan. Consideration of changes to longwall extraction geometry in consultation with relevant regulatory authorities.
	<ul style="list-style-type: none"> WHC Buildings 1 - 8. 	<ul style="list-style-type: none"> Photographic record of building condition. Observations of cracking of masonry. Observations of loss of structural integrity. 	<ul style="list-style-type: none"> Monthly during active subsidence. Following completion of Longwall 8. 	<ul style="list-style-type: none"> Review of photographic record. 	<ul style="list-style-type: none"> Visual inspection does not identify an impact to the condition or structural integrity of a WHC building. 	<ul style="list-style-type: none"> The performance indicators will be considered to have been exceeded if visual inspections identify an impact to the condition or structural integrity of a WHC building. If the performance indicators have been exceeded, an assessment will be made against the performance measure (Figure 5). 	<ul style="list-style-type: none"> The performance measure is exceeded if structural and heritage review and analysis indicate development of Longwalls 8 to 10A has resulted in greater than negligible heritage impact to the WHC. The above analysis will be peer reviewed by a specialist approved by the DP&E. 	<ul style="list-style-type: none"> Additional monitoring (e.g. increase in monitoring frequency). Implement management measures identified in Section 5 of the WHCMMP in consideration of the WHC Conservation Management Plan. Consideration of changes to longwall extraction geometry in consultation with relevant regulatory authorities.

CONTINGENCY MANAGEMENT



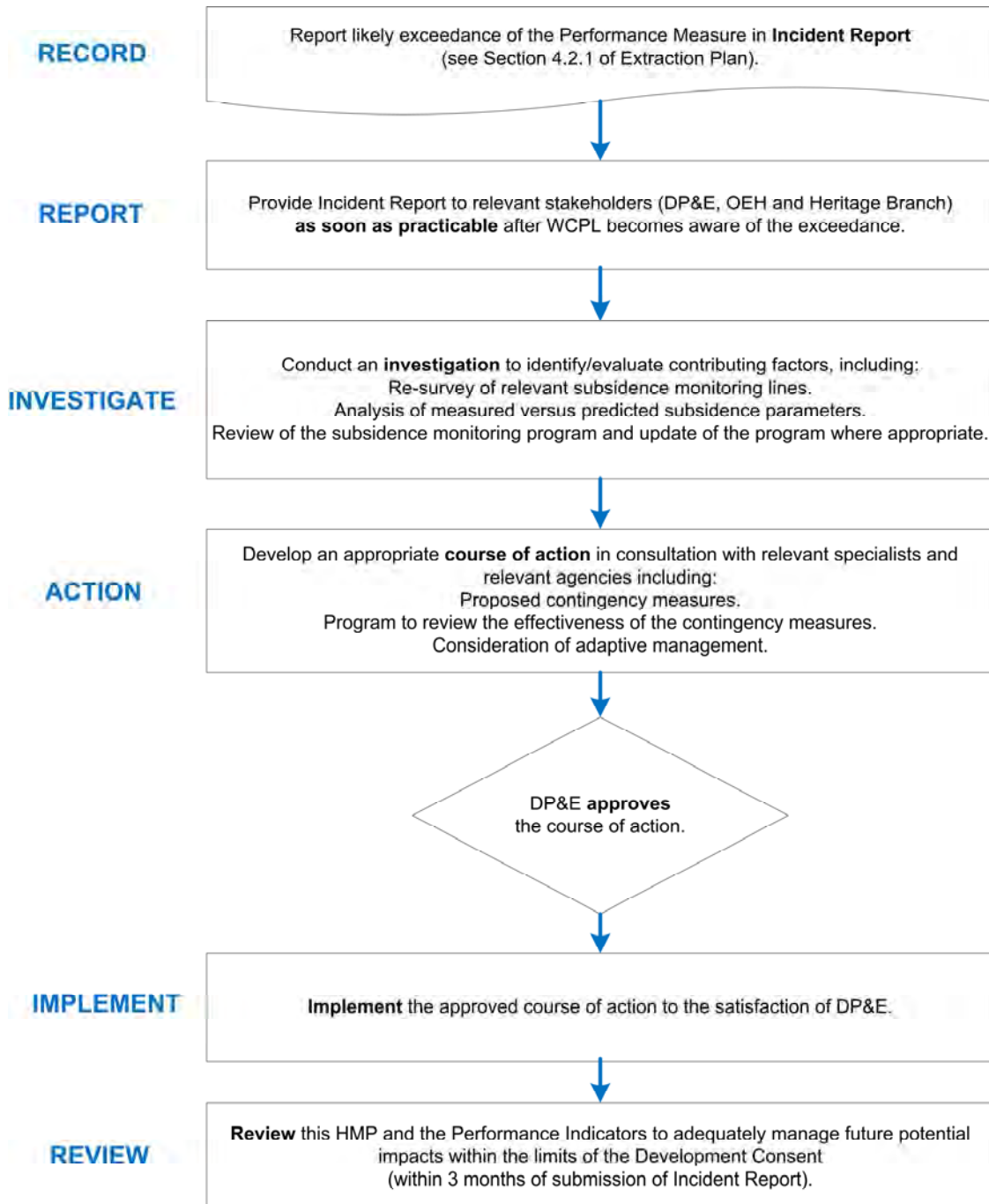
W A M B O C O A L M I N E

FIGURE 5
Monitoring of Environmental Consequences
against Performance Indicators
and Measures

Peabody
ENERGY

5 CONTINGENCY PLAN

In the event the heritage performance measure summarised in **Table 6** is considered to have been exceeded or are likely to be exceeded, in accordance with the schematic presented in **Figure 5**, WCPL will implement the following Contingency Plan:



The framework for the various components of the HMP are summarised in the HMP TARP which is included as **Attachment 1**. The HMP TARP illustrates how the various predicted subsidence impacts, monitoring components, performance measures, and responsibilities are structured to achieve compliance with the relevant statutory requirements, and the framework for management and contingency actions.

6 ROLES AND RESPONSIBILITIES

Key responsibilities of WCPL personnel and the Aboriginal community in relation to this HMP are summarised in **Table 8**. Responsibilities may be delegated as required.

Table 8
Heritage Management Plan Responsibilities Summary

Responsibility	Task
General Manager	<ul style="list-style-type: none"> Ensure resources are available to WCPL personnel to facilitate the completion of responsibilities under this HMP. Ensure timely and accurate Incident Reporting under this HMP.
Director: Technical Services and Projects	<ul style="list-style-type: none"> Ensure the Subsidence Monitoring Program and this HMP are implemented. Ensure monitoring and Subsidence Management Status Reports required under the Subsidence Monitoring Program and this HMP are carried out within specified timeframes, are adequately checked and processed and are prepared to the required standard.
Environment and Community Manager	<ul style="list-style-type: none"> Liaise with relevant stakeholders regarding subsidence impact management and related environmental consequences. Ensure Incident Reports required under this HMP are prepared within specified timeframes and to the required standard. Undertake implementation of management measures summarised in Table 2.
Mine Surveyor	<ul style="list-style-type: none"> Undertake all subsidence monitoring to the required standard within the specified timeframes and ensure data are adequately checked, processed and recorded.
Aboriginal Community	<ul style="list-style-type: none"> Ensure management of Aboriginal heritage sites are undertaken in a culturally sensitive manner consistent with the approved S&MP.

7 REFERENCES

- Department of Environment, Climate Change and Water (2010) *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.
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Wambo Coal Pty Limited (2012) *North Wambo Underground Mine Modification Environmental Assessment*.

Wambo Coal Pty Limited (2014) *North Wambo Underground Mine Longwall 10A Modification Environmental Assessment*.

White, E. (2003) *Wambo Development Project Aboriginal Heritage Assessment*.

ATTACHMENT 1

HERITAGE MANAGEMENT PLAN TRIGGER ACTION RESPONSE PLAN

Table A1-1
Heritage Management Plan Trigger Action Response Plan

Condition	Normal	Level 1	Level 2
	Predicted Impacts	Management Measures	Restoration/Contingency Phase
Trigger	<ul style="list-style-type: none"> Predicted impacts on WHC described in Section 3. 	<ul style="list-style-type: none"> Management measures (with regard to the specific circumstances of the subsidence impact [e.g. the location, nature and extent of the impact] and the assessment of environmental consequences, in accordance with Section 4 and the WHCMMP). 	<ul style="list-style-type: none"> If the heritage performance measure has been exceeded, or is likely to be exceeded.
Action	<ul style="list-style-type: none"> Conduct monitoring, consistent with Table 7, the WHCMMP and the Subsidence Monitoring Program (Appendix H of the Extraction Plan). Assess the environmental consequences of the subsidence in accordance with Section 4. Assess the need for management measures in accordance with the WHCMMP. Implement conservation policies in the WHC Conservation Management Plan. 	<ul style="list-style-type: none"> Implement management measures, as required, in accordance with the WHCMMP. Implement conservation policies in the WHC Conservation Management Plan. 	<ul style="list-style-type: none"> Implement Contingency Plan described in Section 5. Implement conservation policies in the WHC Conservation Management Plan.
Frequency	<ul style="list-style-type: none"> Frequency consistent with Table 7 and the WHCMMP. 	<ul style="list-style-type: none"> As required, in accordance with the WHCMMP. 	<ul style="list-style-type: none"> As required, in accordance with the WHCMMP.
Position of Decision-making	<ul style="list-style-type: none"> Environment and Community Manager. 	<ul style="list-style-type: none"> Environment and Community Manager. 	<ul style="list-style-type: none"> General Manager.

Note: WHC refers to the Wambo Homestead Complex.

WHCMMP refers to the Wambo Homestead Complex Mine Management Plan.

ATTACHMENT 2

WAMBO HOMESTEAD COMPLEX
MINE MANAGEMENT PLAN

Godden Mackay Logan

Heritage Consultants



Mine Management Plan

Underground Mining in the Vicinity of Wambo Homestead Complex

Report prepared for Wambo Coal Pty Ltd
July 2012

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Report Register

The following report register documents the development and issue of the report entitled Mine Management Plan—Underground Mining in the Vicinity of WHC, undertaken by Godden Mackay Logan Pty Ltd in accordance with its quality management system. Godden Mackay Logan operates under a quality management system which has been certified as complying with the Australian/New Zealand Standard for quality management systems AS/NZS ISO 9001:2008.

Job No.	Issue No.	Notes/Description	Issue Date
10-0207	1	Draft Report	April 2012
10-0207	2	Final Report	July 2012

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Executive Summary

Godden Mackay Logan Pty Ltd (GML) has been commissioned by Wambo Coal Pty Ltd (WCPL) to prepare a Mine Management Plan for the proposed underground mining of North Wambo Underground Mine Longwalls 7 and 8 (LW 7 and 8) in the vicinity of Wambo Homestead Complex (WHC). The WHC is listed on the State Heritage Register (SHR) as SHR No.0200.

The Wambo Coal Mine operates in accordance with Development Consent DA 305-7-2003. Condition 57 of DA 305-7-2003 relevantly states:

Section 60 Approval

57. An application under section 60 of the Heritage Act must be submitted to and approved by the Heritage Council prior to the commencement of any development on land within the State Heritage Register listing boundary for the Wambo Homestead Complex. In this regard a mine management plan shall be required to accompany the application which demonstrates that the proposed underground mining shall not have adverse heritage impacts on the Wambo Homestead Complex due to land subsidence.

Condition 57 is based on a General Term of Approval (GTA) provided by the Heritage Council to the Department of Planning and Infrastructure in 2003.

GML have prepared this Mine Management Plan to accompany an application under Section 60 of the Heritage Act 1977 to allow for the continuation of underground mine development within the WHC SHR boundary. This Mine Management Plan includes a statement of heritage impacts, management measures to avoid adverse impacts, and recommendations on management procedures for WHC in relation to underground mining.

The proposed activity subject to this application under the Heritage Act consists of the continuation of existing underground mining of the Wambo Seams to include North Wambo Longwalls (NW LW 7 and 8) within the Wambo Homestead SHR curtilage area.

The key potential impact from this activity is subsidence.

Expert subsidence engineers Ditton Geotechnical Services 2012 (DgS) have undertaken an assessment to determine the appropriate size of a Wambo Homestead Exclusion Zone (WHEZ) to ensure any subsidence impacts of LW 7 and 8 on the WHC structures are acceptable. DgS have conservatively estimated a WHEZ around the WHC buildings, to ensure that subsidence and strain increases will not result in a change to the existing overall impact category of the WHC structures after completion of NW LW 7 and 8.

Following their assessment and based on the survey results to-date (including consideration of cumulative impacts from the historical United Collieries mining), DgS has recommended a number of management measures be adopted to minimise any subsidence impacts on the WHC. These include:

- For NW LW 8, provision of the following conservative minimum set-back distance:
 - Masonry buildings—equivalent to an AoD of 35 degrees or 47m.
 - Timber buildings—equivalent to an AoD of 26.5 degrees or 33.5m.

- For NW LW 7 in relation to building 6, the Stud Masters Cottage, a 20m WHEZ (based on 17 degrees AoD) and the implementation of a number of specific measures have been recommended. The WHEZ based on a AoD of 35 degrees (or 47m setback distance) will be adopted for the remainder of the WHC buildings, with the exception of Buildings 8 and 9 which would observe AoD of 4 degrees (5m) and 17 degrees (20m) respectively.
- Undertake pre-mining visual and photographic inspections (dilapidation surveys) prior to NW LW 7 and 8.
- Undertake on-going 3-D subsidence monitoring of Pegs HM1 to HM24 on a monthly basis during active subsidence development at the Buildings and after LW 7 and 8 are complete using spirit levelling for subsidence measurements.
- Review performance of the WHEZ after LW 7 is completed and adjust LW 8 if considered necessary (ie as an Adaptive Management measure).

Implementation of more specific management strategies are proposed to minimise the impact of LW 7 on the Stud Master's Cottage (Building 6) as follows:

- Installation of subsoil drains to a minimum depth of 1m (ie below the footings) around a 5m set back distance from the perimeter of the structure to lower the moisture in the 'over wet' clays and isolate the structure from significant tensile strains that could exacerbate the existing cracks in the walls. Specialist geotechnical design advice should be obtained to ensure the design and locations of the trenches do not exacerbate the poor footing and foundation clay performance overall.
- Undertake the proposed reinstatement of the roof for the Stud Master Cottage as a priority prior to the commencement of the mining works at LW 7 and further, if necessary, install temporary bracing to internal walls to mitigate any subsidence affects.
- Placement of low strength grout to approximately full roadway height (ie greater than 95%) around the two pillars directly below the building to minimise pot-hole potential and subsidence increases due to LW 7 abutment loading. Specialist geotechnical advice should also be sought in regards to designing and managing the grouting works.

In addition, consistent with the Conservation Management Plan (CMP), WCPL will continue to undertake regular monitoring and ongoing maintenance and management of the Complex, in accordance with its obligations under the Heritage Act 1977 and Environmental Planning and Assessment Act, 1979.

Based on the adoption of the above measures, DgS concludes that any subsidence impacts will not change the existing overall impact category for the WHC structures. The predicted impacts from the proposed North Wambo mining will be significantly less than the previously approved United mining within the WHC. GML believes that the proposal is acceptable on this basis. In addition, based on its assessment of the potential impacts and mitigation measures in relation to the proposed underground mining, as described in the DgS report, GML agrees with this conclusion and believes that if they are adopted there will be no adverse effects on the State heritage values of the WHC.

1.0 Introduction

1.1 Preamble

Godden Mackay Logan Pty Ltd (GML) has been commissioned by Wambo Coal Pty Ltd (WCPL) to prepare a Mine Management Plan for the proposed underground mining of Longwalls 7 and 8 (LW 7 & 8) in the vicinity of Wambo Homestead Complex (WHC).

The Wambo Coal Mine operates in accordance with Development Consent DA 305-7-2003. Condition 57 of DA 305-7-2003 relevantly states:

Section 60 Approval

57. An application under section 60 of the Heritage Act must be submitted to and approved by the Heritage Council prior to the commencement of any development on land within the State Heritage Register listing boundary for the Wambo Homestead Complex. In this regard a mine management plan shall be required to accompany the application which demonstrates that the proposed underground mining shall not have adverse heritage impacts on the WHC due to land subsidence.

Condition 57 is based on a General Term of Approval (GTA) provided by the Heritage Council to the Department of Planning and Infrastructure in 2003.

GML have prepared this Mine Management Plan to accompany an application under Section 60 of the *Heritage Act 1977* (Heritage Act), to allow for the continuation of underground mine development within the WHC State Heritage Register (SHR) boundary. This management plan includes a statement of heritage impacts, management measures to avoid adverse impacts, and recommendations on management procedures for WHC in relation to underground mining.

1.2 Study Area

The WHC is located approximately 15km west of Singleton, near Warkworth in the Hunter Valley of New South Wales (Figure 1.1). The site is identified as Lot 82 of Deposited Plan 548749. Access to the site is currently via a private road which runs through the mining operation. Wambo adjoins grazing land to the south, other coal mining operations to the east and north, grazing land to the northwest and Wollemi National Park to the west and southwest.

A range of open cut and underground mine operations have been conducted at Wambo since mining operations commenced in 1969. Mining under Development Consent DA 305-7-2003 commenced in 2004 and currently both open cut and underground operations are conducted. The approved run-of-mine (ROM) coal production rate is 14.7 million tonnes per annum (Mtpa) and product coal is transported from Wambo by rail.

The WHC is located at the southern limit of the existing surface operations at the Wambo site. The WHC is listed on the SHR under the Heritage Act.

1.3 The Proposed Activity

The proposed activity subject to this application under the Heritage Act consists of the continuation of existing underground mining of the Wambo Seam to include North Wambo LW 7 and 8 within the Wambo Homestead SHR curtilage area.

Mining under Development Consent DA 305-7-2003 commenced in 2004 and currently both open cut and underground operations are conducted. The approved North Wambo Underground Mine (North Wambo) consists of eight longwall panels. Development at North Wambo commenced in 2005 and production (using longwall mining methods) commenced in 2007 (WCPL, 2008a). Longwall mining is currently conducted in LW 5 and development activities are occurring in LW 6 and 7 (ie approaching the Wambo Homestead Curtilage). The mining of North Wambo LW 7 and 8 within the Wambo Homestead Curtilage would provide for the continuation of mining at North Wambo (for approximately 1.3 years) and direct employment of 200 personnel. Mining within the Wambo Homestead Curtilage would involve the production of about 5.69 million tonnes of ROM coal.

1.4 Statutory Context

The proposed underground mining within the WHC is subject to the provisions of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and the Heritage Act.

1.4.1 Environmental Planning and Assessment Act 1979

Any coal mining proposal is subject to special provisions of the EP&A Act as a major project. In 2004 this included classification as State Significant Development and designated development, requiring:

- the preparation of an Environmental Impact Statement (EIS);
- public exhibition of the proposal, EIS and other related documentation; and
- the preparation of an Assessment Report by the Director of Planning.

Development Consent DA 305-2003

Following this procedure, the proposed mining operations were granted development consent in 2004 by the Minister under Section 80 of the EP&A Act. The approved development of open cut and underground mining operations at Wambo Coal Mine included longwall mining within the SHR curtilage of the WHC (subject to the conditions discussed below).

A number of conditions were attached to the Development Consent including conditions 57–62 relating to the WHC (Copy of Consent - Appendix B). These conditions have generally been met (see Section 2.3), with the exception of condition 57, which is the subject of this application.

In accordance with Condition 57 of Development Consent DA 305-7-2003 (see Section 1.1), GML has prepared this Mine Management Plan to accompany an application under Section 60 of the Heritage Act to allow for the continuation of underground mine development within the WHC SHR boundary.

1.4.2 Heritage Act 1977

The Heritage Act provides a range of provisions for identifying and protecting items of environmental heritage, the principal means being through listing on the SHR for items assessed as being of 'State' significance.

The WHC was made subject to a Permanent Conservation Order (PCO) in 1982 while under the ownership of Joan Margaret Plesick. The PCO included an extensive area around the homestead and outbuildings. In 1987 the site was bought by Wambo Mining Corporation. In July of 1996 the

site was heritage listed on the Singleton Local Environment Plan (gazetted 5 July 1996). All items subject to a PCO were transferred to the SHR as a State significant heritage item when the Register came into existence following amendments to the Heritage Act in 1998. The WHC PCO was converted to an entry on the SHR in April 1999 and is listed as SHR No.0200 (see Appendix A).

Listings for the WHC are summarised in Table 1.1.

Under Section 60 of the Heritage Act, the approval of the Heritage Council is required for any activity (unless exempted) listed in Section 57(2) within the curtilage of a SHR item; hence the requirement for approval under the Heritage Act for that part of the development approved under the EP&A Act which is within the gazetted SHR listed area of WHC. The mining of the North Wambo Underground Mine longwall panels LW7 and LW8 is considered to be development in relation to the WHC SHR boundary and, therefore, an approval under Section 60 of the Heritage Act is required.

Statutory Heritage Listings

Table 1.1 Wambo Homestead Complex Heritage Listings

Heritage Listing	Gazettal Date
Singleton Local Environmental Plan (1996)	5 July 1996
NSW Heritage Act—State Heritage Register (00200)	2 April 1999

1.5 Previous Reports and Studies

A conservation plan was prepared by Bernard Collins in 1994 as a thesis for a Master of Science (Architectural Conservation). This study was updated in a draft Conservation Plan in 2006 by EJE Heritage.

More recently, GML has been engaged to provide a range of heritage services to assist in reviewing the future management decisions for the site. These include:

- the preparation of a WHC Heritage Strategy;
- a Comparative Homesteads Study;
- a Revised Comparative Homesteads Study;
- additional Historical Research of Colonial Homesteads;
- a Relocation Feasibility Study;
- an Interpretation Strategy; and
- the current revision of the WHC CMP.

1.6 Reporting Approach

1.6.1 Report Structure

This management plan includes:

- a background history of Wambo, including mining operations (Section 2);

- a summary description of the proposed mining (Section 3);
- a statement of heritage impacts (Section 4); and
- management measures to avoid adverse impacts and recommendations on management procedures for WHC in relation to underground mining (Sections 5 and 6).

1.6.2 Terminology

The terminology used in this report is consistent with the NSW Heritage Manual, prepared by the NSW Heritage Branch and *The Australia ICOMOS Charter for Places of Cultural Significance 1999* (Burra Charter).¹

1.6.3 Limitations

This report was prepared to assess heritage impacts of underground mining to WHC, and provide future management recommendations for the site, for a S60 application under the Heritage Act by the owners, Wambo Coal Pty Ltd, to the Heritage Council of NSW. This assessment is based on the findings of the Dgs Report *Subsidence Data Review and Impact Assessment for Longwalls 7 and 8 at North Wambo Underground Mine, Warkworth. DGS Report No. NWU-001/4 for Peabody Energy Australia Pty Ltd, Date: 23 May 2012* and GML knowledge and experience of the heritage values of the WHC.

The report documents do not include an identification or comparison of Aboriginal heritage values associated with the Wambo site or any comparison of specific vegetation or natural values. It is a management report, and utilising existing research, assessments and documentation. It has not included a specified fieldwork program, apart from the inspection of the homestead complex by GML, for the purposes of the specific advice on possible impacts from underground mining.

1.6.4 Authorship

This report has been prepared by Reece McDougall (CEO) and Diana Cowie (Graduate Consultant) of GML.

1.6.5 Acknowledgements

GML gratefully acknowledges the extensive work of Bernard Collins, the author of the 1994 CMP, and EJE Heritage, authors of the 2006 CMP for the WHC.

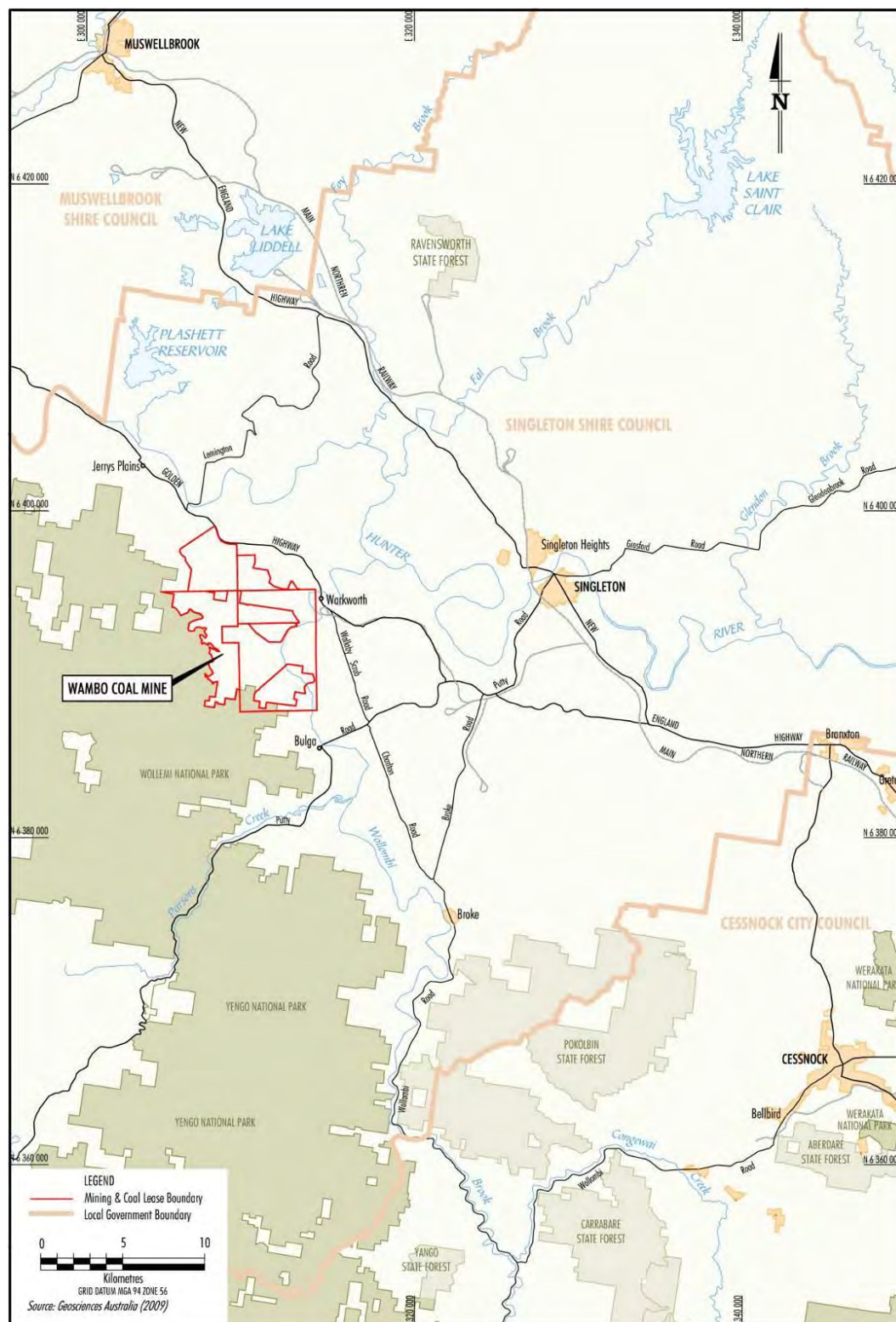


Figure 1.1 Location of subject land. (Source Peabody Energy)

2.0 Wambo Homestead Complex

2.1 Introduction

The homestead complex is presently comprised of nine distinct structures:

- Building 1: The New House c1844;
- Building 2: The Kitchen Wing c1830;
- Building 3 : Servant's Wing c1837;
- Building 4: Carriage House with Stables and Granary c1844;
- Building 5: Slab Horse Boxes c1900
- Building 6: Stud Master's Cottage c1837
- Building 7: Slab Butcher's Hut c1890;
- Building 8:& 9: Mounting Yard and Horse Boxes c1900

2.2 Historical Development

2.2.1 Wambo Homestead Complex and Farm

The area around Wambo was some of the earliest land taken up by Europeans, as it was close to the road from Windsor and positioned around the fertile valley flats of the Wollombi Brook and Hunter River. In April 1824 Matthew Hindston, a free emigrant and Sydney merchant, was granted 2,000 acres on the left bank of the Wollombi Brook. The following year another free emigrant, David Maziere, was granted 746 acres adjacent to Hindston.¹ These two farms make up the core of the Wambo estate as it later developed. It is unclear if either Hindston or Maziere developed their grants beyond some land clearing, and there is no evidence of either of them living on the site or building any substantial structures. By 1834, both Hindston and Maziere had sold their lands to James Hale who developed the Wambo Estate.²

James Hale arrived as a 20 year old convict aboard the *Mariner* in 1816 and was forwarded to Windsor for assignment. Here he served out his sentence being freed by servitude in c1822.³ Hale became a colonial Government contractor supplying stores for survey parties leaving from Windsor in the 1820s and early 1830s. By 1828 he was an established, successful local businessman—operating the White Hart Inn at Windsor, with a publican's license, five assigned servants, and 2133 acres of land of which 11 was cleared and cultivated, owning 11 horses, 433 cattle and 1,090 sheep.⁴

In 1834 Hale applied for seven separate leases in the Parishes of Lemington and Warkworth around the Wollombi Brook. He followed in 1835 with a purchase of 1,218 acres of land on the Wollombi Brook adjacent to Hindston and Maziere's land and a further 5,760 acres through leasehold.⁵ Hale then acquired another 4,480 acres in 1837, including Hindston and Maziere's properties around the same time. Hale gave the name of Lemington Grange to his estate; Lemington being the Parish within which much of his estate fell.⁶ Wambo Homestead was the creation of James Hale and appears to have begun in the mid 1830's.⁷ The name *Wambo Estate* was being used after 1857, replacing the name *Lemington Grange*.⁸

While Hale lived in Windsor, he used Wambo Estate as a pastoral holding. Hale continued to increase his grazing holdings through the 1830s and 1840s and by 1841 held close to 100,000 acres in the Hunter Valley and Liverpool Plains regions. Like Wambo, these properties were run by on site superintendents with 21 men living on the properties in 1841. As well as having assigned labour working on his properties, Hale was a member of the Coolie Association from 1842, which

advocated the importation of Asian labourers to replace the convicts, transportation of whom had ceased to New South Wales in 1841. With his large holdings Hale, despite his convict background, would have been just as dependent on convict labourers as the other large landholders in the Valley. To compensate, Hale employed newly arrived immigrants who he paid a wage with board and lodging, to work on his properties.⁹ Hale's estate was used both for grazing and for cultivation.¹⁰

Hale's stepson, William Durham Junior and his stepson's wife (Sophia Hill) and children were living at the Wambo homestead from approximately 1852.¹¹ When Hale died in 1857 all of his property was left to his stepson, William Durham Junior, eldest son of his wife Mary from her first marriage.¹² William Durham had been managing the property for some time on behalf of Hale before his death. The property stayed in the Durham family until 1892.¹³

Wambo was sold to Ben Richards in 1894, resold in 1898 and purchased in 1905. In 1908 the property was sub-divided and the lot which included the homestead was retained by Frank MacDonald who had originally bought the entire property in 1905 in partnership with R.C Allen.¹⁴ At the time of this partnership the property was developed as a horse stud. This involved additions to the buildings and construction of horse boxes and mounding yards to the rear of the homestead.¹⁵ The MacDonald family continued to breed horses and also operated three dairies until 1968 when a large portion of the estate was sold to the Wambo Mining Corporation. The homestead and surrounding 80 acres stayed in the possession of the MacDonalds until 1983, when it was sold to Mr John Birks.¹⁶ Birks subsequently sold the house portion in 1987 to the Wambo Mining Corporation, the homestead's current owner.¹⁷

In 1981 the Wambo complex was classified by the National Trust and in 1982 a Permanent Conservation Order was placed on the site, which was converted directly to the SHR in 1999.

2.2.2 History of Mining at Wambo

The Wambo Property was purchased by a small group of individuals with mining interests in 1969 and there have been a range of owners since. Underground operations in the vicinity of the property commenced in 1972. In 1974 open-cut mining began as a small-scale operation to supplement the underground production from the Wambo seam. Underground mining has been progressively expanded to include six active mines in the vicinity—Charlie's Hole, Wambo, Ridge Entry, Homestead, Wollemi, and the latest in 2005, North Wambo.

Between 1982 and 1991 the property was owned by a combination of companies, including Panaroya, Hartogen, Total Australia, GIO and CdF Minerals. It was transferred to Sumito Coal Mining Ltd (now Sumiseki) in 1991 who managed the site until purchased by Excel Coal in 2001.

The pastoral pursuits of the property were initially continued under the new mining interest owner and the buildings were later used for storage purposes in association with the development of the mine. The WHC is not available for public access due to the health and safety requirements of the surrounding mining operation. The property has been vacant for the last decade.

The current owner is Wambo Coal Pty Ltd (consisting of 75% Peabody Energy and 25% Sumiseki), which has operated the site since October 2006.

The WHC is physically within three mining leases—Consolidated Coal Lease No.743, Mining Lease No. 1402 and Mining Lease No. 1594.

The development consent granted by the Minister in February 2004 approved mining operations which will have a life of approximately 21 years and further applications are likely.

In 2005 United Collieries was granted approval for expanded underground mining operations within the heritage listed curtilage of the complex and as a result of approval conditions a contribution of \$2 million was made to the newly established Hunter Heritage Fund, now managed by the NSW Heritage Council.

2.3 WCPL Management of the Homestead Complex

The current owner, WCPL has undertaken a regular annual maintenance audit and photographic record of the buildings within the Complex, as required by the Heritage Council minimum maintenance standards. Wambo Coal Pty Ltd has also promoted community involvement by way of a series of paintings of the buildings and landscape. Wambo Coal supports a Consultative Community Committee which keeps the community informed of heritage and other environmental issues.

A Conservation Plan was prepared by Bernard Collins in 1994 as a thesis for a Master of Science (Architectural Conservation). This study was updated in a draft CMP in 2006 by EJE Heritage.

In addition, under the supervision of a GML heritage architect and Hyder engineer, and using recognised heritage builder Waller Constructions, the company has undertaken extensive stabilisation and conservation works. The Mine Management Plan is based on the extensive previous research undertaken in the aforementioned studies into the significance, condition, and conservation options and recommendations for the Homestead Complex.

From 2010, GML has provided a range of heritage services to assist WCPL in planning for the future of the WHC, including the following:

- revision of the EJE CMP;
- preparation of a WHC Heritage Strategy 2011;
- development of comparative analysis/assessment of the place/item in the context of comparative sites in the Hunter Valley, particularly surviving nineteenth-century homestead groups;
- further investigations and research to provide a Revised Comparative Homesteads Study 2011;
- professional review of the history of the place/item to identify the key themes, events and people relevant to assessment of its heritage significance, including the significance of surviving components and attributes and relationship to comparative sites;
- provision of specialist engineering and architectural advice on the feasibility of relocating the structures that make up the WHC. Also initial input/advice on heritage criteria relevant to any new site/location for the reconstructed elements;
- preparation of initial Interpretation Strategy recommendations for incorporating and presenting the heritage values of the place as part of any future management and/or development, proposals; and

- provision of specialist heritage advice to direct stabilisation of existing significant structures. These works have included making structures watertight and upgrading drainage systems; providing support for structural components/fabric where required to prevent further collapse and/or make structures safe for ongoing inspection and maintenance; identifying and controlling white-ant infestations, and securing fabric from ongoing deterioration by appropriate protection methods (including removal and storage).

WCPL has undertaken a number of activities, as follows:

- Undertaken an annual photographic record of the Wambo Homestead and structures in accordance with Heritage Council guidelines.
- Implemented blast monitoring of the Homestead site.
- Commissioned the preparation of 'Wambo Homestead—An Artists Impression' by Vivian Dwyer.
- Recognised the constraints for public access given the Homestead's location within an active mining development. This has provided some specific opportunities for the community to inspect the WHC, for example the inspection by Singleton Council in 2011.

In addition, over the last 18 months WCPL has undertaken an extensive program of works to stabilise and maintain the buildings in the WHC. These works have resulted in more stable structures in relation to key components such as the New House, Kitchen Wing, Butchers Hut and Servants Block which will both assist in their long-term conservation and also be able to respond to any subsidence impacts from the proposed underground mining noting such impacts are predicted to be minimal.

From January to October last year works were undertaken to buildings in the WHC 'to implement the Voluntary Action Plan (VAP)' and 'in accordance with the recommendations made in the following documents', as required:

- Wambo Homestead Complex VAP: Initial Conservation and Maintenance Works, Draft Report, prepared for Wambo Coal Pty Ltd, 17 February 2011 by Godden Mackay Logan Pty Ltd, and
- Wambo Homestead Complex VAP Supplementary GML Report, 25 February 2011 by Godden Mackay Logan, Pty Ltd.

An illustrated summary of the works completed, including 'before' and 'after' photographs is included in the resultant report Wambo Homestead Complex VAP Report on Completion of Conservation and Maintenance Works November 2011, Appendix C.

The aim of these works was to secure and protect from ongoing deterioration, as much as possible, components and fabric of the homestead complex that contribute to its heritage significance. In other words, to conserve and retain in situ by:

- ongoing maintenance—including and adding to tasks commenced in the initial VAP works;
- measures to make secure/support significant components/fabric in danger of collapse by strutting and/or bracing; and

- stabilisation of original components/fabric where appropriate

Further maintenance and stabilisation works (Stage 2 conservation works) to the WHC were carried out in 2012 in accordance with the requirements of the NSW Department of Planning for:

A Schedule of Works to be carried out over the next twelve months... [to] continue with the works started to prevent further deterioration of the buildings while the delisting application was being processed and a revised Conservation Management Plan (CMP) was being prepared and submitted. (Email correspondence from Julia Pope, NSW Department of Planning, 8 July 2011.)

An illustrated summary of the further conservation works, including 'before' and 'after' photographs is included in the resultant report Wambo Homestead Complex Report on Completion of Conservation and Maintenance Works Part 2, June 2012, Appendix D.

During the course of the works, appropriate measures were taken to adequately protect significant built elements from potential damage using methods that did not adversely affect existing fabric and were readily removable. The VAP Report 2011 provides a number of examples where works were needed to reinstate, remove and replace and/or prop components to prevent collapse/failure. Other removable/non-invasive methods to protect exposed fabric from water damage were also used including sand-bag diversionary walls and fibreglass sheet 'spouts'.

As with the initial VAP program the aim of the Stage 2 conservation works was to secure and protect significant components and fabric from ongoing deterioration, as much as possible.

Reconstruction using new components and fabric to recreate a previous structure was not included.

These works (other than routine maintenance, which will be ongoing) were implemented over a period of 12 months. Priority was given to essential stabilisation and protection works, as well as investigation of particular problem areas where deterioration rates have increased.

Both the VAP and Stage 2 Conservation works programme were directed and monitored by Jyoti Somerville, Associate, GML, with specialist structural engineering input from Paul Connett, Hyder Consulting Pty Ltd. Site works—other than landscape maintenance—were carried out by Gary Waller, G & C Waller Builders Pty Ltd, who have extensive expertise and experience working on significant heritage sites.

A summary of the range of works undertaken to buildings within the WHC as part of the VAP and Stage 2 conservation works is provided below:

2.3.1 New House

VAP 2011

- Removal of intrusive vegetation.
- Bracing of verandah support wall to halt settlement and rotation; removal of deteriorated columns and replacement with new timber props; resealing and realignment of gutter and construction of new timber-framed 'water chute' with acrylic sheeting to collect and disperse roof water onto ground away from base of building.
- New timber bracing to supplement retained existing corner column; resealing and realignment of gutter and construction of new timber-framed 'water chute' with acrylic sheeting to collect and disperse roof water onto ground away from base of building.

- Upgrading of roof drainage showing two new timber-framed 'water chutes' to disperse roof water onto ground away from base of building at south and north ends of east elevation.
- Propping and bracing collapsing masonry wall on inside and outside faces of building.

Further Conservation Works 2012

- Pre work inspections by the engineer, heritage consultant and builder.
- Builder installed approved propping under cracking ceilings and cornices to provide a secure support and 'hold-all' for loose/cracked sections including sheeting under ceilings and fabric-protected timber prop-heads under cornices, as discussed.
- Propping/bracing also provided where required to roof framing to back (north) rooms and to support sections of masonry walling where the structural integrity was affected by salt-damp erosion.

2.3.2 Kitchen Wing and Courtyards

VAP 2011

- In conjunction with propping edge beam and realigning verandah gutter on New House installing a new timber-framed 'water chute' at junction with Kitchen Wing to disperse roof water away from verandah framing into existing drainage system.
- Initial clearing of invasive plant growth showing formerly hidden components and fabric.
- Improving roof drainage including checking over and resealing/repairing roofing, removal of deteriorated sections of gutter, re-securing and/or replacing existing gutters, installation of new spouts/outlets and construction of new timber-framed 'water chute' with acrylic sheeting to collect and disperse roof water onto ground away from base of buildings.
- Repairing roof and drainage including checking over and repair/refixing of roof sheeting (main roof and verandah) and flashings, removal of deteriorated gutters and downpipes and installation of 'water-chutes' with new flashings to collect and disperse roof water from valleys and wall junctions.
- Realigning of verandah posts/edge beam.
- Installation of new props to support windmill off verandah roof, clearing out and realignment/propping of framing and upgrading of roof drainage
- Installing new gutter and downpipe as part of drainage upgrading. Main roof left gutter-less to drain to verandah

Further Conservation Works 2012

- Engineer, heritage consultant and builder identified structural wall areas requiring bracing and support—particularly along west elevation, southwest corner and east basement wall of Kitchen Wing, various internal walls of this wing and the southeast corner of the New House.
- Builder installed propping and bracing, as agreed with Engineer, to prevent structural collapse of upper walls.

- Basement cleared out and drained, including stairs, area and internal spaces.
- Masonry walls to external area wall (ie eastern retaining wall to Basement stair) and internal room/area braced as required.
- Timber ceiling/floor structure above braced and propped as required.
- Cement paving to northeast courtyard sealed to prevent water entry into area and basement.

2.3.3 Stud Master's Cottage

VAP 2011

- Sorting, analysis and storage of external fabric.
- Inspecting/ analysis and storage of surviving roof and verandah fabric inside building.
- Removal of tarpaulin to allow inspection of walls, roof/ceiling components and interiors.
- Clean-up/removal of components/fabric from former roof and verandah for sorting and storage

Further Conservation Works 2012

- Tarpaulin removed to allow inspection by Engineer, Heritage Consultant and Builder of condition, strength, repair/bracing needs of surviving roof structure; extent of movement of external walls; condition of masonry at base of walls, including ground conditions below floor; and wall cracking generally.
- Conditions as found recorded photographically and by Engineer as drawn details of footing conditions.
- Builder inspected all retrieved components/fabric from initial maintenance/repair works (completed 2011) and currently stored in on-site container (re. number, size, material, function and condition of components and relative age based on characteristic features (ie old/early corrugated steel with thicker galvanising vs more modern galvanised steel roofing; adzed or bush-pole timbers vs sawn timbers; modern vs traditional nails/fixings, etc).
- Builder's report reviewed by Engineer and Heritage Consultant regarding options for using this fabric as part of reconstruction of roof (ie incorporating and supplementing sound, reusable components and fabric) as part of future reinstatement of roof and verandah

2.3.4 Coach House and Stables

VAP 2011

- Removal of invasive plantings showing extent/condition of fabric and stabilisation works.
- Clean up and installation of new timber props to support roof framing showing stockpiled retrieved fabric
- Clearing, stabilisation/propping works and installation of new acrylic sheeted waterproofing to provide ventilated weather protection of openings and fabric exposed to weather.

Further Conservation Works 2012

- Stables and Coach House cleared out (removing stored hay and other debris) to expose stone flagging and previously hidden structural framing and cladding elements, including in loft area.
- Fallen, readily retrievable building components restored (ie repositioned in original locations) where possible (eg verandah posts, door and cladding components).
- New timber propping and bracing installed as part of securing, straightening and stabilising structure (located so as to support/protect existing components but be as visually unobtrusive as possible, particularly in external views). Floor, wall, ceiling and roof framing propped as necessary.
- Clear corrugated acrylic sheeting used to cover areas/openings exposed to water entry (as initiated in Stage 1 Voluntary Action Plan (VAP) works).

2.3.5 Butcher's Hut

VAP 2011

- Clearing and stabilization works, including resecuring loose/fallen slabs and associated joinery.
- Removal of invasive plant growth and structural propping to support temporary roof covering.
- Restoration (ie reinstatement) of original timber slabs and parging and new timber props to support temporary roof covering.
- Restoration and stabilisation works and final fixing of corner cover strips and tarpaulin cover.
- Clean up and installation of new timber props to support roof framing showing stockpiled retrieved fabric.

Further Conservation Works 2012

- Original timber slab cladding reinstalled on north, west and east walls to original locations with associated joinery/trim (at corners and around openings) refixed/replaced as necessary to make secure.
- New timber propping and bracing installed on east and west elevations as part of securing, straightening and stabilising structure.
- Internal bracing to interior/roof area to transfer loadings, including new coverings to roof and gable ends.
- Existing corrugated iron restored where bent and/or lifting from fixings at gable ends.
- Additional installation of clear corrugated acrylic sheeting to cover areas/openings exposed to water entry (as per Stage 1 Voluntary Action Plan (VAP) works).

2.3.6 Servants Block

Further Conservation Works 2012

- Structure cleared of intrusive vegetation and accumulated debris and inspected and recorded by Builder.
- Structure propped and stabilised including external masonry walls, roof and first floor framing.

2.3.7 Proposed Future Works

In addition to the above actions, WCPL is intending to undertake a further works program over the next 1-2 years. The structural support of the Stud Master's Cottage and reinstatement of roof and verandah will be brought forward as a priority recognising that such works in conjunction with the proposed underground grouting (see Section 5.0) will also ensure that any subsidence impacts from the proposed mining will be mitigated and the effects on fabric will be minimal.

The following works are proposed (following investigation and review by WCPL Heritage Engineer and Architect and Heritage Council approval) to be undertaken over the next 1-2 years as part of the continuing maintenance and improvement program.

- Structural support works for the Stud Masters Cottage.
- Reinstating the roof and verandah on the Stud Masters Cottage.
- Stabilisation and repair of timber yards.
- Further conservation works to the New House and Kitchen Wing.
- Further drainage works in the vicinity of buildings.

As part of the above works, measures were undertaken to record site evidence as found, in order to provide a future resource for research, and to guide future decision making and management of the place (including repair/restoration, interpretation, etc.). This included internal propping and support of the 'New House'.

Regular inspections and maintenance of site by WCPL staff were undertaken. Maintenance of the landscaped setting of the Homestead complex has included installation of fighting water services, grass control and removal of invasive trees/weeds where these endangered the stability of significant structures. Works to improve site drainage and security have also been carried out.

- Provided reports to Wambo Community Consultation Committee.

2.4 Heritage Significance of the Homestead Complex

The role of WHC as a nineteenth-century homestead complex, including residence with domestic and farm outbuildings, reflects its function and the social structure of its early operation.

2.4.1 Cultural Heritage Values

WHC shares key themes and associations with people/families and events in the history of the Hunter Region through extant site features, age, layout, buildings, and other site components. The following aspects contribute to WHC's significance:

- historic associations with early land grants and settlement of the Hunter pre-1850;
- association with James Hale—a freed convict and one of the largest land holders in New South Wales in the early nineteenth century;
- association through Hale and his family with other significant early settler families (such as the Cox and Durham families) and their holdings throughout New South Wales;
- association with early pastoral activity in the Hunter and horse breeding in particular;
- extensive physical evidence of an early (pre-1850) homestead complex including a full range of outbuildings;
- homestead which has retained significant early fabric and detailing, is well built, little altered and also reflects its owner's humble origins with few architectural pretensions;
- individual outbuildings of typological note including particularly the Butcher's Hut; and
- its rural siting and setting.

One of the notable historical attributes of Wambo is its association with the convict-emancipist entrepreneur James Hale. In the Hunter Valley, homestead complexes and pastoral activities were very rarely established by men of convict origin, making Wambo quite valuable in that regard. The results of Barney Collin's comparative analysis in 1994 (unpublished architectural thesis) found that of pastoral activities in the first half of the nineteenth century (the squatting era) in the Hunter Valley, 90% were established by free men and 10% by men of convict origin.¹⁸

The main residence at Wambo (the New House) is one of a larger group of 78 (pre-1850) homesteads within the Hunter Region but is made rarer by its association with emancipist James Hale and its relatively high degree of historic authenticity. Although significant original features and fabric are retained both externally and internally, it is in an advanced state of deterioration which impacts its integrity.

The outbuildings associated with Wambo are important for the evidence they provide of past site use, pastoral and domestic activities and for the extent to which important early fabric has been retained. The Butcher's Hut is a comparatively rare structure (four butcher's huts are identified in the Hunter Homestead complexes established pre-1850). It is an example of clay insulation construction which has survived sufficiently well to demonstrate this now largely lost traditional building method. Other outbuildings such as the horse-related slab buildings provide important evidence of significant early uses of the site (eight places with similar equine infrastructure identified in the Hunter pre-1850 established homestead complexes).

Using the SHR criteria for assessment WHC is of State heritage value for historical significance (SHR a), associative significance (SHR b), aesthetic significance (SHR c), social significance (SHR d), as well as research potential (SHR e) and rarity value (SHR f). Details are included in the SHR listing at Appendix A.

2.4.2 Statement of Significance

From the State Heritage Register WHC's Statement of Significance is described as:

Wambo Homestead Complex is state significant in the context of Australian pastoral activities and horse breeding in New South Wales and for its capacity to demonstrate the development of pastoral and agricultural activity in the Hunter Region--an important early region of colonial settlement.

This significance is strongly demonstrated in the survival of the core group of five early homestead buildings, constructed between the mid-1830s and mid-1840s, and in the relationship of all buildings and structures of the Wambo Homestead Complex to their setting and the landscape.

Wambo Homestead Complex is state significant as an important group of homestead buildings which remain substantially intact and which display the progressive architectural development of a typical Australian homestead group. It is also state significant for its capacity to demonstrate rare evidence of extensive early finishes in the fabric of the core group of 1830s and 1840s buildings, and for the retention of all original joinery of the four masonry buildings of this group. The New House is state significant for its refined design and capacity to demonstrate architectural ambition at an early stage of colonial rural settlement.

Wambo Homestead Complex is state significant for its rarity as an important homestead complex that was established by a former convict in the Hunter Region, where most large estates were established by free settlement. The complex is significant for its associations with its original owner, the emancipist convict James Hale, who was responsible for the complex's core buildings and who, by 1844, had established himself as one of the top 100 landholders in the colony.

Although the Wambo Homestead Complex is in a 'rundown' condition, it still maintains and demonstrates its state significance.

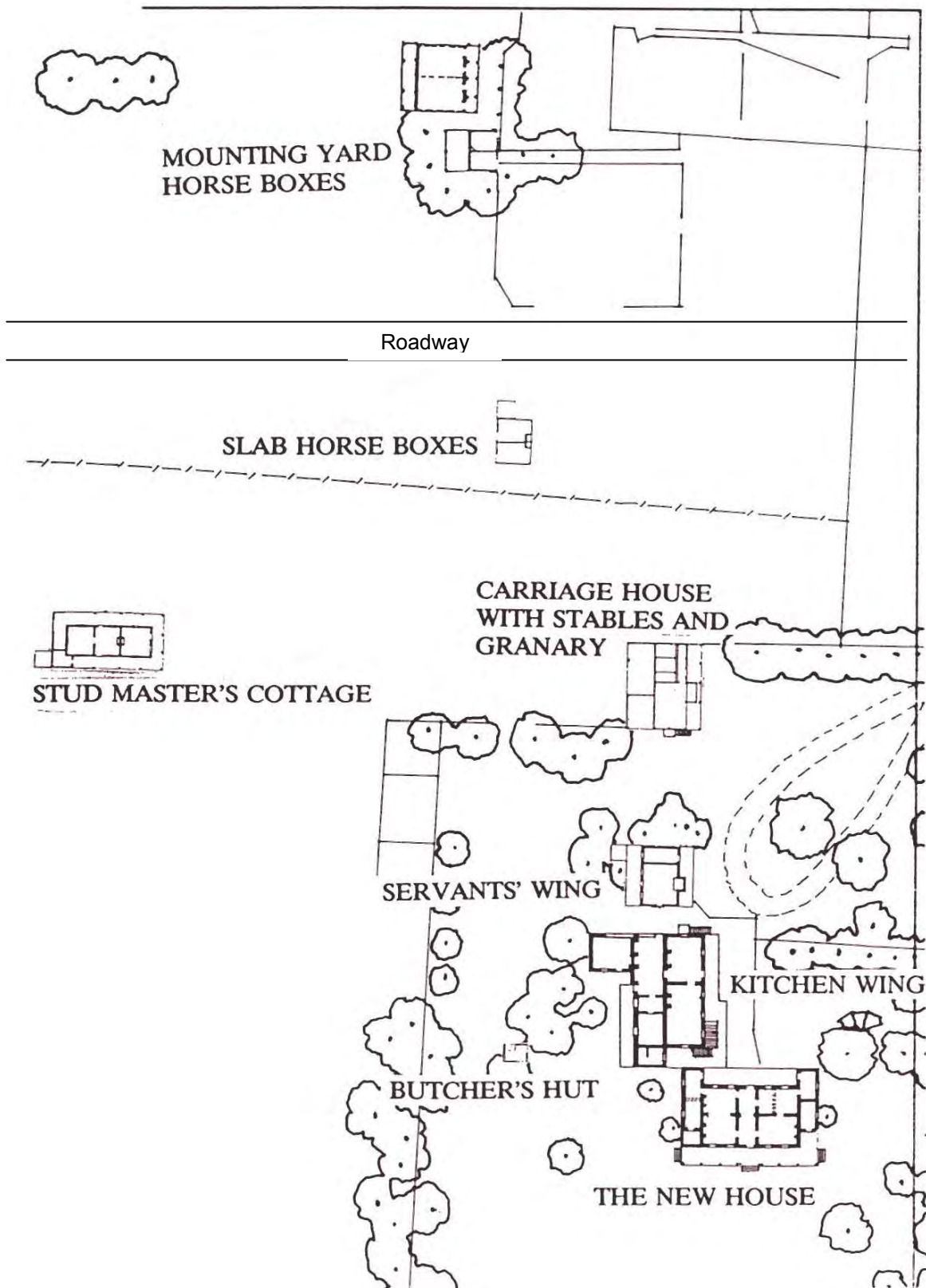


Figure 2.1 Sketch plan of extant buildings of Wambo Homestead Complex—not to scale. (Source: Collins 1994)

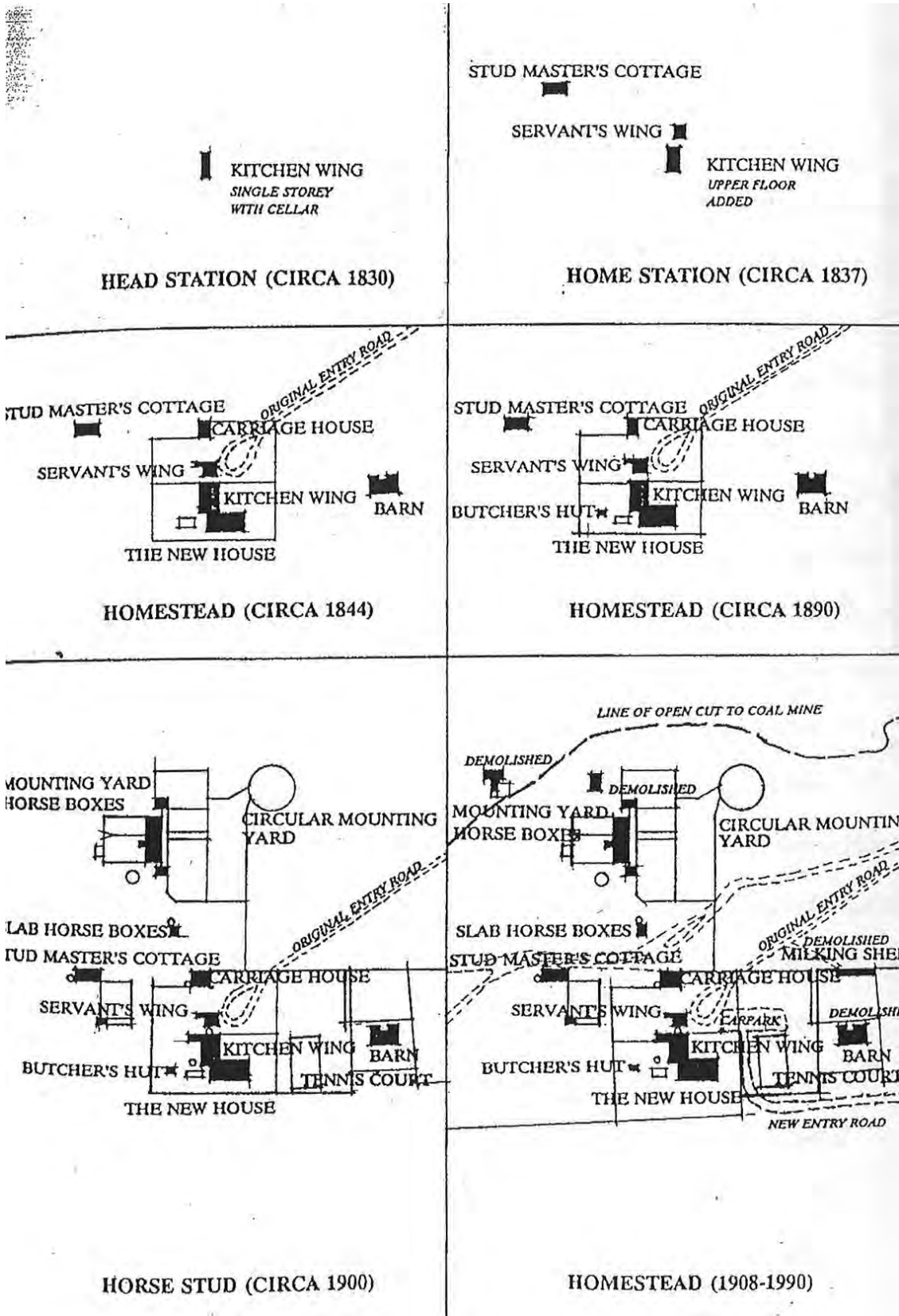


Figure 2.2 Plans illustrating the development of the Wambo Estate from 1830 until 1990. These sketch plans prepared by B Collins show the expansion of the homestead particularly in the period 1830–1844, with later demolition also indicated. (Source: Collins CMP 1994)

2.5 Endnotes

- ¹ Fink, E. 1977, *The Built Environment of the Shire of Singleton*, Hunter Valley Research Foundation, Research report No. 35, p. 78.
- ² Collins B. 1994, 'Wambo Homestead near Warkworth, NSW: A Conservation Plan', Master of Science (Architecture), Faculty of Architecture, University of Sydney, p. 13.
- ³ Baxter, C. 1999, *General Muster List of NSW 1823-1825*, Australian Biographical and Genealogical Record, Sydney, p. 237. Note in this muster Hale is noted as John Hale, not James Hale (entry 23637).
- ⁴ Collins op cit, p. 12. See also *Sydney Gazette and NSW Advertiser*, 3 January 1832.
- ⁵ *Sydney Herald*, 8 September 1834.
- ⁶ Collins, op cit, p. 8.
- ⁷ Collins, B. 1994, Wambo Homestead near Warkworth, New South Wales, A Conservation Study, p. 5.
- ⁸ Collins, B. 1994, Wambo Homestead near Warkworth, New South Wales, A Conservation Study, p. 8-9; *Sydney Herald*, 3 March 1836.
- ⁹ Governor's Dispatches: Governor Gipps May-August 1844. Mitchell Library, Reel 1234, p. 233.
- ¹⁰ *Maitland Mercury & Hunter River General Advertiser*, 14 December 1844; *Maitland Mercury & Hunter River General Advertiser*, 5 April 1845; *Maitland Mercury & Hunter River General Advertiser*, 2 May 1846. The breed of Hale's cattle as short horns was mentioned in an article on the property in the Maitland Mercury published 20 November 1875 regarding the stud herd there. This gave a brief background to the breeding history of the herd.
- ¹¹ Collins, B. 1994, Wambo Homestead near Warkworth, New South Wales, A Conservation Study, p. 24.
- ¹² Ibid, p. 10.
- ¹³ Ibid, p. 25.
- ¹⁴ Ibid, p. 10.
- ¹⁵ Ibid, p. 27.
- ¹⁶ Ibid, p. 30.
- ¹⁷ Ibid, pp. 10, 31.

3.0 Proposed Underground Mining Development

3.1 Summary of Mining Activities in the Vicinity of Wambo Homestead

A number of mining operations have been conducted in the vicinity of the WHC including:

- Former open-cut mining activities conducted from 1969.
- Wambo's current open-cut operations conducted in accordance with Development Consent DA 305-7-2003 which commenced in 2005.
- Wambo's Homestead Underground Mine—mining was conducted in the Whybrow seam between 1979 and 1999. Mining of the Homestead Underground Mine included mining (bord and pillar) under the WHC.
- United Collieries' United Underground Mine (United)—mining was conducted in the Woodland Hills seam between 1992 until 2010. Mining of the United Underground Mine included longwall mining under some buildings of the WHC.

Of these operations, United is the only operation to longwall mine under the WHC. Seven longwall panels at the United were originally approved in 2002 and these did not mine under the WHC. However, approval was granted in 2004 for the extension of United LW 7 and the addition of LW 8 under the WHC subject to observing a subsidence control zone around the WHC to minimise potential subsidence impacts.

The subsidence control zone was intended to limit subsidence for all WHC buildings to less than 20mm. To achieve this United second workings (ie longwall mining) was not permitted within an angle of draw of 26.5° from all WHC buildings.¹

An approval to mine United LW 7 under the WHC (ie relax the subsidence exclusion zone for United LW 7) was approved in 2007. It is understood that the Heritage Office supported this approval on the basis that proposed works would have minor impact on the heritage values of the WHC.²

Mining of United LWs 7 and 8 was subsequently conducted in 2007 to 2009. Ditton Geotechnical Services (DgS) concluded that the subsidence management measures implemented have been effective in controlling subsidence movements to within tolerable impact limits for all WHC buildings. A detailed summary of observed subsidence impacts on the WHC is provided in DgS's Report *Subsidence Data Review and Impact assessment for Longwalls 7 and 8 at North Wambo Underground Mine 23 May 2012* (see attached).

3.1.1 Proposed Underground Mining Subject to Development Consent DA 305-7-2003 and this Application

Project Description

The approved North Wambo Underground Mine (North Wambo) consists of eight longwall panels. Development at North Wambo commenced in 2005 and production (using longwall mining methods) commenced in 2007.³ Longwall mining is currently conducted in LW 5 and development activities are occurring in LW 6 and 7 (ie approaching the Wambo Homestead curtilage).

As development activities at North Wambo in relation to mining of LW 7 and 8 are now approaching the Wambo Homestead curtilage, a Section 60 approval is required as soon as possible to allow for

development/mining activities at North Wambo to continue uninterrupted into the Wambo Homestead Curtilage (Figure 3.1).

Project Justification

The mining of North Wambo LW 7 and 8 within the Wambo Homestead curtilage would provide for the continuation of mining at North Wambo (for approximately 1.3 years) and direct employment of 200 personnel. Mining within the Wambo Homestead curtilage would involve the production of about 5.69 million tonne of ROM coal.

This ROM coal production would contribute to NSW export income, State royalties and State and Commonwealth tax revenue. In addition, significant contributions to the regional and NSW output or business turnover and household income would also result from this continued ROM coal production.

The proposal has been subject to public exhibition, assessment by the Department of Planning and Ministerial approval in 2004 and is now being provided to the Heritage Council under the Heritage Act in relation to continuation of mining within the SHR curtilage.

The benefits outlined above would be forgone if mining of North Wambo LW 7 and 8 within the Wambo Homestead curtilage is not implemented.

3.2 Endnotes

- ¹ Ditton Geotechnical Services, 2012
- ² Department of Planning, 2007
- ³ WCPL, 2008a

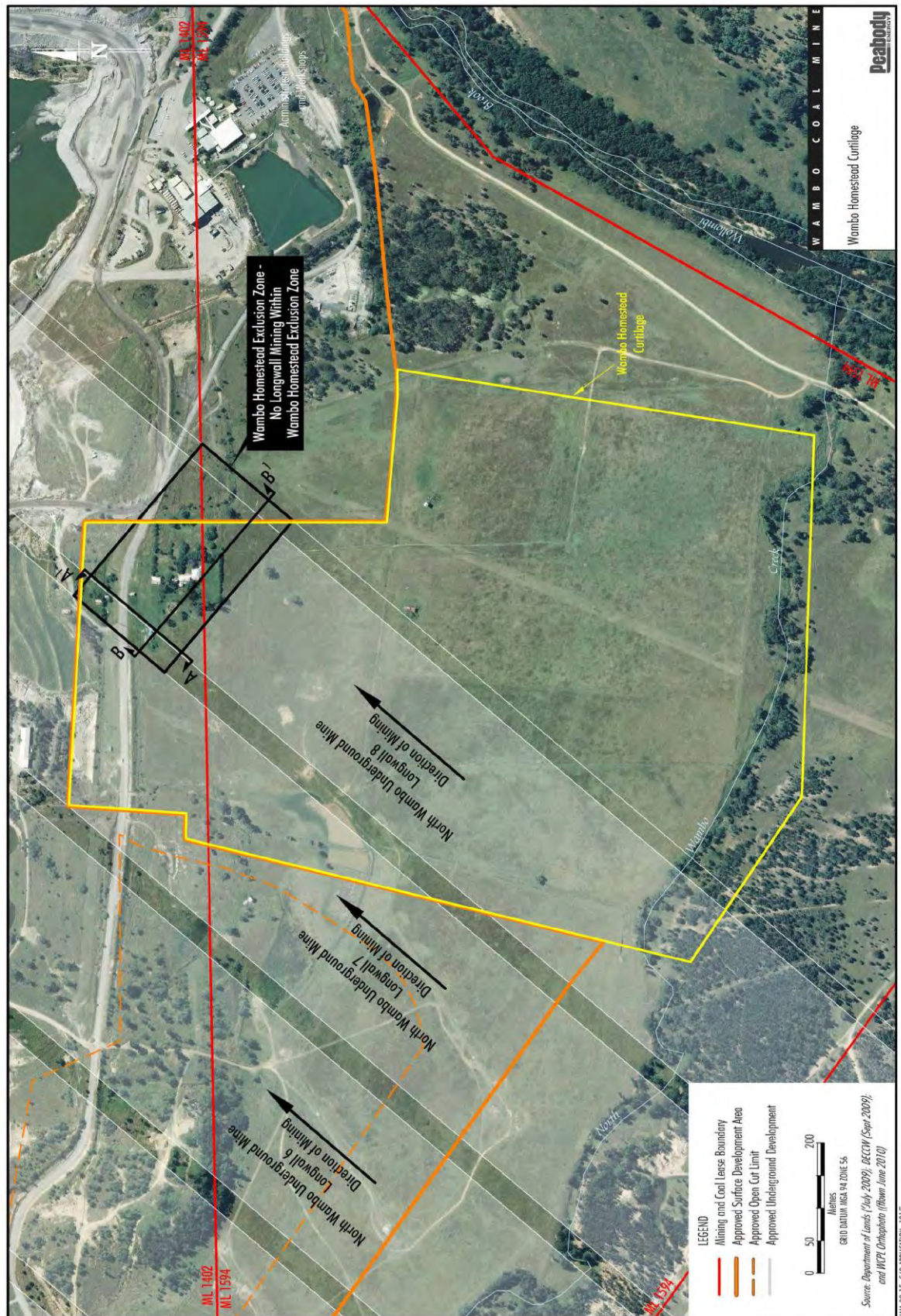


Figure 3.1 Lease and mining boundaries in relation to Wambo Homestead SHR Curtilage. (Source: Wambo Coal Pty Ltd)

4.0 Statement of Heritage Impacts

4.1 Heritage Impacts in General

Underground mining has a number of potential environmental impacts. These include noise, dust, vibration and subsidence. The impacts of noise, dust and vibration will have no adverse effects on the heritage values of the WHC because the entrance to the mine is located well outside of the WHC heritage area. There will be no additional impacts on the setting in addition to the existing open-cut mining in the vicinity of the property. The main impact with potential to affect the fabric of the Wambo Homestead structures is subsidence. The assessment report by DgS has considered the potential impacts from the proposed mining of longwalls 7 and 8 by WCPL and any cumulative impacts based on the consideration of the previous underground mining by United Collieries and the earlier bord and pillar mining of the Whybrow seam in 1979. This includes both the predicted subsidence effects on the land and the resultant impacts on buildings and structures within the WHC.

4.1.1 Preamble

Subsidence refers to vertical displacement of a point, on or in the earth's surface, moving vertically to a lower level. Subsidence of the ground actually includes both vertical and horizontal displacements.

Longwall mining is the safest, most efficient and most commonly used method of underground mining in Australia and other developed countries.

Using a technique known as retreat mining, typically, a longwall face retreats at a rate of 50m to 100m per week, depending on the seam thickness and mining conditions. The coal between the development headings and between the main headings is left in place as pillars to protect the roadways as mining proceeds. The pillars between the development headings are referred to as chain pillars.

When coal is extracted using this method, the roof immediately above the seam is allowed to collapse into the void that is left as the face retreats.

If the width of an extracted panel of coal is small and the rocks above the seam are sufficiently strong, it is possible that the roof will not collapse and hence, no appreciable subsidence will occur at the surface.

The management of these impacts requires an understanding of fundamental aspects of mine subsidence such as:

- the magnitude and direction of subsidence movements at any point within the influence of mining;
- differential subsidence (either in the direction or magnitude of movements) may lead to impacts on surface or sub surface features; and
- the tolerance of a given surface or subsurface feature to the influence of mine subsidence.

Management of subsidence must be risk based, flexible, responsive and capable of dealing with unexpected changes or uncertainties.

The potential subsidence impacts from underground mining of LW 7 and 8 within the SHR curtilage have been assessed by DgS (2012) and provided in their report *Subsidence Data Review and Impact Assessment for Longwalls 7 and 8 North Wambo Underground Mine, Warkworth*.

The proposed North Wambo Underground (NW) mine workings (LW 7 and 8) consist of 261m wide longwalls (void width) and 26m wide x 95m long tail gate chain pillars (solid dimensions). The final main gate chain pillars for LW 8 will be 17m wide x 95m long.

Surface Conditions

The surface conditions above the Homestead Mine's access headings consists of a relatively flat, broad alluvium-filled valley, which has been incised to a depth of approximately 2–3m by the ephemeral North Wambo Creek. The depth of the alluvium associated with North Wambo Creek typically ranges between 10–14m, with depths of up to 18m noted above the proposed NW Mine's LWs.

Ground slopes are generally $<5^{\circ}$ and increase to 10° to 15° along the banks of the creek. There is some evidence of 'ponding' along the creek bed that is associated with mine subsidence above NW Mine's LW 1 and 2 and United Mine's LWs 1 to 8.

Subsidence Control Zone

A Subsidence Control Zone (SCZ) refers to the zone where subsidence needs to be controlled beneath sensitive surface features, such as the WHC. The SCZ for the WHC is known as the Wambo Homestead Exclusion Zone (WHEZ). The WHEZ is a boundary around the WHC structures defined by the 'angle of draw' (AOD). The AOD is the angle to the vertical from the edge of the extracted longwall panel. Therefore, the smaller the angle, the closer the longwall miner mines to the structure on the surface (e.g. an angle of 0° would allow mining directly beneath the edge of the structure); conversely, the larger the angle, the greater the barrier between the miner and the structure. In the NSW Coalfield's, the practical or design angle of draw applied to sensitive features is typically 26.5° to 35° and has been applied successfully to protect cliff lines, waterways and sensitive archaeological sites from significant impact.

Methodology for determining subsidence impacts

In assessing the potential subsidence impacts from the proposed underground mining of North Wambo LW 7 and 8 on the WHC, DgS have considered the measured impacts from the previous United mining, determined the likely impacts from the proposed North Wambo mining and used this data to predict the likely cumulative impacts from both developments.

4.1.2 United Collieries Underground Mining within WHC

For United Mine's LW 7 and 8, the application of the WHEZ required that second workings (ie longwall mining) did not occur within an angle of draw of 26.5° from any of the buildings.

A detailed study of the site and community consultation by the United Mine in 2007 resulted in the relaxation of the WHEZ by the Heritage Office to allow increased subsidence of several of the WHC outbuildings. This decision allowed the full extraction of United's LW 7 to be undertaken. No relaxation of the WHEZ was allowed for United's LW 8, however, which was proposed to be stopped and re-started at a distance equivalent to the design angle of draw of 26.5° from the masonry structures within the complex.

Subsidence monitoring of the buildings within the WHC was undertaken during extraction of the United LW 7 and 8b.

Monitoring results to-date indicate that Buildings 1 to 7 have been subsided by 40mm to 159mm after the completion of the United longwalls (see Table 4.1).

The effects of mining LW 7 and 8b has resulted in subsidence at Buildings 1 to 3 (single and double storey masonry, circa 1844) ranging from 40mm to 92mm. Measured tilts for the buildings ranged from 0.7 to 2.0mm/m.

The effects of mining at Buildings 4, 5 and 7 (single storey timber frames with cement-based slab and/or paving stones, circa 1844) has resulted in subsidence ranging from 55 to 159mm. Measured tilts for the buildings ranged from 0.5 to 2.7mm/m.

The measured subsidence at the Stud Master's Cottage (Building 6) after United LWs 7 and 8 ranged from 121 to 151mm, with the highest subsidence nearest to LW 7 rib side. The tilt across the site estimated to be 0.5 to 3.5mm/m towards the northwest.

4.1.3 Proposed North Wambo Underground Mining within WHC

The proposed mining of NW LW 7 and 8 has the potential to result in subsidence impacts within WHC.

Using recognized subsidence prediction methodology DgS has determined that the potential subsidence from the proposed NW underground mine will be significantly less than the resultant impacts from United Colliery previously approved by the Heritage Council.

Predicted effects are that subsidence for Buildings 1 to 7 will range between 2mm to 30mm. This is about one fifth the magnitudes of the United Collieries impacts (see Table 4.1).

In additional there is the potential to impact on the stability of the earlier workings of the Whybrow seam below the Stud Master's Cottage and to ensure such potential affects do not occur it is proposed to inject grout in the mine voids (see Section 5.0 and Appendix E).

Table 4.1 Predicted cumulative subsidence effects at the WHC buildings due to the proposed North Wambo Mine LW 7 and 8 and measured Arrowfield Seam Longwalls. N.B. *Italics* indicate estimation from predicted subsidence contours. Shaded cells relate to the Stud Master's Cottage. Source: Source DgS Report.

Building No.	Distance from LW7 in Wambo Seam	AoD Range (o)	Subsidence (mm) (Multi Seam effected value)	Tilt (mm/mm)	Curvature (km-1)	Horizontal Strain (mm/m)
Predicted Subsidence Effects due to Wambo Seam Only (LWs 1 to 8)						
1	130 - 155	63 - 67	2	0.2	0.05	0.5
2	110 - 134	59 - 63	10	1	0.05	0.5
3	106 - 117	58 - 60	10	1	0.05	0.5
4	85 - 102	52 - 57	15	1	0.05	0.5
5	71-59	41 - 48	20	1.5	0.05	0.5
6	20 - 38	17 - 30	15 – 30	1 - 1.5	0.05 - 0.08	1-1.5

Building No.	Distance from LW7 in Wambo Seam	AoD Range (o)	Subsidence (mm) (Multi Seam effected value)	Tilt (mm/mm)	Curvature (km-1)	Horizontal Strain (mm/m)
7	110 - 114	59 - 60	10	1	0.05	0.5
8	5 - 21	4 - 17	30 – 70	1 – 4	0.15 - 0.20	1-2
9	21 - 31	17 - 25	15 – 29	1 - 1.5	0.05 - 0.08	1-3
Measured Subsidence Effects due to Arrowfield Seam LWs (United LWs 1to 7)						
1	134	29	40 – 60	0.7 - 1.5	-0.05 - 0.0	-0.5 - 0.0
2	115	26	56 – 84	0.7 - 1.7	-0.06 - 0.1	-0.6 - 1
3	111	25	71 – 92	1.5 - 2.0	-0.06 - 0.1	-0.6 - 1.0
4	75	17	86 – 100	1.2 - 1.8	-0.06 - 0.1	-0.6 - 1.0
5	34	8	143 – 159	1.9 - 2.7	-0.19 - 0.0	-1.5 - 1.5
6	28	7	121 – 151	0.5 - 3.5	-0.15 - 0.13	-1.5 - 1.5
7	107	25	55	0.5	0.05	0.5
8	-23	-6	270 – 420	11	0.2 - 0.25	2 - 3
9	-6	-2	200 – 250	8	0.1 - 0.2	1 - 2
Predicted Cumulative Subsidence Effects due to Wambo & Arrowfield Seams						
1	130 - 155	63 - 67	42 – 62	0.9-1.7	0 - 0.05	0 - 0.5
2	110 - 134	59 - 63	66 – 94	1.5-2.2	0 - 0.05	0 - 0.5
3	106 - 117	58 - 60	81 – 102	2.0 - 2.5	0 - 0.05	0 - 0.5
4	85 - 102	52 - 57	67 – 72	1.7 - 2.3	0.05 - 0.1	0.5 - 1.0
5	71 - 59	41 - 48	163 – 179	3.4 - 4.2	0.05 - 0.1	0.5 - 1.0
6	20 - 38	17 - 30	136 – 181	1.5 – 5	0.15 - 0.21	1.5 - 2.0
7	110 - 114	59 - 60	65	1.5	0.05	0.5
8	5 - 21	4 - 17	300 – 490	12 – 15	0.35 - 0.4	3.5 - 4.0
9	21 - 31	17 - 25	215 – 519	9 – 10	0.15 - 0.28	1.5 - 2.8

Cumulative Impacts

Cumulative impacts for buildings 1 to 7 are predicted to range between 42mm and 181mm (Table 4.1). In relation to the effect this subsidence will have on the WHC buildings, DgS predicts that the majority of buildings will display negligible impacts (ie hairline cracks <0.1mm wide) with a slight impact on the Stud Master's Cottage, building 6 (ie 5mm wide cracks noticeable but easily filled) (Table 4.2). These potential impacts will be minimised by the adoption of a number of mitigation measures presented in Section 5.0.

Table 4.2 Predicted subsidence effect impacts on WHC buildings due to United & NW Longwalls. The impacts are based on estimated cracking widths from **AS2870-1996**¹. Shaded cells indicate impacts predicted to be greater than negligible that may require mitigation or amelioration works. (Source: DgS Report)

Building No	United LW 7&8 Impact	North Wambo LW7& 8 Impact	Cumulative Impact of Mine Subsidence
1	Negligible	Negligible	Negligible
2	Negligible	Negligible	Negligible
3	Negligible	Negligible	Negligible
4	Negligible	Negligible	Negligible
5	Negligible	Negligible	Negligible
6	Very Slight to Slight	Slight	Slight
7	Negligible	Negligible	Negligible
8	Moderate	Negligible	Moderate
9	Moderate	Negligible	Moderate

The WHC buildings have been assessed to have already sustained negligible to moderate damage due to United's mining (Table 4.2). The expected impacts from the mining of North Wambo Longwalls 7 and 8 are not expected to result in a change to the overall impact category (Table 4.2). Note Buildings 8 & 9 are the timber Mounting Yard and Horse Boxes.

4.2 Endnotes

- ¹ 'Negligible'- Hairline cracks < 0.1 mm wide. 'Very Slight' - Fine cracks < 1 mm wide which don't need repair. 'Slight' - Cracks < 5 mm wide noticeable but easily filled. 'Moderate' - Cracks 5 - 15 mm wide or 3 to 5 mm wide in one group, or tilts > 7 mm/m and drainage effected. 'Severe' - Cracks 15-25 mm wide and walls requiring replacement.

5.0 Management Measures to Avoid and Minimise Harm

5.1 Overview

DgS has undertaken an assessment of the required AOD, and therefore WHEZ and other mitigation measures to ensure that subsidence impacts on the WHC structures after completion of NW LW 7 and 8 will be acceptable.

This includes a review of subsidence data for LW NW1 and NW2 (including multi-seam mining effects from underlying United longwalls and the overlying Whybrow Seam workings). This assessment also included an assessment of the performance of subsidence impact management strategies for LW NW1 and NW2 and the impact on the WHEZ that was applied to the United Colliery Longwalls to protect the Homestead Heritage Area.

Assessment of the potential impacts within the SHR curtilage from mining LW 7 and 8 is based on review of existing data from United mining, predictive modelling and validation of potential subsidence from WCPL proposed mining operation (Section 4.0).

Accordingly, recommendations have been based on consideration of any cumulative impacts from subsidence. While there has been some subsidence to the land within the SHR from United mining operations, it has been concluded that the barrier of coal left beneath the WHC has been effective in controlling subsidence. DgS concluded that it is apparent a design AOD of 26.5° from the sides and ends of United LW 7 and 8 respectively, has limited the differential subsidence and strains at the three masonry buildings to within tolerable limits.

DgS therefore goes on to conclude that based on the adoption of a significantly more conservative WHEZ based on an AOD of 35°, (or 47m setback distance) for masonry WHC structures and an AOD of 26.5° for timber WHC structures, subsidence and strain increases will not result in a change to the existing overall impact category of the WHC structures after completion of NW LW 7 and 8.

For LW 7, it is proposed to relax the WHEZ to AoD of 17° (or 20m minimum setback distance) in the vicinity of the Stud Master's Cottage to enable extraction of significant coal reserves. While subsidence impacts are predicted to be slight, additional mitigations measures have been recommended and will be implemented to minimise these impacts. The WHEZ based on a AoD of 35 degrees, (or 47m setback distance) will be adopted for the remainder of the WHC buildings, with the exception of Buildings 8 and 9 which would observe AoD of 4 degrees (5m) and 17 degrees (20m) respectively. The subsidence impacts for Buildings 8 and 9 are predicted to be negligible (see conceptual 3D in Figure 5.1, plan in Figure 5.2, and cross sections in Figures 5.3 and 5.4).

Due to the range of building sizes, structure types (ie masonry or timber frame), measured subsidence effects to-date and existing condition, the minimum set back distances from LW 7 and 8 are suggested for a given level of impact risk (Table 5.1).

Table 5.1 Suggested minimum set-back limits for level of impact risk. (Source: DgS Report)

Building No.s	Minimum Angle of Draw for 67 m of Cover		Minimum Setback Distance (m)		Impact Risk to Buildings*
	LW7	LW8	LW7	LW8	
1 to 5	35°	35°	47	47	Negligible
6	17	35	20	47	Slight
7	35	26.5	47	33.5	Negligible
8	4°	26.5	5	33.5	Negligible
9	17°	26.5	20	33.5	Negligible

* this includes a low strength grout placed to full roadway height around two pillars in Whybrow Seam that are directly below the Stud Master's Cottage (Building 6).

The setback limit line for the proposed mining layout is shown in Figure 5.2.

Following their assessment and based on the survey results to-date, DgS has recommended a number of management measures be adopted to minimise any subsidence impacts on the WHC. These include:

General

- Undertake pre-mining visual and photographic inspections (dilapidation surveys) prior to NW LW 7 and 8.
- Undertake ongoing 3D subsidence monitoring of Pegs HM1 to HM24 on a monthly basis during active subsidence development at the buildings and after LW 7 and 8 are complete using spirit levelling for subsidence measurements.
- Review performance of the WHEZ after LW 7 is completed and adjust LW 8 if considered necessary (i.e. as an Adaptive Management measure).

Specific

Implementation of more specific management strategies are proposed to minimise the impact of LW 7 on the Stud Master's Cottage (Building 6) as follows:

- Installation of subsoil drains to a minimum depth of 1 metre (i.e. below the footings) around a 5 metre set back distance from the perimeter of the structure to lower the moisture in the 'over wet' clays and isolate the structure from significant tensile strains that could exacerbate the existing cracks in the walls. Specialist geotechnical design advice should be obtained to ensure the design and locations of the trenches do not exacerbate the poor footing and foundation clay performance overall.
- Placement of low strength grout to full roadway height around the two pillars directly below the building (Figure 38a, DgS report) to minimise pot-hole potential and subsidence increases due to LW 7 abutment loading. Specialist geotechnical advice should also be sought in regards to designing and managing the grouting works.

- Undertake the proposed reinstatement of the roof for the Stud Master's Cottage as a priority prior to the commencement of the mining works at LW 7 and further if necessary install temporary bracing to internal walls to mitigate any subsidence affects

Proposed Grouting of Homestead Workings

WCPL is proposing to bulk fill the Homestead Mine's access Headings with low strength grout to minimise the potential for connective cracking to develop between the Whybrow Seam and surface alluvium above the proposed NW's LW 7 and 8.

At this stage it is proposed to grout the workings to 35 cut-through at a Wambo Seam cover depth of 110 m and out by pillar areas that will be directly undermined by LW 7 and 8.

The grouting would also be beneficial in the proposed barrier area by minimising the potential for

1. abutment loads acting on Whybrow Seam pillars to increase subsidence, and/or
2. potholes to develop directly beneath the WHC buildings.

The cover depth at the WHC is 22m, which is within the practical range for grout injection from strategically placed boreholes drilled from the surface.

The use of grouting to reduce the impact of subsidence is a recognised technique which has been used where underground mining is in proximity to sensitive areas such as wetlands, alluvial water flows and residential and commercial development (see Appendix E).

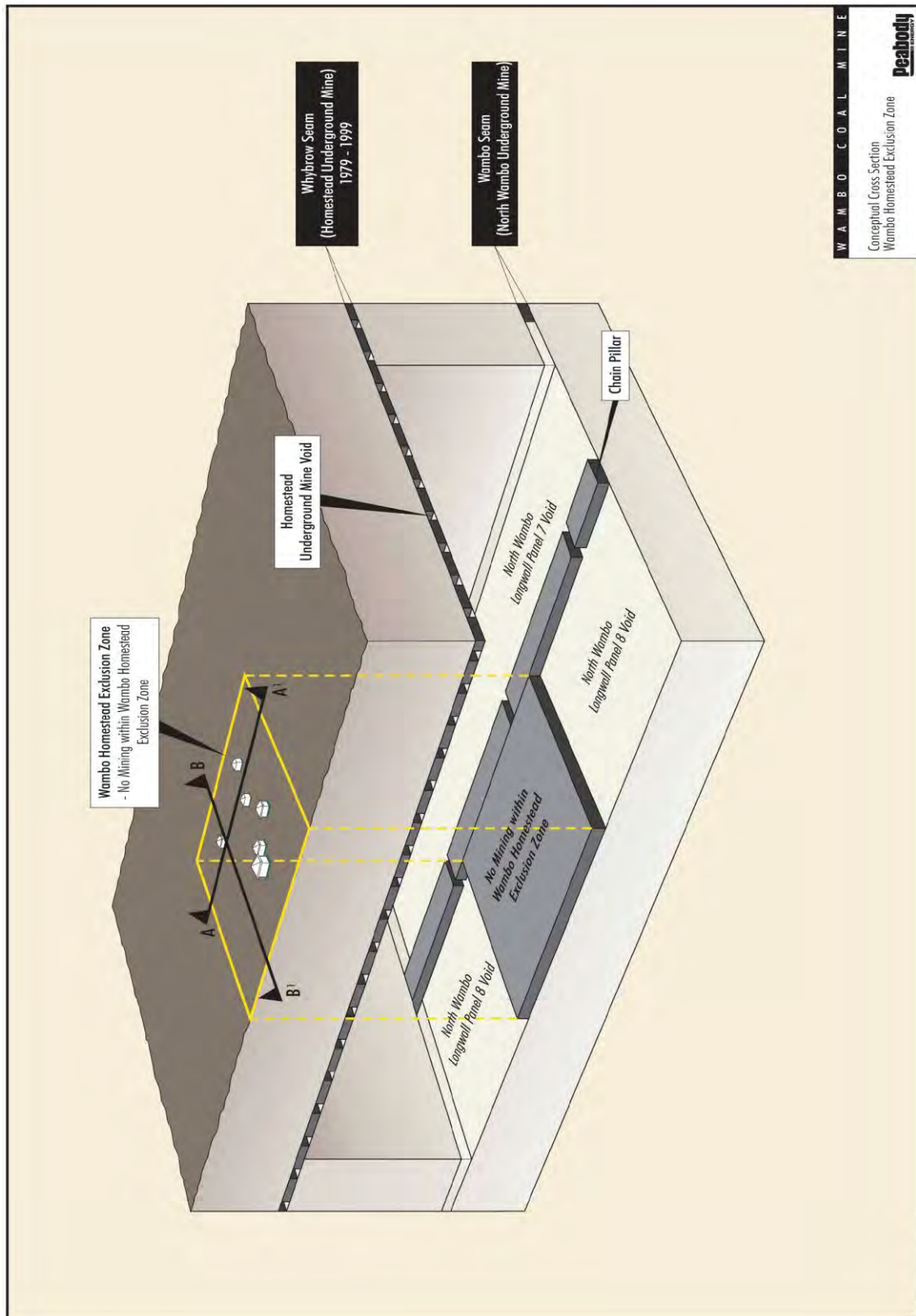
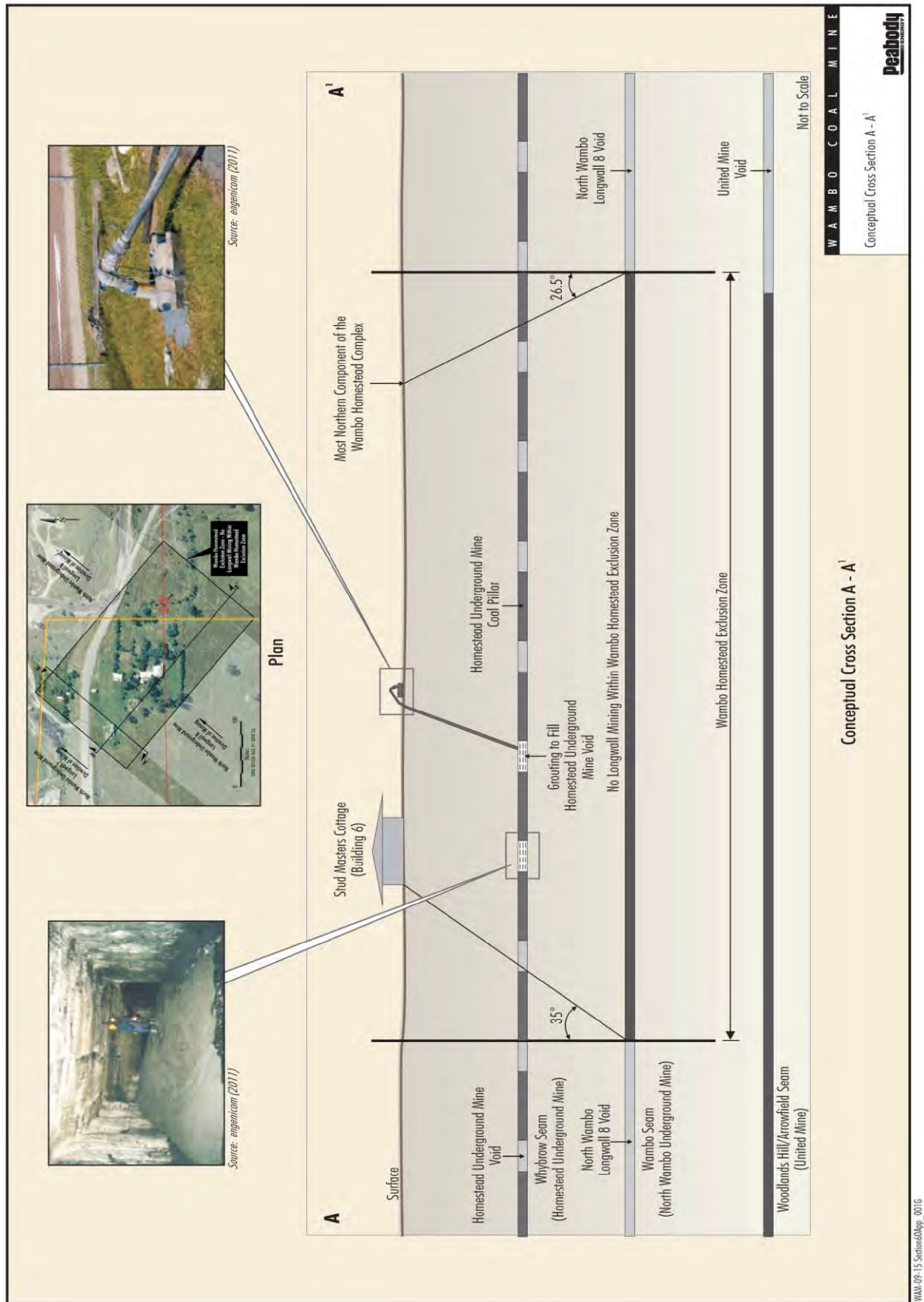


Figure 5.1 Conceptual 3D cross section of WHC and proposed underground mining.



Figure 5.2 Proposed mining LW7 and LW8 in relation to WHC.



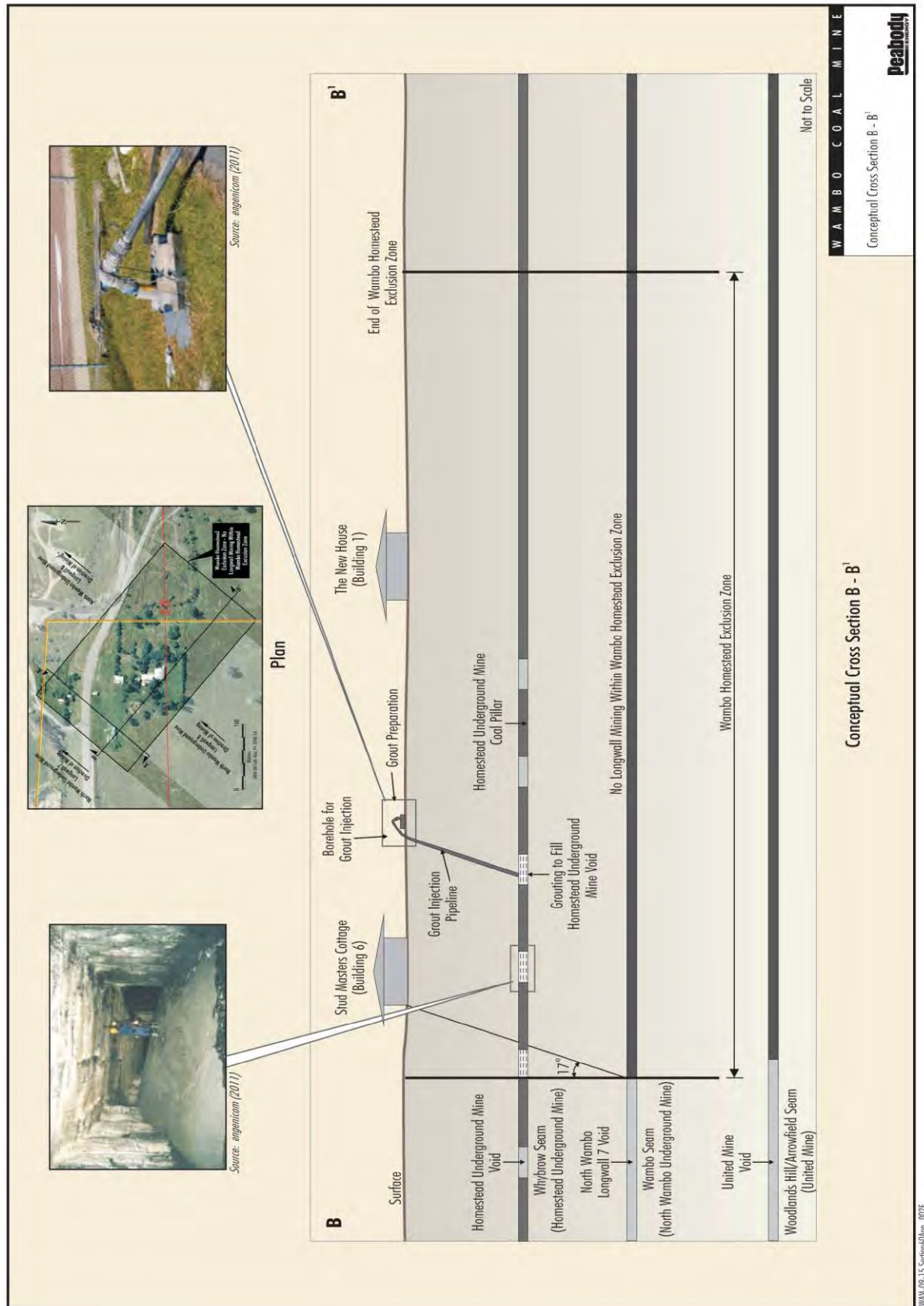


Figure 5.4 Cross section B-B showing exclusion zones.

5.2 Ongoing Maintenance and Conservation Works

Consistent with its ongoing maintenance and management of the Complex, WCPL will continue the following activities:

- Undertake regular inspections of all structures in the WHC. This will include monitoring the success of recent stabilisation and conservation works. These works have included making structures watertight and upgrading drainage systems; providing support for structural components/fabric where required to prevent further collapse, and/or make structures safe for ongoing inspection and maintenance; and internal propping and support of the 'New House.
- Undertake ongoing inspection, maintenance, investigation, recording, stabilisation and repair works should continue to be undertaken following the detailed guidelines in the WHC Schedule of Conservation and Maintenance Works—Addendum to Wambo Homestead Conservation Management Plan (June 2006), report prepared for WCPL by GML, October 2011. WCPL have committed to a schedule of works in order to complete stabilisation and repair works required as at October 2011, for the WHC. The timetable would see this work completed by the end of July 2012, providing there are no delays.
- Prepare an annual photographic record of the Wambo homestead and structures in accordance with Heritage Council guidelines.
- Implement blast monitoring of the Homestead site.

In addition WCPL in conjunction with GML has identified a number of priority works which will be undertaken over the next 1–2 years. This includes bringing the proposed structural works and reinstatement of roof and verandah of the Stud Master's Cottage (see Section 2.3).

6.0 Evaluation of Impacts and Management Measures

WCPL has existing development consent (DA 305-7-2003) under the EP&A Act and, consistent with condition 57, is submitting a S60 application to the Heritage Council for approval to continue with its underground mining operation into the SHR curtilage of the WHC. The key potential impact from the proposed underground mining within the Wambo SHR curtilage is subsidence.

Expert subsidence engineers DgS have undertaken an assessment to determine the appropriate size of a WHEZ to ensure any subsidence impacts of LW 7 and 8 on the WHC structures are acceptable. DgS have conservatively estimated a WHEZ around the WHC buildings, to ensure that subsidence and strain increases will not result in a change to the existing overall impact category of the WHC structures after completion of NW LW 7 and 8.

Following their assessment, and based on the survey results to-date (including consideration of cumulative impacts from the historical United Collieries mining), DgS has recommended a number of management measures be adopted to minimise any subsidence impacts on the WHC. These include:

- For NW LW 8, provision of the following conservative minimum set-back distance:
 - Masonry buildings—equivalent to an AoD of 35 degrees or 47m.
 - Timber buildings—equivalent to an AoD of 26.5 degrees or 33.5m.
- For NW LW 7 in relation to building 6, the Stud Master's Cottage, a 20m WHEZ (based on 17 degrees AoD) and the implementation of a number of specific measures have been recommended. The WHEZ based on a AoD of 35 degrees (or 47m setback distance) will be adopted for the remainder of the WHC buildings, with the exception of Buildings 8 and 9 which would observe AoD of 4 degrees (5m) and 17 degrees (20m) respectively.
- Undertake pre-mining visual and photographic inspections (dilapidation surveys) prior to NW LW 7 and 8.
- Undertake ongoing 3D subsidence monitoring of Pegs HM1 to HM24 on a monthly basis during active subsidence development at the buildings and after LWs 7 and 8 are complete using spirit levelling for subsidence measurements.
- Review performance of the WHEZ after LW 7 is completed and adjust LW 8 if considered necessary (ie as an adaptive management measure).

Implementation of more specific management strategies are proposed to minimise the impact of LW 7 on the Stud Master's Cottage (Building 6) as follows:

- Installation of subsoil drains to a minimum depth of 1m (ie below the footings) around a 5m set back distance from the perimeter of the structure to lower the moisture in the 'over wet' clays and isolate the structure from tensile strain and curvature from LW 7 that could exacerbate the existing cracks in the walls. Specialist geotechnical design advice should be obtained to ensure the design and locations of the trenches do not exacerbate the poor footing and foundation clay performance overall.

- Placement of low strength grout to approximately full roadway height (ie greater than 95%) around the two pillars directly below the building to minimise pot-hole potential and subsidence increases due to LW 7 abutment loading. Specialist geotechnical advice should also be sought in regards to designing and managing the grouting works.
- Undertake the proposed structural works (if necessary, install temporary bracing to internal walls to mitigate any subsidence affects) and reinstate the roof and verandah of the Stud Master's Cottage as a priority prior to the commencement of the mining works at LW 7.

In addition, consistent with the CMP, WCPL will continue to undertake regular monitoring and ongoing maintenance and management of the Complex, in accordance with its obligations under the Heritage Act and EP&A Act.

Based on the adoption of the above measures DgS concludes that any subsidence impacts will not change the existing overall impact category for the WHC structures. The predicted impacts from the proposed North Wambo mining will be significantly less than the previously approved United mining within the WHC. GML believes that the proposal is acceptable on this basis. In addition, based on its assessment of the potential impacts and mitigation measures in relation to the proposed underground mining, as described in the DgS report, GML agrees with this conclusion and believes that, if they are adopted, there will be no adverse effects on the State heritage values of the WHC.

7.0 Recommendation

Based on the above, it is concluded that the proposed underground mining of LW 7 and 8 would not have adverse impacts on the heritage values of WHC from land subsidence.

However, a range of management and monitoring actions have been recommended to ensure that there are minimal impacts on the fabric of the WHC buildings throughout the operation of underground mining of LW 7 and 8.

8.0 Appendices

Appendix A

State Heritage Register Listing Wambo Homestead Complex Singleton

Appendix B

Wambo Mine Section 80 EP&A 1979 Development Consent

Appendix C

Report 'Wambo Homestead Complex VAP Report on Completion of Conservation and Maintenance Works November

Appendix D

2011Wambo Homestead Complex Report on Completion of Conservation and Maintenance Works Part 2, June 2012

Appendix E

Peabody Energy Australia Wambo Coal Mine Grouting of Mine Workings to Minimise Subsidence Impacts

Appendix A

State Heritage Register Listing Wambo Homestead Complex Singleton

Wambo Homestead

Item

Name of Item: Wambo Homestead
Other Name/s: Wambo Homestead Complex
Type of Item: Landscape
Group/Collection: Farming and Grazing
Category: Homestead Complex
Location: Lat: 150.9913568 Long: -32.58653846
Primary Address: Warkworth, NSW 2330
Local Govt. Area: Singleton

Property Description:

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
LOT	82	-	DP	548749

All Addresses

Street Address	Suburb/Town	LGA	Parish	County	Type
	Warkworth	Singleton	Lemington	Hunter	Primary

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
Wambo Mining Corporation Pty Ltd	Private	08 Apr 99

Statement of Significance

Wambo Homestead Complex is state significant in the context of Australian pastoral activities and horse breeding in New South Wales and for its capacity to demonstrate the development of pastoral and agricultural activity in the Hunter Region--an important early region of colonial settlement.

This significance is strongly demonstrated in the survival of the core group of five early homestead buildings, constructed between the mid 1830s and mid 1840s, and in the relationship of all buildings and structures of the Wambo Homestead Complex to their setting and the landscape.

Wambo Homestead Complex is state significant as an important group of homestead buildings which remain substantially intact and which display the progressive architectural development of a typical Australian homestead group. It is also state significant for its capacity to demonstrate rare evidence of extensive early finishes in the fabric of the core group of 1830s and 1840s buildings, and for the retention of all original joinery of the four masonry buildings of this group. The New House is state significant for its refined design and capacity to demonstrate architectural ambition at an early stage of colonial rural settlement.

Wambo Homestead Complex is state significant for its rarity as an important homestead complex that was established by a former convict in the Hunter Region, where most large estates were established by free settlement. The complex is significant for its associations with its original owner, the emancipist convict James Hale, who was responsible for the complex's core buildings and who, by 1844, had established himself as one of the top 100 landholders in the colony.

Although the Wambo Homestead Complex is in a 'rundown' condition,

it still maintains and demonstrates its state significance.

Date Significance Updated: 01 Jun 04

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Construction Years: 1830 - 1906

Physical Description: The Homestead is presently comprised of eight buildings, the earliest being the kitchen wing. Originally this was a single storey sandstone building with a cellar, to which a brick upper floor was added. A large brick laundry has also been added.

Other buildings include the Stud Master's Cottage of three rooms and the brick servants wing of three rooms also. All are 'Old Colonial Georgian', the earliest European architectural style used in Australia.

Around 1844, the 'Victorian Regency' New House was built, constructed of brick and render with a stone base. It is a distinctive single-storey rendered (stucco) brick house, obviously conceived as an architecturally ambitious Regency style villa. Rigorously designed to impress as a tasteful, spare, symmetrical grand homestead residence, it was placed to present to the valley floor and ranges to the south, turning the 'old house' into an impressive supporting kitchen and service wing. The four principal rooms, arranged as pairs either side of an axial central flagged hall, are covered by a low, transverse, hipped roof. These are surrounded by a lower skirt of verandahs and verandah room rooms, set at a lower pitch but similarly roofed originally with hardwood shingles (GML, Wambo Homestead Complex, Revised Database of Hunter Region Homesteads, Report, Nov 2010, p. 28).

Other buildings which make up the Homestead are the Slab Carriage House with Stables, the timber slab / rammed earth Butcher's Hut and the Slab Horse Boxes. Other remote structures exist on the property including a large hay barn, silos and fences.

There is rare evidence of extensive early finishes in the fabric of the core group of 1830s and 1840s buildings. The four masonry buildings of this group demonstrate rare retention of all their original joinery.

Physical Condition and/or

Archaeological Potential: As a group of buildings, Wambo Homestead is rare in New South Wales in that many outbuildings still remain substantially intact allowing easy understanding of the development of a homestead complex. **Date Condition Updated:** 11 Dec 01

Modifications and Dates: 1830s - Single brick Stud Master's Cottage and Servants Wing constructed possibly while the brick upper floor to the kitchen wing was added. 1837 - Homestead was situated on 4480 acres and included a large brick structure with cellars. 1844 (circa) - The New House was constructed. The construction of the Carriage House and Stables would have been contemporary with the building of the New House.

Current Use: coal mining

Former Use: pastoral and agricultural activity and horse breeding

History

Historical Notes:

Aboriginal Presence

Wambo Homestead is located close to the junction of the traditional boundaries of the Kamilaroi and the Wonaruah peoples. The Kamilaroi extended west to the Namoi and Barwon Rivers, and across the Liverpool Plains. The Wonaruah, who were closely affiliated with the Kamilaroi, occupied the central Hunter Valley area from around Merriwa and the Goulburn River, north to the Paterson. Europeans

made contact with both groups when trying to cross the Blue Mountains from Windsor. Archaeological surveys have identified a number of Aboriginal camp sites at the Wambo mine site. Following European settlement, Aboriginal people remained around Wambo and Jerry's Plains, but relations were frequently strained. There is no reported contact between the Wambo settlers and the Kamilaroi or Wonaruah peoples, but there is evidence of an ongoing Aboriginal presence at Wambo from the 1830s, and records of Aboriginal people working on the estate for the Durham family.

European Settlement of the Hunter Valley

1813: Four well-behaved convicts, from the Newcastle penal station, were provided with small land grants for farming near Paterson's Plains in the lower Hunter. Convict farming was the only official early settlement allowed in the Hunter Valley which was initially closed to settlers.

1820: Governor Macquarie established the new penal settlement in the more remote location of Port Macquarie and officially opened up Newcastle and the Hunter Valley to free settlement in 1821.

1820: John Howe, a Windsor settler, led a party from Windsor through the Broken Back Ranges to present day Broke and Jerry's Plains arriving near Singleton (close to Wambo). He named the wide grassy flood plain St Patricks Plains where he was granted land. This marked the beginnings of European settlement of the middle and upper Hunter Valley.

1822-29: Rapid European settlement of the Hunter Valley. Over 300 farms totalling over 800,000 acres were established on granted and leased land. Most farms were run by resident settlers and most were over 1000 acres.

Settlement of the Hunter Valley was either via sea from Sydney, or overland from Windsor. Livestock were largely driven along the overland route.

By the 1830s the Hunter Valley was the most densely settled district outside the Cumberland Plain.

Smaller farms, generally less than 100 acres, were established around Maitland, Paterson and Singleton based on land grants that were matched to an applicant's income or capital (as recommended by the Bigge Report). Most of these were the subsistence farms of emancipated convicts or colonial free born.

Larger properties for sheep and cattle grazing with grain growing were generally held by emigrant farmers and worked by assigned convicts (the Hunter Valley having a large proportion of the colony's assigned convicts).

By 1828, of the 91 estates in the Hunter Valley that were over 1000 acres, only two were recorded as being owned by ex-convicts.

Development of the Wambo Estate 1824-40

Land around Wambo was desirable, close to the Windsor Road and the fertile valley flats of the Wollombi Brook and Hunter River. It was granted early in the European settlement of the Hunter Valley, as 1824 and 1825 land grants to two free emigrants. There is no evidence that either grantee had developed the land or built any substantial structures before both grants were sold to James Hale who established the Wambo Estate.

James Hale arrived in the colony in 1816 as a 20 year old convict who was forwarded to Windsor on assignment.

By 1822, Hale had been freed by servitude and was working as an overseer for William Cox in the Hawkesbury.

In the 1820s and early 1830s Hale was a contractor to the Colonial Government supplying fresh and salt beef, mutton, flour, maize, firewood and cartage for survey parties departing Windsor.

By 1828 he had established himself as a successful Windsor resident and local businessman, being innkeeper of the White Hart Inn at Windsor with 5 assigned servants; 2133 acres of land (11 being

cleared); 11 horses; 433 cattle and 1090 sheep.

1835: Hale purchased 1218 acres on Wollombi Brook. This marked the beginning of his Hunter Valley landholding interests, which Hale rapidly expanded.

1835-37: Hale added a further 10,240 acres in leasehold. This marked him as having an unusually large landholding for a Hunter Valley emancipist.

Hale expanded his landholdings in the 1830s and 1840s with purchases in the Liverpool Plains around Inverell, and further west around Coonabarabran.

By 1841 Hale's grazing empire comprised almost 100,000 acres. Most of his properties (like Wambo) were run by managers who lived on site and worked the property with both assigned convicts and newly arrived immigrant labour.

James Hale resided at Windsor throughout his ownership of Wambo, in the house he purchased from his former master, William Cox

c 1830-3 Hale constructed the first building on the Wambo Estate. The Kitchen Wing was begun as a single storey stone building with a cellar and later extended with an upper level of brick.

1837 Stud Masters Cottage

1840 Carriage House with Stables and Granary

1844 Servants Wing

1844-7 New House

Hale was possibly influenced in the design of Wambo by the Colonial Architect Francis Greenway whose work he would have encountered through his close relationship with William Cox. Cox took a number of contracts, where he worked with Greenway, for the construction of public buildings around Windsor. Hale may also have used some of Cox's builders for the construction of Wambo.

By 1844 James Hale was one of the largest 100 landholders in the colony; an established sheep and cattle grazier and wheat farmer with at least 4 assigned convicts working at Wambo.

Hale used Wambo as a halfway point for moving sheep between Windsor and his properties on the Liverpool Plains and New England.

Over the 1840s to 1870s, the Wambo herd developed into prize-winning bulls and cows at local and Sydney shows.

1857 James Hale died, leaving Wambo and many of his other properties to William Durham, the eldest son of his wife Mary from her first marriage. Durham had very likely been the manager of Wambo. Wambo continued in Durham family ownership until 1894 when it was sold into various hands.

1863 coal discovered at Wambo (during well-drilling).

1900 construction of the timber Butcher's Hut.

1905 Wambo Estate purchased by RC Allen and Frank Macdonald for use as a thoroughbred stud. Allen and Macdonald implemented a program of timber building in 1906 that included the Slab Horse Boxes and the Mounting Yard and Horse Boxes and fences.

1906 Property subdivided and Macdonald family purchased the Wambo Homestead block which they held until 1983.

1971 Wambo Mining Corporation bought much of the surrounding land (but not the homestead block).

1981 National Trust listing of Wambo Homestead.

1982 Permanent Conservation Order made over Wambo Homestead.

1987 Wambo Mining Corporation bought the Wambo Homestead block and began mining the area, using the Wambo Homestead for training and storage until 2000.

2000 Wambo Homestead vacated.

Source: Godden Mackay Logan, Wambo Homestead Complex, Heritage Strategy, Historical Development -- Wambo Homestead and Farm, 2010, pp. 39-44.

Historic Themes

Australian Theme (abbrev)	New South Wales Theme	Local Theme
2. Peopling - Peopling the continent	Convict - Activities relating to incarceration, transport, reform, accommodation and working during the convict period in NSW (1788-1850) - does not include activities associated with the conviction of persons in NSW that are unrelated to the imperial 'convict system': use the theme of Law & Order for such activities	Demonstrating emancipist's entrepreneurial activities -
2. Peopling - Peopling the continent	Convict - Activities relating to incarceration, transport, reform, accommodation and working during the convict period in NSW (1788-1850) - does not include activities associated with the conviction of persons in NSW that are unrelated to the imperial 'convict system': use the theme of Law & Order for such activities	Creating a gentleman's estate -
3. Economy - Developing local, regional and national economies	Agriculture - Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes, can include aquaculture	Pastoralism - grazing sheep, cattle, goats or other animals -
3. Economy - Developing local, regional and national economies	Agriculture - Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes, can include aquaculture	Pastoralism - grazing sheep, cattle, goats or other animals -
3. Economy - Developing local, regional and national economies	Agriculture - Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes, can include aquaculture	Horse stud farming -
3. Economy - Developing local, regional and national economies	Agriculture - Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes, can include aquaculture	Farming by convict emancipists -
3. Economy - Developing local, regional and national economies	Mining - Activities associated with the identification, extraction, processing and distribution of mineral ores, precious stones and other such inorganic substances.	Mining for coal -
3. Economy - Developing local, regional and national economies	Pastoralism - Activities associated with the breeding, raising, processing and distribution of livestock for human use	pastoral homestead -
4. Settlement - Building settlements, towns and cities	Accommodation - Activities associated with the provision of accommodation, and particular types of accommodation – does not include architectural styles – use the theme of Creative Endeavour for such activities.	Housing farming families -
8. Culture - Developing cultural institutions and ways of life	Creative endeavour - Activities associated with the production and performance of literary, artistic, architectural and other imaginative, interpretive or inventive works; and/or associated with the production and expression of cultural phenomena; and/or environments that have inspired such creative activities.	Vernacular structures and building techniques -

Assessment of Significance

SHR Criteria a)

[Historical Significance]

Wambo Homestead shows the development of pastoral activities in the Hunter Valley after Commissioner J.T Bigge's reports to the British Government on the state of the colony and its administration. Wambo Homestead specifically shows the pattern of selection by residents of Windsor via John Howe's newly established Bulga Road.

	<p>It provides evidence of the rise to wealth of James Hale, a former convict and important resident of Windsor who by the mid 1840s had established himself as a successful entrepreneur and one of the 100 largest landholders in the colony.</p> <p>Wambo Homestead is a rare example which demonstrates the economic development of the Hunter Valley Region from an agricultural base through sheep, cattle and horse breeding to dairying and presently coal mining. The process involved in gaining the best economic opportunities from the property can be clearly seen.</p>
<p>SHR Criteria b) [Associative Significance]</p>	<p>As the creation of the convicted thief, James Hale, Wambo Estate demonstrates the enormous opportunities open to the pioneers of New South Wales. Within two decades a farm boy serving a seven year prison term had become wealthy and influential in two districts, the Hawkesbury and the Hunter Valley, and one of the colony's largest landholders. In the Durham period, the property continued to yield affluence to its owners, allowing the children of convicts to control the circumstances of their lives and to live with some style.</p>
<p>SHR Criteria c) [Aesthetic Significance]</p>	<p>Wambo Homestead remains substantially intact and largely unaltered. The buildings follow the architectural vocabulary of vernacular Georgian England and demonstrate the progressive architectural development of a typical early Australian homestead group.</p> <p>The New House (c.1847) is state significant for its capacity to demonstrate refined design and architectural ambition at an early stage of colonial settlement through its conception as an architecturally ambitious Regency style villa that was designed to impress as a tasteful, spare, symmetrical grand homestead residence placed to present to the valley floor and ranges to the south.</p>
<p>SHR Criteria d) [Social Significance]</p>	<p>Wambo Homestead demonstrates the opportunities available to energetic people who were transported to NSW in the early decades of the 19th century. Wambo Homestead is significant in terms of its distance from Hales place of residence, Windsor, and because of its position in the broadening agricultural enterprises of pioneer settlers. The group of buildings express the way farms were operated, with an emphasis on manual labour, and the use of the horse for work and transport.</p>
	<p>As the residence of William and Sophia Durham the homestead has associative social significance in the Hunter Valley. This is evident in the substantial development of the Homestead in the early years and the descriptions of lifestyle afforded by visiting commentators of the period. Further, the development of the Horse Stud infrastructure by the Allen and McDonald partnership provides physical evidence of the social and sporting aspirations of elite residents of Sydney at the turn of the 20th century.</p>
<p>SHR Criteria e) [Research Potential]</p>	<p>As an archaeological resource the buildings and surrounding grounds provided an opportunity to contribute to the knowledge regarding the expansion of the colony of New South Wales, its agricultural diversification and every day life on homestead properties from the 1820s till the 1890s.</p>
<p>SHR Criteria f) [Rarity]</p>	<p>As a group of buildings, Wambo Homestead is rare in New South Wales in that many outbuildings still remain substantially intact allowing easy understanding of the development of a homestead complex.</p> <p>It is rare as a large and important estate established by an emancipated convict in the Hunter Valley, where most such estates were established by free settlers.</p> <p>The core group of 1830s and 1840s buildings demonstrate rare evidence of extensive early finishes in the building fabric and the retention of all the original joinery in the four masonry buildings of the group.</p>
<p>Assessment Criteria</p>	<p>Items are assessed against the State Heritage Register (SHR) Criteria to determine the level of significance. Refer to the Listings below for the</p>

level of statutory protection.

Procedures /Exemptions

Section of Act	Description	Title	Comments	Action Date
57(2)	Exemption to allow work	Standard Exemptions	<p>SCHEDULE OF STANDARD EXEMPTIONS HERITAGE ACT 1977</p> <p>Notice of Order Under Section 57 (2) of the Heritage Act 1977</p> <p>I, the Minister for Planning, pursuant to subsection 57(2) of the Heritage Act 1977, on the recommendation of the Heritage Council of New South Wales, do by this Order:</p> <p>1. revoke the Schedule of Exemptions to subsection 57(1) of the Heritage Act made under subsection 57(2) and published in the Government Gazette on 22 February 2008; and</p> <p>2. grant standard exemptions from subsection 57(1) of the Heritage Act 1977, described in the Schedule attached.</p> <p>FRANK SARTOR Minister for Planning Sydney, 11 July 2008</p> <p>To view the schedule click on the Standard Exemptions for Works Requiring Heritage Council Approval link below.</p>	Sep 5 2008

Standard Exemptions for Works Requiring Heritage Council Approval

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
<i>Heritage Act - State Heritage Register</i>		00200	02 Apr 99	27	1546
<i>Heritage Act - Permanent Conservation Order - former</i>		00200	03 Sep 82	116	4087
<i>Local Environmental Plan</i>		1996	05 Jul 96	081	3907

References, Internet links & Images

Type	Author	Year	Title	Internet Links
Written	Godden Mackay Logan	2010	Wambo Homestead Complex Heritage Strategy	
Electronic	Heritage Branch, Department of Planning	2010	Report to the Heritage Council on Application under S38 of the Heritage Act for the removal of Wambo Homestead Complex from the State Heritage Register	Click here
Electronic	Neville McAlary	2010	Letter from Peabody : application under s38 Heritage Act for removal of Wambo Homestead Complex from the State Heritage Register	Click here
Written	Godden Mackay Logan	2010	Wambo Homestead Complex: Revised Database of Hunter Region Homesteads	
Written	EJE Heritage	2008	Wambo homestead near Warkworth : archival photographic record	

Written	EJE Heritage.	2007	Wambo homestead near Warkworth : archival photographic record	
Written	EJE Heritage.	2006	Wambo homestead : archival photographic record	
Written	EJE Heritage.	2005	Wambo homestead : archival photographic record	
Written	Di Sneddon	2003	Reprieve: Heritage Act saves Wambo Homestead (Singleton Argus 14/11/03)	
Management Plan	Bernard Collins	1994	Wambo Homestead Near Warkworth, New South Wales, A conservation Study	

Note: Internet links may be to web pages, documents or images.

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Appendix B

Wambo Mine Section 80 EP&A 1979 Development Consent

Refer to NSW Department of Planning and Environment website for latest version:

<http://majorprojects.planning.nsw.gov.au/page/>

Appendix C

Report 'Wambo Homestead Complex VAP Report on Completion of Conservation and Maintenance Works November

Godden Mackay Logan

Heritage Consultants



Wambo Homestead Complex VAP

Report on Completion of Conservation and Maintenance Works

Report prepared for Wambo Coal Pty Ltd
November 2011

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Report Register

The following report register documents the development and issue of the report entitled Wambo Homestead Complex VAP—Report on Completion of Conservation and Maintenance Works, undertaken by Godden Mackay Logan Pty Ltd in accordance with its quality management system. Godden Mackay Logan operates under a quality management system which has been certified as complying with the Australian/New Zealand Standard for quality management systems AS/NZS ISO 9001:2008.

Job No.	Issue No.	Notes/Description	Issue Date
11-0017	1	Final Report	Nov 2011

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Wambo Homestead Complex—Report on Completion of Voluntary Action Plan (VAP) Works

1.1 Introduction

1.1.1 Purpose of Report

This report relates to Section 60 application No: 2011/S60/13 for the Wambo Homestead Complex, Warkworth (near Singleton), State Heritage Register (SHR) Number 200, for 'proposed maintenance and other interim works to implement the Voluntary Action Plan (VAP) arising from Mining DA Consent requirements.'

The report addresses the various conditions, set out in the letter of 25 March 2011, from the Manger, Conservation Team, Heritage Branch, Department of Planning (Mr Vincent Sicari), 'as delegate of the NSW Heritage Council' granting approval for the proposed works 'Pursuant to Section 63 of the NSW Heritage Act 1977'.

1.1.2 Compliance with Conditions of Approval

Scope of Works (Conditions 1, 5 and 6)

The works completed 'to implement the Voluntary Action Plan (VAP)' were carried out 'in accordance with the recommendations made in the following documents', as required:

- *Wambo Homestead Complex VAP: Initial Conservation and Maintenance Works, Draft Report*, prepared for Wambo Coal Pty Ltd, 17 February 2011 by Godden Mackay Logan Pty Ltd (GML), and
- *Wambo Homestead Complex VAP Supplementary GML Report*, 25 February 2011 by Godden Mackay Logan, Pty Ltd.

An illustrated summary of the works completed, including 'before' and 'after' photographs is included in Section 1.2 of this report.

During the course of the works, appropriate measures were taken to adequately protect significant built elements from potential damage using methods that did not adversely affect existing fabric and were readily removable. The summary of works in Section 1.2 shows a number of examples where works were needed to reinstate, remove and replace and/or prop components to prevent collapse/failure. Other removable/non-invasive methods to protect exposed fabric from water damage were also used, including sand-bag diversionary walls and fibreglass sheet 'spouts'.

No excavation or removal of archaeological relics was carried out in the course of the work.

Oversight by Nominated Heritage Consultant (Conditions 2 and 3)

The works program was directed and monitored by Jyoti Somerville, Associate, of GML, with specialist structural engineering input from Paul Connett, Hyder Consulting Pty Ltd. Site works—other than landscape maintenance—were carried out by Gary Waller, G & C Waller Builders, Pty Ltd who have extensive expertise and experience working on significant heritage sites.

All work was carried out in accordance with the approach and methodology set out in the submitted and approved documentation prepared by GML, as required. Briefings for contractors were carried

out before works commenced and regular monitoring (via email, site visits, calls, etc) was maintained throughout the project. Loose and removed items were inspected and appropriate storage locations (providing security and weather protection) were determined for each item.

Final Report (Condition 4)

This report is submitted in fulfilment of item 4 of the conditions of approval, requiring 'the nominated heritage consultant (to) submit a brief report to the Heritage Council or its Delegate...(confirming) that all the works have been completed in accordance with the approved documents and conditions of this approval.'

1.2 Summary of Completed Works

1.2.1 Introduction

The following illustrated account of the completed works, including 'before' and 'after' photographs, is intended to provide a summary of the various measures implemented and outcomes achieved as part of the approved works program.

This section should be read in conjunction with the approved reports (identified in Section 1.1.2) which set out the detail of the works methodology, scope and intended outcomes. Where additional works were found to be necessary during the course of the works program, because of the condition of building structures and/or components, these are noted and recorded.

References to building names and orientation are taken from the site plan included as Figure 1.

All photographs were taken by GML (unless otherwise indicated) over the period January to October 2011 to record conditions before, during and after the completion of the works.

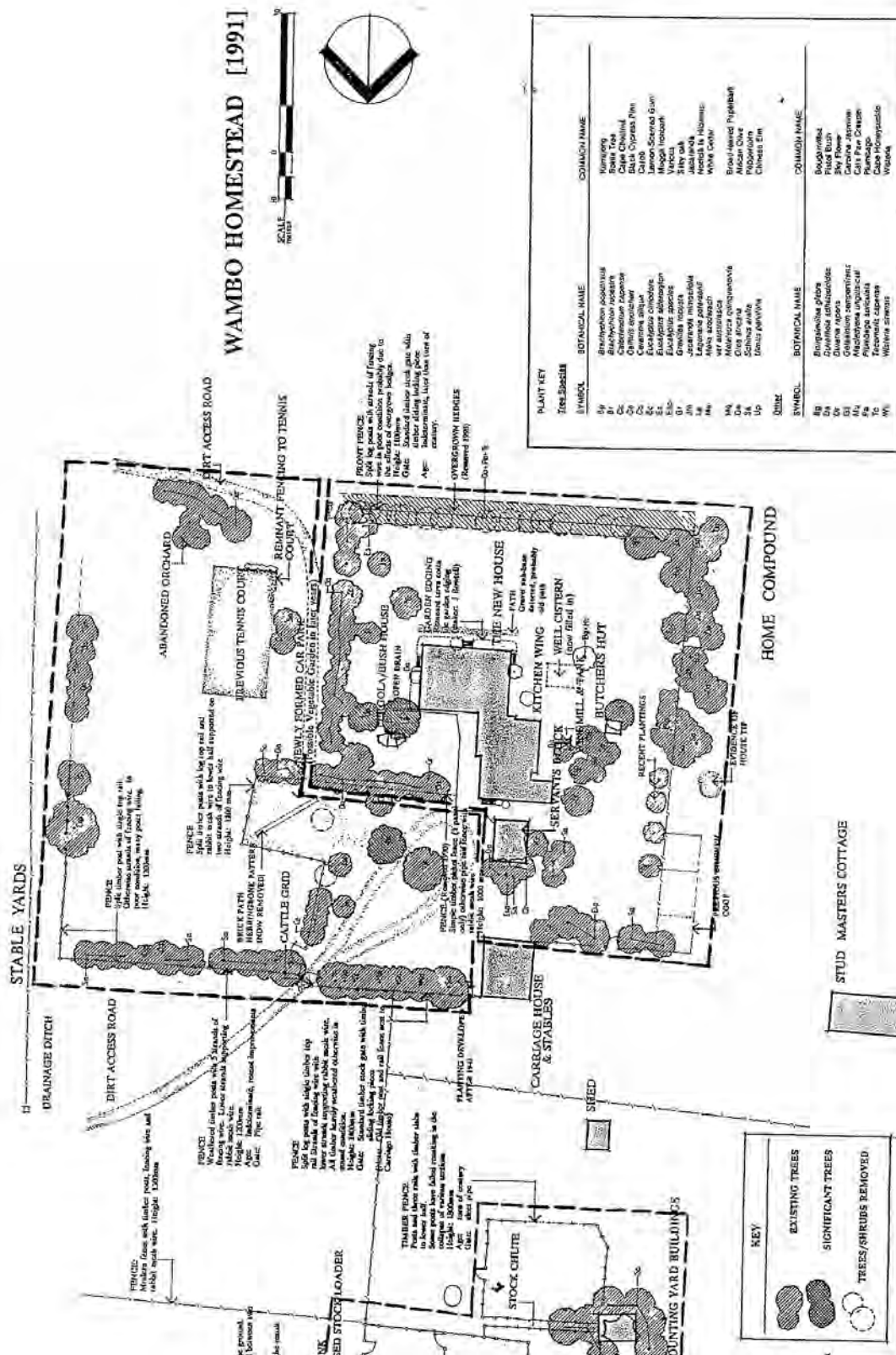


Figure 1 Wambo Homestead Complex site plan, showing major site components referred to in this report. (Source: Wambo Homestead—Landscape Overview (Drawing 10) from Wambo Homestead—A Conservation Plan, by B Collins, 1994, p.196)

1.2.2 New House



Figure 2 Southwest corner showing invasive tree suckers **before** removal and works to roof and verandah drainage.



Figure 3 West end of front verandah **before** works showing deterioration in timber columns and settlement of retaining wall and edge beam with attached eaves gutter.



Figure 4 South elevation **after** of intrusive vegetation showing the newly exposed original galvanised steel hood over the verandah infill-room window.



Figure 5 Southwest corner of front elevation **after** removal of intrusive vegetation but **before** works to verandah.



Figure 6 Detail of west end of front verandah **before** works showing deterioration in timber columns and settlement of retaining wall and edge beam with attached eaves gutter.



Figure 7 Detail of east end of front verandah **before** works showing deterioration in southeast corner columns and early replacement (stop-chamfered) column.



Figure 8 West end of front verandah **after** removal of unsound corner column showing new timber props to support roof framing and timber-framed 'water chute' with acrylic sheeting to collect and disperse roof water onto ground away from base of building.



Figure 9 Original/early timber columns, bases and framing **after** removal—because of deteriorated physical/structural condition—for storage inside New House.



Figure 10 South elevation with verandah **before** works.



Figure 11 South end of west elevation **after** works to brace front verandah framing and front wall and rectify roof water drainage.



Figure 12 South elevation **after** works including bracing of verandah support wall to halt settlement and rotation; removal of deteriorated columns and replacement with new timber props; resecuring and realignment of gutter and construction of new timber-framed 'water chute' with acrylic sheeting to collect and disperse roof water onto ground away from base of building.



Figure 13 South end of east elevation **after** works including new timber bracing to supplement retained existing corner column; resecuring and realignment of gutter and construction of new timber-framed 'water chute' with acrylic sheeting to collect and disperse roof water onto ground away from base of building.



Figure 14 North end of east elevation **before** works to upgrade drainage with new 'water-chute' as shown below.



Figure 15 East end of north elevation **before** works showing settlement due to salt-damp deterioration of basement walls.



Figure 16 Southeast corner **after** works to upgrade roof drainage showing two new timber-framed 'water chutes' to disperse roof water onto ground away from base of building at south and north ends of east elevation.



Figure 17 East end of north elevation **after** works to prop and brace collapsing masonry wall on inside and outside faces of building.

1.2.3 Kitchen Wing and Courtyards



Figure 18 Northeast courtyard showing north elevation of New House and junction to Kitchen Wing at west end **before** works to prop wall and framing and upgrade drainage.



Figure 19 East elevation of Kitchen Wing to northeast courtyard **before** works to roof, verandah framing and drainage.



Figure 20 Southwest corner of northeast courtyard **after** works to prop edge beam and realign verandah gutter on New House. Also shows new timber-framed 'water chute' at junction with Kitchen Wing to disperse roof water away from verandah framing into existing drainage system.



Figure 21 West elevation of Kitchen Wing **before** works to roofs and gutters and removal of invasive *Grevillia robusta* (Silky Oak) tree suckers.



Figure 22 Southwest corner of Kitchen Wing at junction with west wall of New House **before** works showing invasive plant growth including African Olive and Silky Oak (self-sown and suckers).



Figure 23 South elevation of Kitchen Wing at junction with northwest corner of New House **after** removal of invasive plant growth including African Olive and Silky Oak.



Figure 24 West elevation of Kitchen Wing from southwest **after** initial clearing of invasive plant growth showing formerly hidden components and fabric.



Figure 25 Southwest corner of Kitchen Wing at junction with west wall of New House **after** works to improve roof drainage, including checking over and resecuring/repairing roofing, removal of deteriorated sections of gutter, re-securing and/or replacing existing gutters, installation of new spouts/outlets and construction of new timber-framed 'water chute' with acrylic sheeting to collect and disperse roof water onto ground away from base of buildings.



Figure 26 North end of west elevation of Kitchen Wing at junction with attached Laundry facing west courtyard **before** works showing invasive plant growth including African Olive and Silky Oak (self-sown and suckers).



Figure 27 North end of west elevation of Kitchen Wing at junction with attached Laundry facing west courtyard **after** removal of invasive plant growth but **before** repairs to roof drainage showing newly exposed areas roofs, guttering and verandah framing



Figure 28 North end of west elevation of Kitchen Wing at junction with attached Laundry facing west courtyard **after** repairs to roofs and drainage including checking over and repair/refixing of roof sheeting (main roof and verandah) and flashings, removal of deteriorated gutters and downpipes and installation of 'water-chutes' with new flashings to collect and disperse roof water from valleys and wall junctions.



Figure 29 Further detail of north end of west elevation of Kitchen Wing facing west courtyard **after** repairs to roofs and drainage. Also shows verandah after clearing up works and realignment of verandah posts/edge beam.



Figure 30 West courtyard **after** removal of invasive plant growth showing collapsed windmill supported on verandah roof exposed by this work, but **before** repairs to roof drainage showing newly exposed areas roofs, guttering and verandah framing



Figure 31 South end of west elevation of Kitchen Wing (from west courtyard) **after** removal of invasive plant growth but **before** repairs/propping to framing and upgrading of roof drainage showing newly exposed areas and components.



Figure 32 West courtyard **after** new props installed to support windmill off verandah roof, clearing out and realignment/propping of framing and upgrading of roof drainage.



Figure 33 East corner of north elevation of Kitchen Wing showing new gutter and downpipe installed as part of drainage upgrading. Main roof left gutter-less to drain to verandah below.

1.2.4 Stud Master's Cottage



Figure 34 Initial inspection of surviving fabric from former roof **before** sorting, analysis and storage – showing hip connection from main roof sheeting.



Figure 35 Initial inspection of surviving fabric from former roof **before** sorting, analysis and storage.



Figure 36 Initial sorting and stockpile of roof framing and sheeting **before** later analysis and storage.



Figure 37 Surviving components/fabric from former roof, verandah, (etc) at west end of Cottage (adjacent to tank stand) **before** sorting, analysis and storage.



Figure 38 Removal of weatherproof tarpaulin over roof to allow inspection of masonry, remaining roof/ceiling components and interiors of building **before** inspection/ analysis and storage of surviving roof and verandah fabric inside building.



Figure 39 North elevation after initial removal/clear up of stockpiled materials and removal of tarpaulin to allow inspection of walls, roof/ceiling components and interiors.



Figure 40 West end of south elevation (adjacent to tank stand) **after** initial clearing and removal of stockpiled building components showing location/evidence/fabric of previous verandah along this elevation.



Figure 41 East end of Cottage – following temporary removal of tarpaulin cover – **after** clear-up/removal of components/fabric from former roof and verandah for sorting and storage.



Figure 42 Interior of cottage used for interim storage of major timber framing components from former roof and verandah – including posts, beams, plates, etc – **after** inspection and sorting.



Figure 43 Same interior space as 42 during removal of stored fabric to nearby container showing examples of retrieved and stored timber framing (posts, beams, etc).



Figure 44 Interior of container used for storage of retrieved building components and fabric from roof and verandah **after** analysis and sorting.



Figure 45 Cleared interior of second room inspected **after** access allowed by removal of tarpaulin and relocation of stored fabric to nearby container.

1.2.5 Coach House and Stables



Figure 46 South elevation of Stables **before** works showing invasive plant growth including African Olive and Silky Oak.



Figure 47 Interior of Stables/Coach House **during** internal clean up (removing stored hay) to allow inspection and stabilisation.



Figure 48 South elevation **after** removal of invasive plantings showing extent/condition of fabric **before** stabilisation works.



Figure 49 Interior **after** clean up and installation of new timber props to support roof framing showing stockpiled retrieved fabric.



Figure 50 North elevation of Stables/Coach House **before** removal of invasive tree growth (lifting framing), propping and straightening and protection of openings/exposed fabric.



Figure 51 South elevation of Stables/Coach House **after** clearing out and sorting of components but **before** propping and repairs.



Figure 52 North and west elevations of Stables/Coach House **after** clearing, stabilisation/propping works and installation of new acrylic sheeted water-proofing to provide ventilated weather protection of openings and fabric exposed to weather.



Figure 53 Northwest corner of Stables/Coach House **after** clearing out, stabilisation/propping works and installation of new acrylic sheeted water-proofing to provide ventilated weather protection of openings and fabric exposed to weather showing detailing of works carried out.

1.2.6 Butcher's Hut



Figure 54 East elevation **before** works.



Figure 55 Detail of east elevation **before** works showing old vine growth in roof space (above parging) and timber framing.



Figure 56 East elevation **after** removal of invasive plant growth and structural propping to support temporary roof covering.



Figure 57 South elevation **after** clearing and stabilisation works, including resecuring loose/fallen slabs and associated joinery.



Figure 58 West elevation **before** works.



Figure 59 Detail of west elevation **before** works showing fallen wall slabs and mud-clay parging insulation behind.



Figure 56 West elevation **after** removal of plant growth, restoration (ie reinstatement) of original timber slabs and parging and new timber props to support temporary roof covering.



Figure 57 West elevation **after** restoration and stabilisation works, just before final fixing of corner cover strips and tarpaulin cover.

Appendix D

2011Wambo Homestead Complex Report on Completion of Conservation and
Maintenance Works Part 2, June 2012



Wambo Homestead Complex

Report on Completion of Conservation and Maintenance Works

Part 2

Report prepared for Wambo Coal Pty Ltd
June 2012

Report Register

The following report register documents the development and issue of the report entitled Wambo Homestead Complex—Report on Completion of Conservation and Maintenance Works—Part 2, undertaken by Godden Mackay Logan Pty Ltd in accordance with its quality management system. Godden Mackay Logan operates under a quality management system which has been certified as complying with the Australian/New Zealand Standard for quality management systems AS/NZS ISO 9001:2008.

Job No.	Issue No.	Notes/Description	Issue Date
11-0326	1	Final Report	June 2012

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1.0 Introduction

This report has been prepared for Wambo Coal Pty Ltd (Wambo) on completion of maintenance and stabilisation works to the Wambo Homestead Complex carried out in accordance with the requirements of the NSW Department of Planning for:

A Schedule of Works to be carried out over the next twelve months... [to] continue with the works started to prevent further deterioration of the buildings while the delisting application was being processed and a revised Conservation Management Plan (CMP) was being prepared and submitted. (Email correspondence from Julia Pope, NSW Department of Planning, 8 July 2011.)

These works and this report follow on from the 'Wambo Homestead Complex VAP: Initial Conservation and Maintenance Works' report prepared by Godden Mackay Logan (GML) (February 2011) for Wambo Coal Pty Ltd (WCPL) which identified initial works to be implemented as part of a Voluntary Action Plan (VAP) by WCPL for site.

This report uses same methodology for identifying and scheduling works for. It also builds on the works completed under the initial VAP works program which was completed in June 2011 and is recorded in the 'Wambo Homestead Complex VAP—Report on Completion of Conservation and Maintenance Works' by Godden Mackay Logan (dated November 2011). For ease of reference, the more recent works are described as 'Stage 2' conservation and maintenance works.

As with the initial VAP program the aim of the Stage 2 works was to secure and protect significant components and fabric from ongoing deterioration, as much as possible. That is, the intention of the works is to conserve and retain in situ by:

- ongoing maintenance—including and adding to tasks commenced in the initial VAP works;
- measures to make secure/support significant components/fabric in danger of collapse by strutting and/or bracing; and
- stabilisation of original components/fabric where appropriate.

Reconstruction using new components and fabric to recreate a previous structure was not included.

The works were carried out by heritage building contractor G & C Waller Builders, under the direction of GML and Paul Connett, Heritage Engineer, Hyder Consulting. Priority was given to essential stabilisation and protection works, as well as investigation of and photographic recording of particular areas and elements to guide future decision making and management of the place (including repair/restoration and interpretation).

The works recorded in this report accord with, and were carried under the conservation policies of, the 2006 CMP for the Wambo Homestead Complex. This report will, in turn, provide input into the CMP Review, currently under preparation (and proposed for completion in July 2012).

The report is report has been prepared by Jyoti Somerville, Associate, with review and input from Reece McDougall, CEO, Godden Mackay Logan.

The location and orientation of the major site components referred to in this report are shown in Figure 1. The names used for the site structures are taken from this plan.

2.0 Summary of Completed Works

2.1 Generally

The following account of the completed works, including 'before', during and 'after' photographs, is intended to provide a summary of the various measures implemented and outcomes achieved as part of the approved works programme.

The report follows on from the approved *Schedule of Conservation and Maintenance Works* by Godden Mackay Logan (dated October 2011) which sets out the proposed works methodology, scope and intended outcomes. In some situations, additional works were also implemented during the course of the project where these were found to be necessary and/or strategically appropriate, including particularly works to support/brace structural components and/or other significant fabric in situ.

The photographs used in this report were largely taken by G&C Waller Builders, unless otherwise indicated, over the first three months of 2012 to record conditions before, during and after the completion of the works. In many situations this was necessitated by specialist access and safety requirements for particular building areas and elements.

2.2 New House (Main Residence)

2.2.1 Engineering Inspections

- Engineer, heritage consultant and builder inspected and photographically recorded cracking and dropping of ceilings and cornices throughout the building. All fallen sections of plaster ceiling and cornice larger than nominated size were collected and stored within residence.
- Engineer provided advice to builder regarding immediate protection and support measures—including propping and temporary lining sheets—to halt ongoing loss/damage to fabric.
- Location and extent of white ant damage in ceiling/roof framing inspected by builder and reported to Engineer, heritage consultant and client. (Note: This work carried out by Builder following completion of 'working at heights' training specified by site OH&S requirements.)
- Engineer inspected cuts through corners of masonry wall structure in main internal rooms on north and south walls. Agreement to maintain as is and monitor.

2.2.2 Propping and Bracing

- Builder installed approved propping under cracking ceilings and cornices to provide a secure support and 'hold-all' for loose/cracked sections including sheeting under ceilings and fabric-protected timber prop-heads under cornices, as discussed.
- Propping/bracing also provided where required to roof framing to back (north) rooms and to support sections of masonry walling where the structural integrity was affected by salt-damp erosion.

2.3 Kitchen Wing

2.3.1 Structural Support for Eroded Walls

- Engineer, heritage consultant and builder identified structural wall areas requiring bracing and support—particularly along west elevation, southwest corner and east basement wall of Kitchen Wing, various internal walls of this wing and the southeast corner of the New House.
- Builder installed propping and bracing, as agreed with Engineer, to prevent structural collapse of upper walls.

2.3.2 Basement

- Basement cleared out and drained, including stairs, Area and internal spaces.
- Masonry walls to external Area wall (ie eastern retaining wall to Basement stair) and internal room/area braced as required.
- Timber ceiling/floor structure above braced and propped as required.
- Cement paving to northeast courtyard sealed to prevent water entry into Area and basement.

2.4 Servants' Block

2.4.1 Inspection and Recording

- Structure cleared of intrusive vegetation and accumulated debris and inspected and recorded by Builder.

2.4.2 Stabilisation Works

- Structure propped and stabilised including external masonry walls, roof and first floor framing.

2.5 Stud Master's Cottage

2.5.1 Inspection and Recording

- Tarpaulin removed to allow inspection by Engineer, Heritage Consultant and Builder of condition, strength, repair/bracing needs of surviving roof structure; extent of movement of external walls; condition of masonry at base of walls, including ground conditions below floor; and wall cracking generally.
- Conditions as found recorded photographically and by Engineer as drawn details of footing conditions.

2.5.2 Analysis of Stored Fabric

- Builder inspected all retrieved components/fabric from initial maintenance/repair works (completed 2011) and currently stored in on-site container (re. number, size, material, function and condition of components and relative age based on characteristic features (ie old/early corrugated steel with thicker galvanising vs more modern galvanised steel roofing; adzed or bush-pole timbers vs sawn timbers; modern vs traditional nails/fixings, etc).

- Builder's report reviewed by Engineer and Heritage Consultant regarding options for using this fabric as part of reconstruction of roof (ie incorporating and supplementing sound, reusable components and fabric) as part of future reinstatement of roof and verandah.

2.6 Stables and Coach House

2.6.1 Clearing and Propping Works

- Stables and Coach House cleared out (removing stored hay and other debris) to expose stone flagging and previously hidden structural framing and cladding elements, including in loft area.
- Fallen, readily retrievable building components restored (ie repositioned in original locations) where possible (eg verandah posts, door and cladding components).
- New timber propping and bracing installed as part of securing, straightening and stabilising structure (located so as to support/protect existing components but be as visually unobtrusive as possible, particularly in external views. Floor, wall, ceiling and roof framing propped as necessary.
- Clear corrugated acrylic sheeting used to cover areas/openings exposed to water entry (as initiated in Stage 1 Voluntary Action Plan (VAP) works).

2.7 Butcher's Hut

2.7.1 Conservation Works

- Original timber slab cladding reinstalled on north, west and east walls to original locations with associated joinery/trim (at corners and around openings) refixed/replaced as necessary to make secure.
- New timber propping and bracing installed on east and west elevations as part of securing, straightening and stabilising structure.
- Internal bracing to interior/roof area to transfer loadings, including new coverings to roof and gable ends.
- Existing corrugated iron restored where bent and/or lifting from fixings at gable ends.
- Additional installation of clear corrugated acrylic sheeting to cover areas/openings exposed to water entry (as per Stage 1 Voluntary Action Plan (VAP) works).

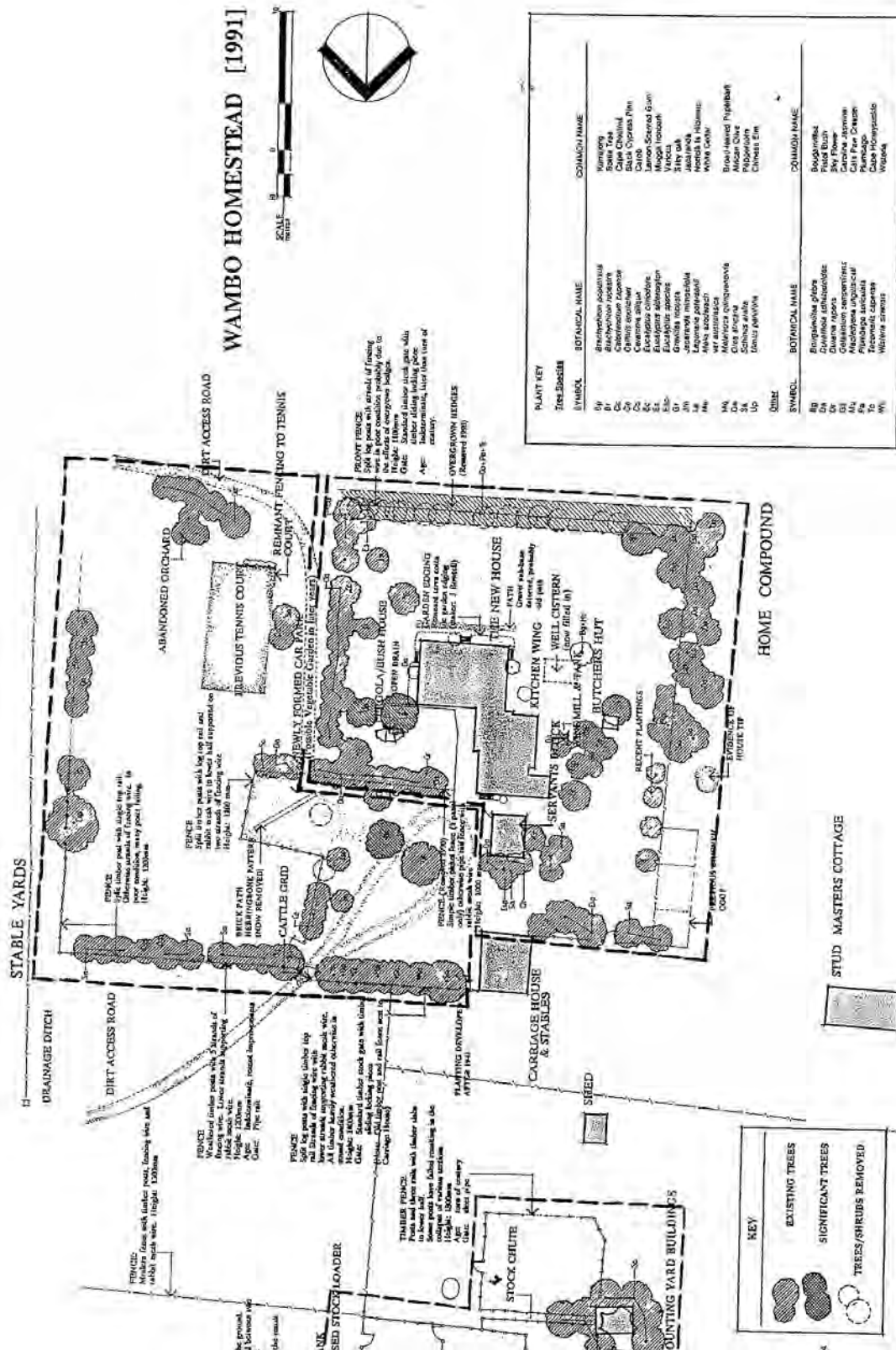


Figure.1 Wambo Homestead Complex site plan, showing major site components referred to in this report. (Source: Wambo Homestead—Landscape Overview (Drawing 10) from Wambo Homestead—A Conservation Plan, by B Collins, 1994, p.196)

2.8 Photographic Recording

2.8.1 New House (Main Homestead)



Figure 2 Interior of Drawing Room showing retention and propping of original lath and plaster ceiling and ceiling rose.



Figure 3 View of propping through whole of Drawing Room interior showing supporting formwork under central archway (looking south).



Figure 4 Interior propping of southeast front room looking east to fireplace and original door in north wall.



Figure 5 Exposed fireplace opening in east wall of southeast front room following opening up and cleaning of room.



Figure 6 Interior of roof and ceiling framing above rear (north) room showing retained components and fabric (including two ceiling linings) and modern, supplementary bracing (posts and ceiling ties).



Figure 7 Temporary stock-pile of retrieved components and fabric on front (south) verandah prior during propping works. Components were returned to building for secure, weather-proof storage after completion of internal works.



Figure 8 View towards east end of north (rear) room after clearing out and propping of roof and ceiling structure.



Figure 9 Detail of propped ceiling and roof structure above original window at east end of north (rear) elevation showing retained

evidence of original plaster and pressed metal ceiling linings.

2.8.2 Kitchen Wing



Figure 10 East elevation to northeast courtyard **after** works showing propped verandah framing, repairs to cracked cement paving and sand-bag barrier to prevent water entry to cellar.



Figure 11 View south along verandah to Kitchen wing **after** propping showing retained building components and fabric.



Figure 12 Detail of new propping to east verandah supporting and retaining historical fabric in situ.



Figure 14 Eroded masonry wall fabric on west elevation of Kitchen Wing due to salt-damp attack **before** repairs.



Figure 15 New propping to masonry wall on west elevation of Kitchen Wing to secure structural elements in place.



Figure 16 Interior of main ground floor room (south end of Kitchen Wing) **after** removal of modern carpet, veneer dado linings (over salt affected masonry) and associated debris.



Figure 17 Detail of early and later fireplaces to former Kitchen on west side of Kitchen Wing **after** clean up and securing of fabric.



Figure 18 Propping of east retaining wall to Area leading down to cellar/basement below Kitchen Wing after cleaning out and completion of stabilisation works.



Figure 19 Interior of cellar/basement after cleaning up showing exposed flag stone flooring and new timber props to walls and ceiling.



Figure 20 View of newly propped walls to cellar/basement Area looking south towards stone steps (up to courtyard) and entry to cellar on west (right) side **after** completion of works.



Figure 21 Interior of cellar/basement looking towards east wall with doorway and windows opening into Area. New timber props to Area wall are braced thorough window bars.

2.8.3 Servants' Block



Figure 22



Figure 23



Figure 24



Figure 25



Figure 26



Figure 27



Figure 28



Figure 29

During and After



Figure 30



Figure 31



Figure 32



Figure 33



Figure 34



Figure 35



Figure 36



Figure 37



Figure 38



Figure 39



Figure 40

Figure 41

2.8.5 Stud Master's Cottage



Figure 42



Figure 43



Figure 44



Figure 45



Figure 46



Figure 47



Figure 48



Figure 49

2.8.6 Stables and Coach House



Figure 50



Figure 51



Figure 52



Figure 53



Figure 54



Figure 55



Figure 56



Figure 57



Figure 58



Figure 59



Figure 60



Figure 61

2.8.7 Butcher's Hut



Figure 62



Figure 63



Figure 64



Figure 65

Appendix E

Peabody Energy Australia Wambo Coal Mine Grouting of Mine Workings to Minimise Subsidence Impacts

Peabody Energy Australia Wambo Coal Mine Grouting of Mine Workings to Minimise Subsidence Impacts

Description

The risk of subsidence resulting from previous mine workings can be reduced by filling mine voids with backfill material (i.e. grout) and consequently increasing the strength of standing pillars.

Wambo Coal Pty Ltd proposes to use grouting to increase the stability of the previous Homestead Underground Mine workings in the Whybrow Seam below key components of the Wambo Homestead Complex. The method proposed to be undertaken is outlined below:

- Boreholes would be drilled from the surface into the Homestead Underground Mine voids.
- Boreholes would be cased and capped for the duration of the project to reduce potential water inflow to the Homestead Underground Mine voids.
- The seal and backfill material would be mixed and prepared at the surface.
- To ensure containment of the backfill a sealer material would be pumped into the Homestead Underground Mine voids through the boreholes.
- After the mine is sealed a backfill mixture would be injected via the boreholes into the Homestead Underground Mine voids (Plate 1).
- The backfill mixture would disperse within the Homestead Underground Mine voids to a designated level (Plates 2 and 3).
- On completion the boreholes would be surveyed and assessed to ensure the relevant Homestead Underground Mine voids are adequately filled and stabilised.

Plate 1: Borehole entrance into underground mining void



Source: Engenicom, 2011

Plate 2: Inside mining void during filling operations



Source: Engenicom, 2011

Plate 3: Mining void during filling operations



Source: Hunter Expressway Alliance, 2011

Case Studies

Australian Examples

- **Newcastle Central Business District** – A large extent of the Newcastle Central Business District and surrounding regions are located on former underground mine workings. Workings in the Yard Seam (approximately 23 meters below the surface) had sterilised areas of Newcastle in terms of high rise development (Pells et al., 1988). High rise development within this area was made possible by stabilisation of these workings through back-fill grouting (Pells et al., 1988). These works were undertaken in consultation with the New South Wales (NSW) Mine Subsidence Board.
- **The Hunter Expressway** – The construction of a dual carriageway motorway in the lower Hunter, NSW, is taking place over former and proposed future coal mines. Grouting of the former mine workings has been conducted in areas below and immediately surrounding bridges and sections of the motorway to reduce the risk of subsidence movements and consequent infrastructure failure (Kingsland et al., 2011). These works were undertaken in consultation with the NSW Mine Subsidence Board.
- **Western Suburbs Leagues Club** – Extensions to the Western Suburbs Leagues Club located in New Lambton, NSW, were undertaken above former underground mine workings located in the Borehole Seam (approximately 15 meters below the surface). In order to enable the construction of the extensions the former underground mine workings were first stabilised through back-fill grouting (Ditton and Love, 1998). These works were undertaken in consultation with the NSW Mine Subsidence Board.
- **Swansea Bends Project** – The Swansea Bends Project (a four kilometer section of road) was constructed, in parts, above former mine workings in Swansea, NSW. Stabilisation of the former workings was required to allow road construction and the stabilisation methods adopted included back-fill grouting of the former mine workings (Kopandy and Francis, 1991). These works were undertaken in consultation with the NSW Mine Subsidence Board.
- **Ipswich Motorway** – Upgrades to the Ipswich Motorway in Queensland involved re-alignment of the motorway corridor over two abandoned coal mines and adjacent a third. In order to provide the motorway with protection against a future subsidence event back-filling of the historic mine voids was carried out (Holz, 2011).
- **General Usage** – grouting technology is widely used in industry and has been for decades.

International Examples

- **Housing Development (Vienna)** – A Housing development in Vienna built in the 1990's over a former gypsum mine site experienced excessive damage to gardens and housing structures due to the formation of sinkholes. Grout was injected into the underground mine voids to rehabilitate the workings, reducing the risk of surface subsidence (Bergmair and Scheiber, 2008).
- **The Main East Coast Main Line (UK)** – A section of the Main East Coast Main Line was constructed over an area of former mine workings. Remedial geotechnical works undertaken to reduce the risk of subsidence impacts included extensive grouting of the former mine workings (Jones, n.d.).
- **High Speed Rail Track (Germany)** – A section of high speed rail track was constructed over an area of former mining activity. The designing phase for the track included injection of grout into known mine cavities to reduce risk of subsidence impacts and improve stability (Jones, n.d.).
- **Littleton Street Mine (UK)** – The former workings of the Littleton Street Mine located below residential areas in Walsall, United Kingdom, have been stabilised through injection of back-fill material (Braithwaite and Phillips, 1991).

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ATTACHMENT 3

WAMBO COAL MINE
SALVAGE AND MANAGEMENT PROGRAMME

ATTACHMENT 3
WAMBO DEVELOPMENT PROJECT – ABORIGINAL HERITAGE
RESEARCH DESIGN AND STUDY PLAN
(INCORPORATING SALVAGE PROGRAMME)

1 BACKGROUND

Wambo Coal Pty Limited (WCPL) proposes to initiate the Wambo Development Project located at the Wambo Coal Mine, in the Hunter Valley of New South Wales (NSW). The Wambo Development Project includes the following components:

- continued development of open cut mining operations (including limited auger mining beyond open cut mining limits) within existing WCPL mining and coal leases and into new mining lease application areas;
- continued placement of waste rock and coarse rejects within mine waste rock emplacements;
- continued placement of tailings within open cut voids and capping with waste rock and coarse rejects;
- an extension to the existing Wollemi Underground Mine Box Cut (within the limits of the Project open cut mining area) to provide direct access for three underground longwall panels in the Whybrow Seam;
- longwall mining of the Wambo Seam via an existing open cut highwall;
- construction of a portal and drift access adjacent to the CHPP to facilitate longwall mining of the Arrowfield and Bowfield Seams;
- upgrade of the existing CHPP to facilitate increased coal production;
- development of a water control structure across North Wambo Creek at the north-western limit of the open cut operation and a channel to allow the passage of flows to the lower reaches of North Wambo Creek around the open cut development;
- de-gazettal and physical closure of Pinegrove Road;
- development of new access roads and internal haul roads;
- relocation of the existing explosives magazine and construction of additional hydrocarbon storage facilities; and
- relocation of the administration area and site offices.

The Wambo Development Project Development Application (DA) 305-7-2003-i was consented by the NSW Minister for Planning and Infrastructure on 4 February 2004. DA 305-7-2003-i was supported by the Wambo Development Project Environmental Impact Statement (Resource Strategies, 2003).

A modification to DA 305-7-2003-i was lodged with the Department of Infrastructure, Planning and Natural Resources (DIPNR) in January 2005. The modification application, once approved, would permit a re-orientation of the Wambo Seam Underground Mine longwalls (and the associated subsidence zone) and a reduction in its footprint outside of the open cut workings (ie. more of the Wambo Seam Underground Mine is beneath the open cut mine and waste rock emplacements). All lands affected by the proposed modification to the Wambo Seam Underground Mine are owned by WCPL and are within the development application area of DA 305-7-2003-i. This modification is currently being determined by the Minister for Infrastructure and Planning.

This Research Design and Study Plan (incorporating a Salvage Programme) are based on:

- the findings and recommendations of the archaeological surveys and assessments conducted for the Wambo Development Project since 2002;
- the requirements of the Wambo Development Project development consent;
- the outcomes from consultation programmes conducted in association with the above mentioned surveys and assessments; and
- the outcomes of the consultation conducted in association with the application for the Section 87 permit and Section 90 consent for the Wambo Development Project.

This research design provides for the collection, salvage, curation and/or relocation of artefacts (Aboriginal Objects) from within the Section 87/90 application area (the 'Application Area') (including sites registered on the DEC Aboriginal Heritage Information Management System database) as well as the addition of information to the archaeological database for the Warkworth/Mount Thorley area. The research design and salvage programme includes the following general works:

- collection of surface artefacts;
- recovery of archaeological material from salvage excavations;
- basic recording of recovered artefactual material;
- analysis of selected salvaged artefactual material from subsurface excavations;
- an excavation program designed to test for the presence of deep archaeological deposits;
- storage of selected artefacts in a Keeping Place; and
- returning collected artefacts to the landscape following completion of rehabilitation works.

2 ARCHAEOLOGICAL SITES IN THE APPLICATION AREA

2.1 PREVIOUS ARCHAEOLOGICAL ASSESSMENTS

In 2002, White conducted an Aboriginal heritage assessment for the Wambo Development Project (WCPL, 2003). Since 1980, a number of other Aboriginal heritage assessments have been undertaken within, or in the immediate surrounds of the Application Area. These assessments were used by White and cited in her report, including:

- Brayshaw (1981);
- Brayshaw et al. (1996);

- Corkill (1990);
- Dyll (1980, 1981);
- Effenberger (1992);
- ERM Mitchell McCotter (1999) (information on NPWS site forms);
- Kuskie (1998, 2000);
- Rich (1991a, 1991b);
- Silcox (1998); and
- Sutton (2002).

White's assessment forms the basis for this research design and study plan.

2.2 PREVIOUSLY RECORDED SITES

There are approximately 276 recorded sites within Application Area. These are listed in Table 1 below.

Table 1
Previously Recorded Sites within the Application Area

Site	Description
98-102, 104, 106-114, 117, 118, 120-125, 151, 152, 229, 232, NW 13*, NW 16*, NW 17*	Open sites located south of North Wambo Creek.
268	100 objects were recorded on an exposure within the Waterfall Creek catchment adjacent to a 2 nd order stream.
258 & 259	Open sites located on a broad upper slope on the north face of the watershed between Waterfall Creek & Splitters Hollow. The 2 sites are separated by ground with poor visibility, so may be one continuous site.
239	Open site located on the east face of a crest sloping down towards North Wambo Creek. 150 objects were recorded on a track over a distance of 130 m.
62	Open site located on edge of minor creek 1 km west of Wollombi Brook and between Wambo and North Wambo Creeks. Piece of glass with a worked edge.
45-48, 52-61, 63-68, 91-97, 103, 105, 115, 116, 126-136, 138, 146-150, Wambo 1; Warkworth Colliery*	Open sites located between North Wambo Creek and Stony Creek
69-73, 81-88	Open sites located along ridgeline north of Stony Creek
89	Open site located on the ridge top watershed between Stony and North Wambo Creeks.
78-80	Open sites located south of Stony Creek.
74-77, SC 3*	Open sites located adjacent to the bank of Stony Creek.
175-181, 184-189	Open sites located north-west of Redbank Creek.
227, 247-250, 260-264, 269, 271, 285-287	Open sites located south of Golden Highway and south-east of Waterfall Creek.
10-12	Open sites located on the eastern side of Wollombi Brook.
23	Open site located adjacent to the Project rail spur west of Wollombi Brook.
90, 137, 139, 140-145	Open site located north of Stony Creek.
153-159	Open sites located adjacent of the north-eastern side North Wambo Creek.
28-29, 119, 160-174, NW 4*	Open sites located north of North Wambo Creek.

Table 1 (Continued)
Previously Recorded Sites within the Application Area

Site	Description
190-201, 208-226, 228, 233-238, 242-246, 251-257, 265-267, 270, 272-284, 288, 289	Open sites located south to south-east of Waterfall Creek.
PAD A	Potential artefact deposit located in cleared land on a crest greater than 200 m from water.
PAD B	Potential artefact deposit located in cleared land on a mid-slope less than 200 m from water.
PAD C	Potential artefact deposit located in cleared land on a slope approximately 80 m from water.
PAD D	Potential artefact deposit located in cleared land on a crest approximately 80 m from water.
PAD I	Potential artefact deposit located in cleared land on a slope approximately 0 to 50 m from water.
PAD E, PAD H, PAD S	Potential artefact deposit located in cleared land on a crest approximately 60 to 100 m from water.
PAD M, PAD R	Potential artefact deposit located in cultivated land on a crest approximately 60 to 100 m from water.
PAD N	Potential artefact deposit located in cleared land on a crest greater than approximately 200 m from water.
PAD Q	Potential artefact deposit located in cleared land on a lower slope greater than approximately 200 m from water.

* Nomenclature in accordance with the DEC AHIMS database, current as at 29 March 2005.

It should be noted that some of the sites listed in Table 1 would not be directly impacted by the Wambo Development Project (refer to WCPL, 2003), however these sites are within lands owned by WCPL and/or the Remnant Woodland Enhancement Programme Areas. In accordance with WCPL (2003) and DA 305-7-2003-i, these lands will be subject to land management measures such as fencing for stock exclusion/control, tree planting and drainage works. Although these works can be designed to avoid known sites, the potential for sub-surface sites can never be entirely discounted. Therefore the Application Area includes these lands and sites within.

3 SALVAGE PROGRAMME

The scope of the salvage methodology is considered to provide an appropriate level of investigation and sampling relative to the research context of the development and the degree of proposed impact.

3.1 ABORIGINAL PARTICIPATION

The salvage programme will be implemented by Dr Kelvin Officer, Matthew Barber, Kerry Navin, Lindsay Smith, Vanessa Myles and Nicola Dal Santo (herein referred to as "archaeologist"). Representatives from the local Aboriginal stakeholder community groups will be invited to observe and, where appropriate, participate in the salvage works (e.g. recording, collection, storage and replacement of artefacts).

3.3 SURFACE SALVAGE

Collection of surface artefacts will be conducted at known sites within the surface development footprint and at sites as determined by monitoring within the underground mining operations area. Surface collections will occur:

- on a progressive basis prior to commencement of ground surface works within each area of the surface development footprint;
- on a progressive basis prior to undertaking land management measures within remnant woodland Enhancement Programme Areas; and
- following the identification of impacts to artefacts in the underground mining operations area as described in WCPL (2003).

A basic level of recording will be conducted on recovered surface material (including location, technological traits and stone type). A small number of artefacts may be selected for more detailed description and analysis (such as use wear and residue analysis and microscopic inspection) where appropriate. This analysis will be conducted by a suitably qualified lithic specialist.

3.4 SUBSURFACE SALVAGE

Eleven previously recorded sites and two Potential Archaeological Deposits (PADs) within the Application Area were identified by White (2003) for subsurface salvage activities, namely, sites 154, 168, 239, 247, 248, 258, 259, 263, 268, 286, 287, PAD N and PAD R (Table 1 and Figure 1).

The subsurface salvage programme may involve several methodologies including:

- pit excavations conducted by backhoe or excavator;
- grader scrape excavations; and
- excavations conducted by hand.

Excavation methodologies to be implemented at the subsurface salvage sites are outlined below. The methodology to be employed at each salvage location will be at the archaeologists discretion in consultation with attending representatives of the Aboriginal stakeholder community groups based on the geomorphology and the potential horizontal and vertical distribution of artefacts within that location. All methodologies outlined below may be subject to change depending on factors encountered in the field.

3.4.1 Methodology for Excavation Using a Backhoe or Excavator

Backhoe pit excavations will be the initial methodology employed at a selection of the subsurface salvage sites in lowland areas adjacent to North Wambo Creek. Subsurface salvage sites located adjacent to North Wambo Creek at which backhoe pits may be employed include sites 154, 168, 239, PAD N and PAD R (Figure 1). Excavation by hand (see below) may also be conducted depending on the results of the backhoe pit excavations.

The number of backhoe pits conducted at each salvage location will be determined according to the following objectives:

- achieving an appropriate sample of the site area and microtopographic variation across that area; and
- recovering a representative or sufficient sample of the archaeological material at each site.

The following excavation methodology will be followed for the mechanical excavation of pits. This methodology may be subject to change depending on factors encountered in the field.

1. Basic locational information will be recorded for each pit.
2. Pits will be excavated by backhoe using either a straight-edged or toothed bucket, depending on the hardness of the material being excavated and plant availability. The preferred bucket type has a straight edge and is between 800 and 1000 mm wide. A toothed bucket will be used if hard ground is encountered. Spit depths will have an intended interval range of between 10 and 40 cm, depending on sediment conditions. Pits will have a potential final length of around 1.5 m to 4 m, depending on the final depth achieved. Pit excavation will include broad-scale vertical control only. Pit excavation will involve the following steps:
 - (a) excavation of spit 1 along an interval averaging 1.5-2.0 m in length.
 - (b) excavation of spit 2 (and all subsequent spits), beginning approximately 200-300 mm from the far end of the previous spit. This will be done in order to create a 'clean' end-wall and prevent contamination from sediments from upper levels.
 - (c) following spit 2 (and after all subsequent spits), the near end of the pit will be extended by up to 300 mm in order to remove any fallen sediment from upper levels and to provide a 'clean' end point for the backhoe bucket.
 - (d) Excavation will cease according to an on-site appreciation of testing requirements.

An appropriate sample of the excavated material will be sieved, either with or without the aid of pressurised water from a water truck. Generally the sample will consist of 8 x 10 litre buckets removed directly from the bucket. A larger sample may be taken if considered warranted. Smaller samples may occur where there is insufficient material to provide an 80 litre unit for sieving. Material will be sieved through 3 mm mesh, with use of a top 5 mm mesh where appropriate.

All identified or suspected cultural material recovered from sieving will be retained, bagged and labelled. In addition, a reference collection of natural gravels may be collected to aid in lithic interpretation, where appropriate.

3. Following cessation of excavation, the soil profile and characteristics will be described and checked with the separately documented incremental spit descriptions. pH measurements may be taken where necessary.
4. All pits will backfilled with the remaining excavated and sieved spoil.

3.4.2 Methodology for Excavation using a Mechanical Grader

Grader scrapes will be conducted at a selection of the subsurface salvage sites within the application area (at the discretion of the archaeologist). The scrapes which will be located and aligned in such a way as to sample the micro-topography across the test/salvage areas. This methodology may be used as a principal means of recovering artefacts, and/or as a technique for revealing areas where backhoe or by-hand excavation should be conducted.

The following methodology will be used:

- Basic locational information will be recorded for each 'scrape' or transect.
- Each scrape or transect will have a variable maximum length, potentially ranging from 30 to over 100 m long.
- More than one scrape (or 'spit') may be excavated along the same transect depending on the results achieved on the initial scrape.
- It is anticipated that each scrape/spit will have a minimum depth of between 10 and 30 cm. The grader blade will be up to 4-5 m in length. The actual machinery and specification employed will depend on the availability of machinery and plant.
- Depending on the depth of the soil profile and the underlying clay substrate, more than one excavation (or spit) may be conducted along any particular scrape/transect.
- Basic location, alignment and depth information will be recorded for each spit conducted.
- Artefacts will be collected from the surface of each scrape/spit, and the horizontal location recorded according to an appropriate measured interval (such as a 1-50 m interval along the scrape. Where a significant grouping of artefacts is detected, (such as a knapping floor), these items will be collected and mapped separately.
- Artefacts will be detected using visual scrutiny by surveyors walking the scrape. Sprayed water (from a water truck) and manual or mechanical rakes may be used to improve visibility along the scrape surface.
- Where considered appropriate, an appropriate sample of the spoil from select areas along the scrapes may be sieved using a wet or dry technique and through a minimum mesh size of 3 or 4 mm.

3.4.3 Methodology for Excavation by Hand

Excavations by hand may be conducted at select subsurface salvage sites within the application area (at the discretion of the archaeologist) utilising the following methodology. This methodology may be subject to change depending on factors encountered in the field.

1. Mark out and record pit locations. The arrangement of excavation areas will vary according to the characteristics of the site. Possible arrangements include: multiple square pits arranged within a grid pattern; rectangular trenches positioned to test/salvage along continuous and potentially intersecting transect(s); and broad area excavation where rectangular areas of 4 m² or more are conducted.
2. Excavate hand-dug pit. Pits or trenches will be excavated by shovel and trowel using standard by-hand archaeological methodologies including vertical and horizontal recording of spit levels and sedimentary, cultural and stratigraphic features.

- Indicative spit intervals will be 10 cm, but may be larger or smaller depending on pit specific conditions and stratigraphic units.
 - Excavation will cease according to an on-site appreciation of the vertical extent of the archaeological deposit.
3. Where cultural features are identified, such as heat treatment pits or hearths, detailed plans will be drawn and samples of dateable material will be obtained.
 4. All excavated archaeological deposit will be sieved either dry or with the aid of pressurised water from a water truck. The use of a dry sieving technique will be determined according to an appreciation of on-site characteristics. All material will be sieved through 3 mm mesh, with use of a top larger mesh where appropriate. All identified or suspected cultural material recovered from sieving will be retained, bagged and labelled.
 5. All pits will be backfilled with the remaining excavated and sieved spoil (depending upon construction requirements).

3.4.4 Excavation Program Designed to Test for the Presence of Deep Archaeological Deposits

A program of exploratory excavations will be conducted at a selection of aggrading landform contexts (such as valley floor alluvium, and alluvial fans on the basal slopes) in the open cut area, with the aim of determining if palaeosols (fossil soil layers) with archaeological potential are present.

A backhoe or excavator would be used to excavate pits or trenches at selected locations (up to 20 at the discretion of the archaeologist). These would be exploratory in nature and would have a principal aim of revealing a section through the sedimentary profile so that any potentially occurring palaeosols may be revealed.

In the event that a palaeosol with archaeological potential was revealed in one of these initial excavations, then a subsequent backhoe pit would be conducted in an adjacent location. This pit would be conducted according to the methodology outlined above.

The extent, scope and methodology of any follow-on salvage excavations would be determined according to the nature and significance of any archaeological material recovered.

3.4.5 Recovery of Material for Dating or Other Forms of Analysis

For all excavation methodologies, samples may be recovered for the purposes of dating or for palaeoenvironmental analysis. Samples may be taken of carbon bearing material for radiocarbon dating. Similarly, if suitable sediments are encountered, samples may be taken for the analysis of pollen, phytoliths and microfauna.

3.5 Management of Recovered Aboriginal Objects

Artefactual material recovered from the Salvage Programme will be subject to an appropriate level of archaeological analysis, and then placed within a Keeping Place at the Wambo Coal Mine.

Should skeletal material be found within the Application Area during the subsurface salvage programme, the NSW Police Force, DEC and the relevant local Aboriginal stakeholder community groups will be notified immediately and an appropriate course of action determined.

The Keeping Place will be located at the Wambo Coal Mine administration complex. The Keeping Place would be in the form of a locked container, and will be accessible to the representatives of each of the local Aboriginal stakeholder groups upon appointment agreed to by WCPL. Artefacts will be stored in the Keeping Place until the completion of rehabilitation works, at which time they will be returned to the landscape.

The collection of Aboriginal objects to be stored at the Keeping Place will be the subject of a Care and Control Permit issued by the DEC.

4 EDUCATION OF ON-SITE PERSONNEL REGARDING HERITAGE MANAGEMENT

As part of the site induction, personnel will be made aware of the following:

- the cultural heritage impact mitigation programme;
- simple criteria for artefact and human bone recognition;
- the heritage management strategies being conducted;
- actions to follow if human skeletal material is encountered; and
- personnel to contact for more information.

5 REFERENCES

Brayshaw, H. 1981 *Archaeological survey of Hunter Valley No.2 Authorisation Area and out-of-pit overburden emplacement area*. Report prepared for James B. Croft and Associates Pty Ltd.

Brayshaw, H. Haglund, L. and Rich, E. 1996 *Lemington mine Hunter valley Southern Extension EIS: archaeological survey for Aboriginal sites*. Report prepared for Lemington Mine through Sinclair Knight Merz.

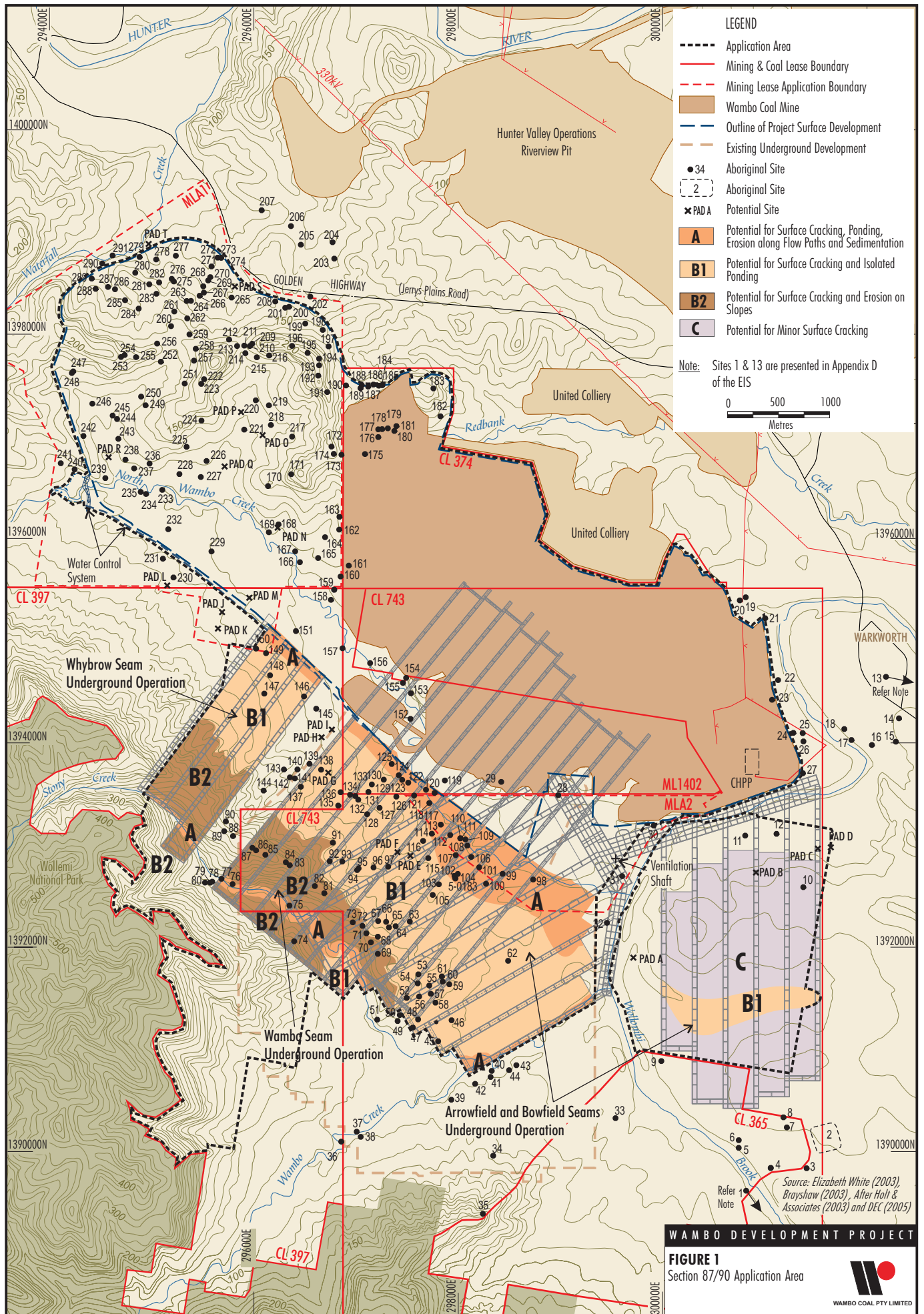
Brayshaw, H. Haglund, L. and Rich, E. 1996 *Lemington mine Hunter valley Southern Extension EIS: archaeological survey for Aboriginal sites*. Report prepared for Lemington Mine through Sinclair Knight Merz.

Corkill, T. 1990 *Preliminary survey for archaeological sites at South Wambo, near Warkworth, NSW*. Report prepared for Envirosciences Pty Ltd and Wambo Mining Corporation.

Dyall, L. K. 1980 *Report on Aboriginal relics on Wambo Coal Lease, Warkworth*. Report prepared for Wambo Mining Corporation Pty Ltd.

- Dyall, L. K. 1981 *Report on Aboriginal relics on United Collieries Authorisation Area, Warkworth, Hunter Valley NSW*. Report prepared for Dames and Moore.
- Effenberger J. (Envirosciences Pty Ltd) 1993a *Archaeological Survey and Assessment: Redbank Power Project, Warkworth*. Unpublished report to National Power Company
- Effenberger J. (Envirosciences Pty Ltd) 1993b *Archaeological Survey and Assessment: Redbank Power Project, Slurry Pipelines, Warkworth Area*. Unpublished report to National Power Company
- Effenberger, J. 1992 *Archaeological Survey and Assessment: Redbank Power Project, Warkworth*, in Envirosciences Pty Ltd (1993).
- ERM Mitchell McCotter 1999 *Carrington Mine. Environmental Impact Statement*. Prepared for Coal and Allied.
- Kuskie P.J. (South East Archaeology (1998) *An Archaeological Assessment of the Proposed Jerrys Plains Coal Terminal and Rail Line, between Warkworth and Mount Thorley, Hunter Valley, NSW*. Appendix G of Jerrys Plains Coal Terminal & Rail Line Supplementary EIS Information (1997).
- Kuskie, P. J. 1998 *An archaeological assessment of the proposed Wambo Mine conveyor and haul road, near Warkworth, Hunter Valley, New South Wales*. Report to CMPS&F Pty Ltd.
- Kuskie, P.J. and Kamminga, J. 2000 *Salvage of Aboriginal archaeological sites in relation to the F3 Freeway near Lenaghans Drive, Black Hill, New South Wales*. Prepared for the Roads & Traffic Authority, NSW.
- Rich, E. 1991a *Proposed open cut and underground mining at Wambo, near Warkworth in the Hunter Valley, NSW: archaeological survey for Aboriginal sites*. Prepared for Envirosciences Pty Ltd and Wambo Mining Corporation Pty Ltd.
- Rich, E. 1991b *Investigation of Aboriginal sites SW3 and SC4 at South Wambo, near Bulga, NSW*. Prepared for Envirosciences Pty Ltd and Wambo Mining Corporation Pty Ltd.
- Silcox, F. 1998 *Archaeological assessment for a proposed rail spur line and coal loading facility, Jerrys Plains, NSW*. Report to CMPS&F Pty Ltd.
- Sutton, M-J. 2002 *Archaeological assessment United Collieries Extension EIS, Hunter Valley, NSW*. Prepared by HLA Envirosciences for United Collieries Pty Ltd.
- WCPL (2003) *Wambo Development Project Environmental Impact Statement*.
- White E. (2003) *Aboriginal Heritage Assessment*. Appendix D of Wambo Development Project Environment Impact Statement (2003).
- Wonnarua Tribal Council Inc (1997) *Aboriginal Archaeological Survey Report on the proposed Redbank Rail Loop*. Appendix 1 of An Archaeological Assessment of the Proposed Jerrys Plains Coal Terminal and Rail Line, between Warkworth and Mount Thorley, Hunter Valley, NSW (1998).

FIGURE 1
ARCHAEOLOGICAL SITES



ATTACHMENT 4

2005 AHIP APPLICATION – CONSULTATION SUMMARY

19. Wonnarua Tribal Council Inc (1997) *Aboriginal Archaeological Survey Report on the Proposed Redbank Rail Loop*. Appendix 1 of An Archaeological Assessment of the Proposed Jerrys Plains Coal Terminal and Rail Line, between Warkworth and Mount Thorley, Hunter Valley, NSW (1998).

IMPORTANT: NPWS Site Numbers and exact Australian Map Grid References or NPWS Aboriginal Site Recording forms for any sites without NPWS Site numbers must be supplied in Attachment "S" or the application will not be processed.

Attach extra information on additional sheets as necessary.

What is the condition of the site(s)? ie. Aboriginal objects(s) and Aboriginal places(s)

Please refer to Tables 3 and 6.

Land use in the Application Area is characterised by a combination of coal mining operations and agricultural land uses. The general landscape of the Application area is characterised by cleared, predominantly grazing land scattered with vegetated hills. The dominant land use is grazing.

Which Aboriginal groups were involved in the heritage assessment and discussions on the proposed development/activity. Attach additional page(s) if necessary.

(It is NPWS policy that wherever possible, consultation with the local Aboriginal community be carried out by the developer/researcher)

Name of Aboriginal group(s): Refer to Table 4.

Address(es): Refer to Table 4.

Telephone: Refer to Table 4.

Fax: Refer to Table 4.

Person(s) Contacted: Refer to Table 4.

Table 4 presents the contact details for those persons who received correspondence and/or indicated that they wished to be consulted with and/or attended the meetings for this Application.

Table 4
Contact Details

Name of Group	Address	Telephone	Fax	Person Contacted
Upper Hunter Wonnarua Council	Post Office Box 184 SINGLETON NSW 2330	(02) 6571 4888	(02) 6571 4889	Victor Perry Laurie Perry Rhoda Perry Tracey Skene Georgina Berry Glen Miller
Wanaruah Local Aboriginal Land Council	PO Box 127 MUSWELLBROOK NSW 2333	(02) 6543 1288	(02) 6542 5377	Noel Downs Trevor Griffiths Beverly Van Vleit Barry French Janelle Risby Errol Smith Kylie Griffiths Larry Van Vleit Rodney Matthews
Combined Council Aboriginal Corporation	31 Mitchell Street MUSWELLBROOK NSW 2333	(02) 6541 1397	(02) 6541 1392	Margaret Matthews John Matthews
Hunter Valley Cultural Consultants	31 Mitchell Street MUSWELLBROOK NSW 2333	0411 897 099	(02) 6541 1392	Christene Matthews Trevor Archbold
Yarrawalk Enterprises	Lands Council Building 17 – 19 Maitland St MUSWELLBROOK NSW 2333	0422 175 839	(02) 6541 0445	Scott Franks

Table 4 (Continued)
Contact Details

Name of Group	Address	Telephone	Fax	Person Contacted
Ungooroo Aboriginal Corporation	PO Box 3095 SINGLETON NSW 2330	(02) 6571 5111	(02) 6571 5777	Graham Ward Allen Paget Rhonda Ward Shaun Paget David Paget Dahleen Hall Rebecca Faulder Chris Dallen
Lower Wonnarua Tribal Consultancy	156 The Inlet Road BULGA NSW 2330	(02) 6574 5311	(02) 6574 5322	Barry Anderson Lee Panek Marie Waugh
Wattaka Wonnarua CCS	4 Kennedy Street SINGLETON NSW 2330	(02) 6571 1713	(02) 6571 2609	Des Hickey
Wonnarua Nation Aboriginal Corporation	PO Box 3066 Singleton Delivery Centre SINGLETON NSW 2330	0417 212 896 (02) 6572 1077	(02) 6571 4364	Robert Lester
Upper Hunter Heritage Consultants	33 Adams St MUSWELLBROOK NSW 2333	(02) 6542 5650 0422 910 898	(02) 6541 1392	Darrel Matthews Melissa Newman
Wonnarua Custodians	35 Acacia St SINGLETON NSW 2330	(02) 6573 1712		Barbara Foot David Foot
Hunter Valley Aboriginal Corporation	Shop 1/36 Brook St MUSWELLBROOK NSW 2333	02 6543 1180	02 65431106	Julie Griffiths Trevor Griffiths
Giwiirr Consultants	8 Fitzgerald Ave MUSWELLBROOK NSW 2333	02 6541 0506 0421434590	02 6541 0751	Rodney Matthews
Arthur Fletcher	619 Main Rd GLENDALE NSW 2285	0402 146 193 02 4954 7751		Arthur Fletcher
Valley Culture	140 Sydney St MUSWELLBROOK NSW 2333	02 6542 5445 0414872290	02 6542 5652	Larry Van Vleit Beverly Van Vleit Michael Stair

What consultation/involvement has occurred?

Wambo Development Project Environmental Impact Statement (2003)

Presented below is a chronological summary of consultation between Local Aboriginal groups and WCPL in relation to the Wambo Development Project Environmental Impact Statement (EIS):

- November 2002: Individual meetings with the Lower Wonnarua Tribal Council, the Upper Hunter Wonnarua Council (representing the Wonnarua Nation Aboriginal Corporation), the Wanaruah Local Aboriginal Land Council and the Ungooroo Aboriginal Corporation to present a Project description and an invitation to be involved in the survey work.
- 11-21 November 2002: Members of the Lower Wonnarua Tribal Council, the Upper Hunter Wonnarua Council (also representing the Wonnarua Nation Aboriginal Corporation), the Wanaruah Local Aboriginal Land Council and the Ungooroo Aboriginal Corporation participated in field survey work for the Wambo Development Project.
- 4 December 2002: An invitation was extended to all Aboriginal groups to attend the Planning Focus Meeting.
- 12-14 December 2002: Second component of field survey work conducted. Members from the Lower Wonnarua Tribal Council, the Upper Hunter Wonnarua Council (representing the WNA), the Wanaruah Local Aboriginal Land Council, and the Ungooroo Aboriginal Corporation participated in the survey work.

- 14 February 2003: Director Generals Requirements for the Project were issued to WCPL outlining the Aboriginal groups WCPL were required to consult with.
- 24 February 2003: Consultation meeting was held in Singleton.
- 17 March 2003: Consultation meeting with Aboriginal groups, WCPL and Coal & Allied at Wambo.

Consultation with respect to this Application

Consultation with respect to this Application consisted of the following:

- WCPL published a public notice in the “Koori Mail” and the “Singleton Argus” in early March 2005 advising of its intention to make this Application and asking persons with knowledge of, or a right or interest in Aboriginal objects within the Application Area to contact WCPL if they wished to be consulted in regards to the Application (refer to Attachment 4).
- WCPL also wrote separately to individuals from the Upper Hunter Wonnarua Council, Wanaruah Local Aboriginal Land Council, Ungooroo Aboriginal Corporation, Lower Wonnarua Tribal Consultancy, Combined Council Aboriginal Corporation, Hunter Valley Cultural Consultants, Yarrawalk Enterprises, Wattaka Wonnarua CCS, Wonnarua Nation Aboriginal Corporation, Upper Hunter Heritage Consultants and Wonnarua Consultants who participated in consultation and/or field work for the Wambo Development Project EIS and/or who were known to WCPL. These individuals were invited to participate in the consultation for the Application.
- In addition, Hunter Valley Aboriginal Corporation, Giwiirr Consultants, Valley Culture and Arthur Fletcher contacted WCPL in response to the public notice. These individuals were also invited to participate in the consultation for the Application.
- WCPL subsequently contacted these individuals and invited them to attend meetings. The meetings were conducted on the 7 and 8 April 2005 and included discussion of the Research Design and Study Programme (incorporating the Salvage Programme) (Attachment 3). Copies of the Research Design and Study Programme (incorporating the Salvage Programme) were provided to attendees. Table 5 presents a summary of the attendees at these meetings.

Table 5
Consultation Details

Date	Group Name	Attendees
7 April 2005	Valley Culture	Beverly Van Vleit
7 April 2005	Wanaruah Local Aboriginal Land Council	Barry French Janelle Risby
7 April 2005	Combined Council Aboriginal Corporation	Margaret Matthews John Matthews
7 April 2005	Yarrawalk Enterprises	Scott Franks
7 April 2005	Ungooroo Aboriginal Corporation	Graham Ward
7 April 2005	Lower Wonnarua Tribal Consultancy	Barry Anderson
7 April 2005	Wonnarua Nation Aboriginal Corporation	Robert Lester
7 April 2005	Upper Hunter Heritage Consultants	Melissa Newman
7 April 2005	Wonnarua Custodians	Barbara Foot
7 April 2005	Giwiirr Consultants	Rodney Matthews
8 April 2005	Upper Hunter Wonnarua Council	Victor Perry
8 April 2005	Arthur Fletcher	Arthur Fletcher Lynne Fletcher

It should be noted that meetings were also arranged with Hunter Valley Cultural Consultants, Hunter Valley Aboriginal Cultural Consultants and Wattaka Wonnarua CCS. Hunter Valley Cultural Consultants and Hunter Valley Aboriginal Consultants were provided with the Research Design and Study Programme (incorporating Salvage Programme) and provided comment. In addition to the above consultation, telephone conversations were conducted, revealing the following:

- Wattaka Wonnarua CCS informed that they have “no problem” with the Application and wish to be involved in the implementation of the Research Design and Study Programme (incorporating Salvage Programme).
- Arthur Fletcher informed that he is undecided about whether he wishes to be involved in the implementation of the Research Design and Study Programme (incorporating Salvage Programme).
- Graham Ward (Ungooroo Aboriginal Corporation) initially indicated support for the Application (see Attachment 4 - letter 10 April 2005), then withdrew this support over concerns that the Application Area and an application area under Section 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (see below) overlapped (see Attachment 4 - letter 17 April 2005). Subsequently, after further consultation with the DEC, Graham Ward telephoned Resource Strategies on 28 April 2005 and stated that since no determination has been made under Section 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*, WCPL would have “no problem” with the Application in this regard.

Notes and outcomes from the above meetings are presented in Attachment 4. Attachment 4 also includes copies of relevant correspondence and the published public notice.

The results of the consultation have been incorporated into this Application. In particular, one concern raised during consultation was the level of Aboriginal representation in the decision making process regarding methodologies to be implemented at specific sites during the salvage programme. This concern has been incorporated into Section 3.4 of the Research Design and Study Plan (incorporating Salvage Programme) (Attachment 3).

It is also noted that submissions from the Upper Hunter Wonnarua Council and Ungooroo Aboriginal Corporation refer to an application under Section 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (herein referred to as the Section 10 application). The Section 10 application requested that an area around the DEC recorded location of the Bora ground (Site 2 – Figure 1), with a radius of 4 km be protected under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*. A portion of this proposed protection area is within the Application Area. It is understood that the Section 10 application is currently being considered by the Minister for the Environment and Heritage (Commonwealth).

WCPL note the following relevant points in relation to the proposed Bora ground protection area from the extensive surveys and consultation conducted for the Wambo Development Project:

- there is no evidence to support a protection area that constitutes a 4,000 m radius around the Bora ground. In fact, recent consultation undertaken for the Wambo Rail Development with Aboriginal people and elders indicated that the 4,000 m protection zone has no relevance and that there is general satisfaction with the protection measures committed to by WCPL as part of the Wambo Development Project;
- no physical evidence of the Bora ground remains;
- the DEC have been aware of the proposed protection area prior to issuing General Terms of Approval for the Wambo Development Project, as this issue was raised during the EIS consultation;
- the southern extent of underground mining proposed as part of the Wambo Development Project east of the Wollombi Brook was pulled back from the location of the Bora ground and is now about 400 m north of the northern end of the probable location;

- there will be no impact from Wambo Development Project-related activities (including subsidence-related impact) on the recorded Bora ground site;
- The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* is Commonwealth legislation that is expressed not to exclude the operation of State legislation including the *National Parks and Wildlife Act 1974*, where it is capable of operating concurrently with that Act. In our view both pieces of legislation can operate concurrently; and
- At this stage no determination has been made on the Section 10 application. The Director-General of the Department of Environment and Conservation can issue a consent under Section 90 and/or a permit under Section 87 of the *National Parks and Wildlife Act 1974* notwithstanding the consideration or determination of the Section 10 application.

IMPORTANT: A letter from the relevant local Aboriginal group(s) which shows its views on the proposed development/activity must be attached, or attach evidence of attempts to obtain these views

SECTION 90 CONSENTS

Describe the cultural significance of the affected Aboriginal object(s)/places(s) (social, historic, aesthetic, scientific), their educational/demonstrative potential, and their regional and local rarity/representativeness and reference the criteria used in the assessment.

Cultural significance assessed by Aboriginal people (in accordance with DEC methodology) is documented as a result of the consultation carried out for the Wambo Development Project EIS (Attachment 5) and in relation to this Application.

Other significance (interpretive value) of the majority of the previously recorded sites within the Application Area has been determined as part of previous impact assessment studies. Refer to Table 6.

None of the known or predicted archaeological resource within the Application Area is considered to have significance above a local level.

Are there areas of land where Aboriginal objects may occur but are not visible? ☒ Yes ☐ No
If yes, this needs to be clearly marked on the map of the area

Aboriginal objects may exist under the surface of the Application Area.

Areas where it is considered that a PAD may occur are identified in Figure 1 (Attachment 1).

See below under the heading *What impact will occur to the Aboriginal object(s)/place(s)?* for the extent to which a Section 90 consent is sought in relation to currently unidentified Aboriginal objects.

What impact will occur to the Aboriginal object(s)/place(s)?

(Indicate on a map the area and Aboriginal object(s)/place(s) to be impacted by the development/activity)

Refer to Figure 1 (Attachment 1).

ATTACHMENT 5

2013 AHIP VARIATION APPLICATION – CONSULTATION SUMMARY

Date	Consultation Conducted
13 May 2011	Letters requesting the names of Aboriginal stakeholders that may have an interest in the consultation process were sent to the Office of the Registrar (Aboriginal Land Rights Act 1983), Native Title Services Corporation Limited, National Native Title Tribunal, Newcastle OEH, Singleton Shire Council, Wanaruah Local Aboriginal Land Council and the Hunter-Central Rivers Catchment Management Authority.
31 May 2011	Letters seeking registrations of interest were sent to Aboriginal parties or groups identified by the above step, those registered Aboriginal parties involved in the original Section 90 application, and any additional groups involved in salvage or other heritage related works at Wambo.
31 May 2011	Public advertisement inviting interested Aboriginal parties or groups to register an interested in the consultation process.
17 June 2011	Provision of a proposed methodology for undertaking the North Wambo Underground Mine Modification Cultural Heritage Impact Assessment to all registered Aboriginal stakeholders for their review and comment.
June/July 2011	Feedback from the registered stakeholders in regard to the proposed methodology received and consideration given to all comments received on the proposed methodology. <ul style="list-style-type: none"> Two comments were received verbally by telephone. Three comments were received in writing via fax. One comment was received in writing via email.
11 July 2011	Record of names of registered Aboriginal parties provided to the OEH and the Wanaruah LALC in accordance with the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010</i> (NSW Department of Environment, Climate Change and Water, 2010).
21 July 2011	Invitation to registered Aboriginal parties to attend the Aboriginal cultural heritage survey.
29 July and 2 August 2011	Aboriginal cultural heritage survey conducted over a two day period. Cultural significance of the area and Aboriginal heritage sites discussed with the Aboriginal participants.
23 December 2011	Draft Cultural Heritage Impact Assessment issued to the registered stakeholders for review, including survey results, archaeological and cultural significance assessment (based on feedback received during consultation and fieldwork), potential impacts and proposed management and mitigation measures.
December 2011 to January 2012	Comments received from registered Aboriginal parties on the draft Cultural Heritage Impact Assessment were considered and included in the Cultural Heritage Impact Assessment.
27 March 2012	Notification to registered Aboriginal groups of survey completion dates and invitation to attend.
4 April 2012	Due to changes in the mine layout, additional surveys were required. Additional cultural heritage survey conducted over one day. Cultural significance of the area and Aboriginal heritage sites discussed with the Aboriginal participants.
30 August 2012	Amended draft Cultural Heritage Impact Assessment issued to the registered stakeholders for review, including survey results, archaeological and cultural significance assessment (based on feedback received during consultation and fieldwork), potential impacts and proposed management and mitigation measures.
October 2012	Phone calls made to all registered Aboriginal parties to request comments (either verbal or written) on the draft Cultural Heritage Impact Assessment.
October 2012	Comments received from registered stakeholders on the draft Cultural Heritage Impact Assessment were considered and the Cultural Heritage Impact Assessment finalised. <ul style="list-style-type: none"> Three written comments received, including one comment in support. Five registered Aboriginal groups commented verbally that they had no comments on the report.
February 2013	Finalised Cultural Heritage Impact Assessment placed on public exhibition as part of North Wambo Underground Mine Modification EA.

REFERENCES

Department of Environment, Climate Change and Water (2010) *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

ATTACHMENT 6

2015 AHIP VARIATION APPLICATION – CONSULTATION SUMMARY

Date	Consultation Conducted
22 May 2014	Provision of a Proposed Methodology for undertaking the North Wambo Underground Mine Longwall 10A Modification Cultural Heritage Impact Assessment to all Registered Aboriginal Parties for their review and comment.
30 May 2014	Invitation to Registered Aboriginal Parties to attend the Aboriginal cultural heritage survey.
5 – 6 June 2014	Aboriginal cultural heritage survey conducted over a two day period. Cultural significance of the area and Aboriginal heritage sites discussed with the representatives of the Registered Aboriginal Parties.
11 June 2014	Information session held for all Registered Aboriginal Parties at the Wambo Coal Mine to present information regarding the Longwall 10A Modification, and the provide Registered Aboriginal Parties with an additional opportunity to raise any cultural issues or comments.
18 June 2014	Copy of the information session presentation material provided to all Registered Aboriginal Parties, along with a request for comments on the Proposed Methodology.
June 2014	At the close of the Proposed Methodology review period, no feedback had been received from the Registered Aboriginal Parties in regard to the Proposed Methodology.
4 July 2014	Draft Cultural Heritage Impact Assessment issued to all Registered Aboriginal Parties for review, including survey results, archaeological and cultural significance assessment (based on feedback received during consultation and fieldwork), potential impacts and proposed management and mitigation measures.
29 July 2014	Phone calls made to all Registered Aboriginal Parties to request comments (either verbal or written) on the draft Cultural Heritage Impact Assessment.
July – August 2014	Comments received from Registered Aboriginal Parties on the draft Cultural Heritage Impact Assessment were considered and included as the Cultural Heritage Impact Assessment was finalised: <ul style="list-style-type: none"> Two written comments received from the Registered Aboriginal Parties. Fifteen Registered Aboriginal Parties commented verbally that they had no comments on the draft Cultural Heritage Impact Assessment.
September 2014	Finalised Cultural Heritage Impact Assessment placed on public exhibition as part of North Wambo Underground Mine Longwall 10A Modification EA and provided to all Registered Aboriginal Parties.

REFERENCES

Department of Environment, Climate Change and Water (2010) *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

ATTACHMENT 7
WAMBO COAL MINE AHIP #2222

Issue of Aboriginal Heritage Impact Permit

National Parks and Wildlife Act 1974 (NPW Act)



**Office of
Environment
& Heritage**

Your reference: Consent 2222 Variation Application
Our reference: AHIMS No. 2222 / FIL12/7057
Notice number: 1132267
Contact: Roger Mehr, 6773 7005.

WAMBO COAL PTY LIMITED,
Trading as WAMBO COAL PTY LTD,
ABN 13 000 668 057,
PMB 1,
SINGLETON NSW 2330
STANDARD POST

NOTICE OF THE ISSUE OF ABORIGINAL HERITAGE IMPACT PERMIT AHIMS #2222

Issued pursuant to section 90C(4) of the *National Parks and Wildlife Act 1974*

BACKGROUND

- A. WAMBO COAL PTY LIMITED trading as WAMBO COAL PTY LTD (the applicant) applied to the Office of Environment and Heritage, Department of Premier and Cabinet (OEH) under section 90A of the *National Parks and Wildlife Act 1974* (NPW Act) for an Aboriginal Heritage Impact Permit (AHIP). The AHIP variation application was in relation to variation of AHIP #2222 to include a small number of Aboriginal objects not covered by the existing AHIP.
- B. OEH received the application on 18-Mar-2013 and further information was received on 03-June-2013.

ISSUE OF ABORIGINAL HERITAGE IMPACT PERMIT VARIATION

- 1. OEH has considered the application and supporting information provided, and matters under section 90K of the NPW Act and has decided to issue an AHIP Variation (Variation #1132265) subject to conditions.
- 2. The AHIP Variation is attached.
- 3. You should read the AHIP Variation carefully and ensure you comply with its conditions.

It is an offence under section 90J NPW Act to fail to comply with the conditions of the AHIP. The maximum penalty that a court may impose on a corporation for failing to comply with this AHIP is \$1.1m. OEH can also issue penalty notices for this offence.

Issue of Aboriginal Heritage Impact Permit

National Parks and Wildlife Act 1974 (NPW Act)



**Office of
Environment
& Heritage**

Mr Richard Bath

Unit Head

North East - Hunter

(by Delegation)

Date: 02-Aug-2013

INFORMATION ABOUT THIS NOTICE

- Details provided in this notice will be available on OEH's Public Register in accordance with section 188F of the National Parks and Wildlife Act 1974.

Variation of this AHIP

- This AHIP may only be varied on application by the AHIP holder or by OEH to correct typographical errors or resolve inconsistencies between conditions of the AHIP. A permit can only be varied by subsequent variation notices.

Appeals against this decision

You can appeal to the Land and Environment Court against this decision. The deadline for lodging the appeal is 21 days after you were given notice of this decision.

Variation of Aboriginal Heritage Impact Permit



Office of
Environment
& Heritage

National Parks and Wildlife Act 1974 (NPW Act)

Our reference: AHIMS No. 2222 / DOC13/9706
Notice number: 1132265
Contact: Roger Mehr, 6773 7005

WAMBO COAL PTY LIMITED,
Trading as WAMBO COAL PTY LTD,
ABN 13 000 668 057,
PMB 1,
SINGLETON NSW 2330

NOTICE OF VARIATION OF ABORIGINAL HERITAGE IMPACT PERMIT NO. 2222

Issued pursuant to section 90D(5) *National Parks and Wildlife Act 1974*

BACKGROUND

- A. WAMBO COAL PTY LIMITED trading as WAMBO COAL PTY LTD (the applicant) applied to the Office of Environment and Heritage, Department of Premier and Cabinet (OEH) to vary Aboriginal Heritage Impact Permit No. 2222 (the AHIP) granted under section 90D *National Parks and Wildlife Act 1974* (NPW Act). The AHIP authorises the carrying out of the destruction of an Aboriginal object/place and permit to collect and/or excavate for the purpose of salvage.
- B. OEH received the application on 18-Mar-2013.
- C. OEH has considered the matters set out in section 90K of the NPW Act.

VARIATION OF ABORIGINAL HERITAGE IMPACT PERMIT

- 1. OEH has decided to grant this variation. By this notice OEH varies AHIP Number 2222 in the following manner:

Variation 1.

Schedule B on Page 2 of 6 of AHIP 2222 defines the AHIP area, which reads:

"The "Application Area", as defined in the text and illustrations of the Consent Application".

is replaced by:

"The "Application Area", as defined in the text and illustrations of the AHIP variation application which appears as Attachment 1 of this Notice of Variation".

Variation of Aboriginal Heritage Impact Permit



Office of
Environment
& Heritage

National Parks and Wildlife Act 1974 (NPW Act)

2. You must provide a copy of this AHIP variation notice to each Registered Aboriginal Party referenced in AHIP Number 2222, within 14 days.

Mr Richard Bath

Unit Head

North East - Hunter

(by Delegation)

Date: 02-Aug-2013

INFORMATION ABOUT THIS VARIATION NOTICE

- Details provided in this notice will be available on OEH's Public Register in accordance with section 188F of the NPW Act.
- You should read this Variation Notice carefully and ensure that you continue to comply with **all** conditions of the original AHIP 2222 issued on 20 June 2005, **as amended** by this Variation Notice. The format of this Variation Notice requires that it must be read in conjunction with the original AHIP.

When this notice begins to operate

- The variations to the AHIP specified in this notice begin to operate immediately from the date of this Variation Notice, unless another date is specified in this notice.

Variation of this notice

- This Variation Notice may only be varied by subsequent notices issued by OEH.

Appeals against this decision

- You can appeal against this decision to the Land and Environment Court. The deadline for lodging the appeal is 21 days after the date that this notice was issued.

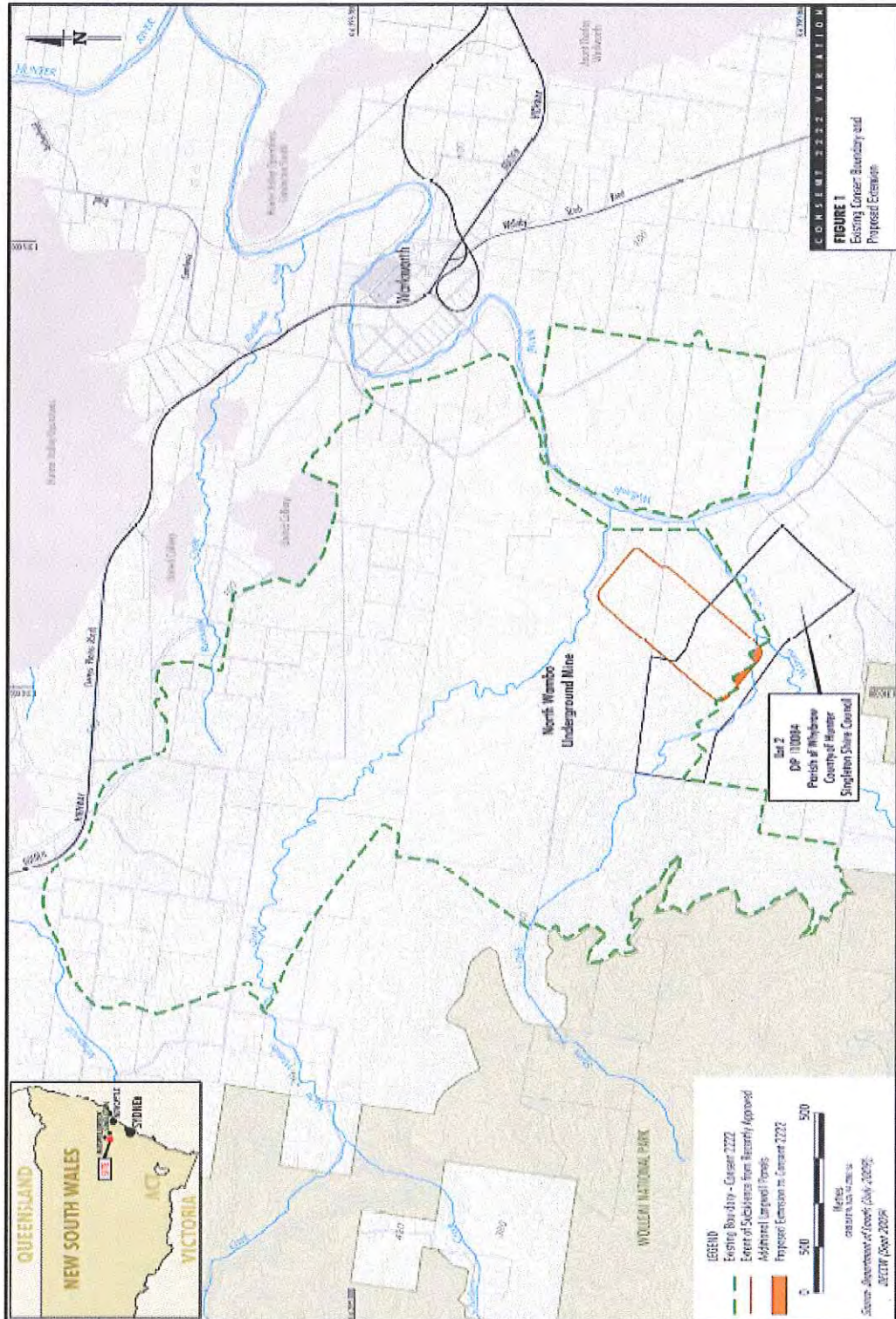
Variation of Aboriginal Heritage Impact Permit



Office of
Environment
& Heritage

National Parks and Wildlife Act 1974 (NPW Act)

Attachment 1 Boundary of AHIP2222 showing the area added in the variation notice #1132265.



Aboriginal Heritage Impact Permit

Notice of Variation

National Parks and Wildlife Act 1974 (NPW Act)

Department of Environment & Climate Change NSW



BACKGROUND

1. An AHIP #2222 was issued to Wambo Coal Pty Ltd on the 20 June 2005 by the Department of Environment, Climate Change and Water (DECCW) under sections 87 and 90 of the *National Parks and Wildlife Act 1974 (NPW Act)*.
2. The original heritage consultant engaged conducted part of the works under this AHIP, however, differences of opinions of the contractual arrangements halted any further works from proceeding.
3. In 2010 Wambo Coal Pty Ltd provided documentation to DECCW of their unsuccessful attempts to meet the conditions of the AHIP and for gaining care and control of the salvaged artefacts back from the original consultants.
4. DECCW contacted the consultants holding the objects, with instructions to return them to the location stipulated in AHIP #2222. The salvaged objects were returned to Wambo Coal Pty Ltd on xx date, however, no documentation or reporting of the salvage works were provided with the return of the salvaged objects.
5. Wambo Coal Pty Ltd appointed another consultant to finalise the works under AHIP #2222. In an effort to collate, analyse and sort through the salvage process and objects to complete the reporting process required under AHIP #2222, Wambo Coal and their consultant requested additional time be granted.
6. On the 19 April 2010, Wambo Coal Pty Ltd requested the Director-General of the DECCW to extend the period of AHIP #2222 for an additional 5 years.
7. DECCW understands that none of the original salvage reporting or documentation was provided, therefore, to adequately report on the process, additional time is required.
8. Wambo Coal Pty Ltd has conducted consultation with the local Aboriginal groups and has received full support from each representative.

NOTICE OF VARIATION

I, Monica Collins, Acting Manager Planning and Aboriginal Heritage Section, North East Branch of the Department of Environment, Climate Change and Water (DECCW), as the Director-General of DECCW's delegate, vary the terms and conditions of the AHIP #2222 issued to Wambo Coal Pty Ltd on the 20 June 2005 as follows:

Aboriginal Heritage Impact Permit Notice of Variation

National Parks and Wildlife Act 1974 (NPW Act)

Department of **Environment & Climate Change** NSW



Variation 1 -

Wherever AHIP #2222 refers to being valid for a period of 5 years, this is now taken to be mean AHIP #2222 is valid for a period of 10 years (expiring on the 19 June 2015).

This variation must be attached to the original AHIP for the variations to be valid.



**Monica Collins
A/Manager North Coast Region
Environment Protection and Regulation Group
Department Environment, Climate Change and Water
Friday, 7 May 2010**



Department of
Environment and Conservation (NSW)

CONSENT #: 2222

NATIONAL PARKS AND WILDLIFE ACT 1974

SECTION 87 and 90

**CONSENT TO CARRY OUT THE DESTRUCTION OF AN ABORIGINAL
OBJECT/PLACE AND PERMIT TO COLLECT AND/OR EXCAVATE FOR
THE PURPOSE OF SALVAGE**

WHEREAS the Aboriginal objects described in Schedule "A" are situated upon the land described in Schedule "B", and constitute Aboriginal objects within the meaning of Section 90 of the National Parks and Wildlife Act 1974, and WHEREAS application has been made by:

**Mr T Sutherland, Project Manager,
Wambo Development Project**

of :

**Wambo Coal Pty Limited
Golden Highway
WARKWORTH NSW 2330**

FOR CONSENT to destroy those objects in the course of: **archaeological salvage and subsequent development of the Wambo Development Project in accordance with the Development Consent issued by the Minister Assisting the Minister for Infrastructure and Planning on 4 February 2004 (DA 305-7-2003-i), Singleton Local Government Area, NSW.**

NOW I, Lisa Corbyn, Director-General of the Department of Environment and Conservation, in pursuance of Section 90 of the said Act, and subject to the conditions hereunder set out DO HEREBY CONSENT to the destruction of the said objects by the said applicant. AND FURTHER, in accordance with the said Conditions and in pursuance of Section 87 of the said Act, I DO HEREBY PERMIT the salvage collection of the said objects from the aforesaid land, prior to destruction of the objects, by the nominated Archaeologists (Navin Officer Heritage Consultants Pty Ltd) and representatives of the Aboriginal community.

TERMS AND CONDITIONS OF THIS CONSENT

This Consent is issued subject to General Terms and Conditions covering all Permits and Consents, as well as the Specific Terms and Conditions pertaining to Consents to destroy Aboriginal objects and any Special Conditions, all of which are detailed in the attached pages.

DATED at COFFS HARBOUR this

20th day of June, 2005.

Gary Davis
Director North East Branch
Issued for the Director-General of
Department of Environment and Conservation

SCHEDULE A:

Generally, all Aboriginal objects, within the definition of the *National Parks and Wildlife Act 1974*, but excluding human skeletal remains.

This includes, but is not limited to, Aboriginal objects described in Tables 1-3 of the following documentation:

- *Wambo Coal Pty Limited. April 2005. Wambo Development Project, Application for Permit under Section 87 and Consent under Section 90 of the National Parks and Wildlife Act 1974.*

This document was registered with the Department of Environment and Conservation on 28 April 2005 as DOC 05/08179, and is hereafter referred to as 'the Consent Application'.

SCHEDULE B:

The "Application Area", as defined in the text and illustrations of the Consent Application.

SPECIAL CONDITIONS APPLYING TO CONSENTS WITH SALVAGE

1. The Consent Holder shall ensure that no works (ie disturbance and/or the salvage of known Aboriginal objects as described in the Consent Application) are undertaken within the portion of the Application Area that is also the subject of the Application that has been made under Section 10 of the *Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984*, until such time as the Section 10 Application has been determined by the Commonwealth Minister for Environment and Heritage.
2. The Consent Holder shall ensure that should any human remains be located during ground disturbing works, all work in the vicinity must cease immediately and the NSW Police Department and the Department of Environment and Conservation, North East Branch, be notified immediately. Work must not commence in the vicinity until such time as DEC officers have examined the find and discussed its management.
3. The Consent Holder shall ensure that the Aboriginal heritage salvage program is conducted in accordance with the methods described in Attachment 3 of the Consent Application.
4. Prior to the commencement of the first phase of the salvage program that is described in Attachment 3 of the Consent Application, the Consent Holder shall ensure that a schedule of the Aboriginal objects/sites to be the subject of that phase is provided to the Department of Environment and Conservation. The Consent Holder shall ensure that a similar schedule is provided to the Department of

Environment and Conservation in advance of all subsequent fieldwork phases.

5. The Consent Holder shall ensure that any proposals to modify the salvage methodology are firstly discussed with the Aboriginal community, and have the endorsement of the Department of Environment and Conservation, prior to modifications being implemented. This is of particular relevance to Section 3.4.4 of the salvage methodology described in Attachment 3 of the Consent Application, which details the proposed 'Excavation Program Designed to Test for the presence of Deep Archaeological Deposits'. The Consent Holder shall ensure that the Department of Environment and Conservation is consulted on the "extent, scope and methodology of any follow-on salvage excavations" that may be proposed in the context of Section 3.4.4 of Attachment 3.
6. The Consent Holder shall ensure that the Proposed Management Measures detailed in Table 6 of the Consent Application for Aboriginal objects/sites in the Remnant Woodland Enhancement Programme Areas be undertaken on an as needs basis. Where possible, management measures to be implemented for habitat conservation and/or restoration within these areas are to be undertaken in a manner that minimises impact to Aboriginal cultural heritage and the need to collect and re-locate Aboriginal objects. The Consent Holder shall ensure that these considerations are incorporated within the broader Fauna & Flora Offset Strategy (Conditions 40-41, 44-48 & 51, Schedule 4 of the Development Consent issued on 4 February 2004 for DA 305-7-2003-i).
7. The Consent Holder shall ensure that protocols for the long-term management of Aboriginal objects/sites within the Application Area and Mining Lease generally are incorporated within the broader Environmental Management Strategy for the Wambo Development Project (Condition 1, Schedule 6 of the Development Consent issued on 4 February 2004 for DA 305-7-2003-i).

SPECIFIC CONDITIONS APPLYING TO CONSENT WITH SALVAGE

1. The Consent covers only those Aboriginal objects described in the instrument of Consent and in any Schedules thereto.
2. The Consent is conditional upon all relevant development approvals having been obtained.
3. Should the Aboriginal objects listed in Schedule 'A' above remain in existence five (5) years from the date of this document, the Consent shall be deemed to be void, and any further damage to the Aboriginal objects will require the preparation of a new Consent document.
4. Should any 'object', defined under the Heritage Act of NSW be uncovered, then excavation or disturbance of that area is to stop

immediately and the Heritage Council of NSW is to be informed in accordance with S.146 of the Heritage Act, 1977 (as amended).

The Heritage Council can be contacted on (02) 9635 6155.

An 'object' under the Heritage Act is defined as any deposit, object or material evidence-

- (a) which relates to the settlement of the area that comprises NSW, not being Aboriginal settlement; and
 - (b) which is 50 or more years old.
5. The holder of the Consent shall furnish the Department of Environment and Conservation with a report at the completion of the salvage work or expiry of the Consent or any renewal thereof, whichever occurs first. Such report shall include:
- a complete list of all material recovered;
 - a detailed description of the methods of excavation/collection and analysis used;
 - a detailed plan of the site, including the location of collection areas, all trenches, auger holes and spoil heaps;
 - summary of consultation undertaken with relevant Local Aboriginal Land Councils or relevant Aboriginal Community Groups.

GENERAL TERMS AND CONDITIONS

1. Permits and Consents are not transferable.
2. A Permit covers only that area stated in the Permit.
3. A Consent covers only that area stated in the instrument of Consent and in any Schedules thereto.
4. Permits may be revoked at any time at the discretion of the Director-General.
5. Terms and conditions of Permits may be varied at any time at the discretion of the Director-General.
6. The Person to whom the Permit is issued or the Consent granted shall be responsible for the manner in which the work covered by the Permit or Consent is performed.
7. An officer of the Department of Environment and Conservation, acting on the authority of the Director-General, may at any time examine work done or any objects recovered under any Permit or Consent.
8. Permits and Consents are necessary for all activities for which they are issued or granted, but do not in themselves give authority to enter or work on freehold land or leased Crown Land. Permission must be sought from the owner or occupier and arrangements made with him/her.
9. The holder of the Permit or Consent shall furnish, when required to do so, an undertaking to indemnify the Department of Environment and

Conservation against all actions, suits, claims and demands of whatsoever nature and all costs, charges and expenses in respect of any accident or injury to any person or property which may arise solely out of the existence of any works associated with the Permit or Consent.

10. All reports received in connection with work carried out under a Permit or Consent shall be treated as confidential but the Department of Environment and Conservation shall have the right to copy all such reports, to allow consideration thereof by qualified referees.
11. For a period of five years from the date of issue of the Permit or Consent, the holder of the Permit or Consent may refuse to allow the Department of Environment and Conservation and The Australian Museum, if such information is held by those institutions, to make public any information contained in any report referred to in Condition 10 above, except where it is deemed necessary for management, protection or research reasons. After this period of five years from the date of issue of the Permit or Consent, the Department of Environment and Conservation and The Australian Museum shall have the right to use and authorise the use of information contained in all reports submitted under the Permit or Consent, except where specifically requested by the holder of the Permit or Consent.
12. Upon publication of any information relating to work done under a Permit or Consent, a copy of such publication(s) shall be forwarded to the Department of Environment and Conservation, The Australian Museum, Sydney, and the Australian Institute of Aboriginal and Torres Strait Islander Studies, Canberra, unless permission to do otherwise has been obtained from the Department of Environment and Conservation.
13. The holder of the Permit or Consent shall consult with the local Aboriginal community regarding the work covered by the Permit or Consent and shall respond to any reasonable request to involve the Aboriginal community in the work.
14. The Department of Environment and Conservation and The Australian Museum may supply copies of relevant reports as furnished by the holder of the permit or Consent to local Aboriginal communities. Upon request by the Department of Environment and Conservation, the holder of the Permit or Consent shall supply a summary of his/her findings with photographs, diagrams, etc., as required, to local Aboriginal communities or other interest local groups.
15. The holder of the Permit or Consent shall keep field records and a copy of all such records shall be lodged with the Department of Environment and Conservation at the termination of each field work period.
16. In the event of a Permit being revoked -
 - a) The Person to whom that Permit was issued shall
 - (i) Furnish an undertaking to indemnify the Department of Environment and Conservation

against all actions, suits, claims and demands of whatsoever nature, and all costs, charges and expenses in respect of any accident or injury to any person or property which may arise solely out of the existence of any works associated with the Permit;

- (ii) leave the areas, the subject of that Permit, in a condition satisfactory to the Department of Environment and Conservation within two weeks from the date of revocation of that Permit;
 - (iii) furnish the Department of Environment and Conservation within six months from the date of revocation of the Permit, a full report on the work completed at the date of revocation. Such a report shall include a complete list of any material recovered;
 - (iv) deposit any Aboriginal objects removed during work associated with the Permit, together with a copy of all field records, at The Australian Museum or at another place designated by the Museum, after these Aboriginal objects have been fully examined, or within six months from the date of revocation of that Permit whichever occurs sooner.
- (b) The Department of Environment and Conservation and The Australian Museum shall have the right to use and authorise the use of information collected under the Permit.

ATTACHMENT 8

SUBSIDENCE PREDICTIONS FOR ABORIGINAL HERITAGE SITES

Site Name	Type	Predicted Total Subsidence after LW8 (mm)	Predicted Total Subsidence after LW9 (mm)	Predicted Total Subsidence after LW10 (mm)	Predicted Total Subsidence after LW10A (mm)	Predicted Total Tilt after LW8 (mm/m)	Predicted Total Tilt after LW9 (mm/m)	Predicted Total Tilt after LW10 (mm/m)	Predicted Total Tilt after LW10A (mm/m)	Hogging Curvature after LW8 (1/km)	Hogging Curvature after LW9 (1/km)	Hogging Curvature after LW10 (1/km)	Hogging Curvature after LW10A (1/km)	Sagging Curvature after LW8 (1/km)	Sagging Curvature after LW9 (1/km)	Sagging Curvature after LW10 (1/km)	Sagging Curvature after LW10A (1/km)
45	Isolated Find	< 20	< 20	80	80	< 0.5	< 0.5	2	2	< 0.01	< 0.01	0.03	0.03	< 0.01	< 0.01	< 0.01	< 0.01
46	Artefact Scatter	< 20	150	1,400	1,400	< 0.5	5	20	20	< 0.01	0.15	0.40	0.40	< 0.01	0.04	0.04	0.04
47	Isolated Find	< 20	< 20	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
48	Isolated Find	< 20	150	150	150	< 0.5	4	4	4	< 0.01	0.15	0.15	0.15	< 0.01	0.01	0.01	0.01
50	Artefact Scatter	30	30	30	30	1	1	1	1	0.02	0.02	0.02	0.02	< 0.01	< 0.01	< 0.01	< 0.01
52	Isolated Find	1,850	1,850	1,850	1,850	30	30	30	30	0.45	0.45	0.45	0.45	0.60	0.60	0.60	0.60
53	Artefact Scatter	1,600	1,600	1,600	1,600	25	25	25	25	0.50	0.50	0.50	0.50	0.45	0.45	0.45	0.45
54	Artefact Scatter	2,250	2,250	2,250	2,250	20	20	20	20	0.65	0.65	0.65	0.65	0.60	0.60	0.60	0.60
55	Artefact Scatter	1,150	1,150	1,150	1,150	25	25	25	25	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30
56	Isolated Find	1,600	1,650	1,650	1,650	20	20	20	20	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
57	Artefact Scatter	150	350	350	350	6	7	7	7	0.15	0.25	0.25	0.25	0.04	0.10	0.10	0.10
58	Isolated Find	< 20	2,100	2,100	2,100	< 0.5	25	25	25	< 0.01	0.65	0.65	0.65	< 0.01	0.60	0.60	0.60
59	Isolated Find	60	1,950	1,950	1,950	2	20	20	20	0.02	0.70	0.70	0.70	0.02	0.65	0.65	0.65
60	Artefact Scatter	400	900	900	900	10	10	10	10	0.20	0.35	0.35	0.35	0.15	0.25	0.25	0.25
61	Artefact Scatter	800	950	950	950	15	15	15	15	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25
98a	Artefact Scatter	< 20	< 20	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
98b	Artefact Scatter	< 20	2,050	2,100	2,100	< 0.5	50	50	50	< 0.01	2.00	2.00	2.00	< 0.01	2.00	2.00	2.00
99	Artefact Scatter	1,400	1,400	1,400	1,400	50	50	50	50	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
333	Artefact Scatter	< 20	1,250	1,250	1,250	< 0.5	25	25	25	< 0.01	0.25	0.30	0.30	< 0.01	0.45	0.45	0.45
336	Artefact Scatter	< 20	< 20	< 20	900	< 0.5	< 0.5	< 0.5	20	< 0.01	< 0.01	< 0.01	0.90	< 0.01	< 0.01	< 0.01	0.00
337	Artefact Scatter	< 20	< 20	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
338	Artefact Scatter	< 20	2,050	2,050	2,050	< 0.5	20	20	20	< 0.01	0.60	0.60	0.60	< 0.01	0.60	0.60	0.60
347	Artefact Scatter	2,300	2,300	2,300	2,300	15	15	15	15	0.85	0.85	0.85	0.85	0.80	0.80	0.80	0.80
348	Artefact Scatter	2,100	2,100	2,100	2,100	25	25	25	25	0.60	0.60	0.60	0.60	0.65	0.65	0.65	0.65
351	Artefact Scatter	600	600	600	600	15	15	15	15	0.30	0.35	0.35	0.35	0.20	0.20	0.20	0.20
352	Artefact Scatter	< 20	2,250	2,250	2,250	< 0.5	30	30	30	< 0.01	0.90	0.90	0.90	< 0.01	0.90	0.90	0.90
353	Artefact Scatter	150	275	275	275	5	7	7	7	0.15	0.30	0.30	0.30	0.05	0.10	0.10	0.10
354	Artefact Scatter	< 20	< 20	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
356	Artefact Scatter	40	900	900	900	1	25	25	25	0.10	0.45	0.45	0.45	0.01	0.30	0.30	0.30
357	Artefact Scatter	< 20	850	850	850	< 0.5	25	25	25	< 0.01	0.55	0.55	0.55	< 0.01	0.35	0.35	0.35
358	Isolated Find	< 20	< 20	2,550	2,550	< 0.5	< 0.5	10	10	< 0.01	< 0.01	0.95	0.95	< 0.01	< 0.01	0.90	0.90
359	Artefact Scatter	2,300	2,300	2,300	2,300	15	15	15	15	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
361	Isolated Find	< 20	1,850	1,850	1,850	< 0.5	45	45	45	< 0.01	1.50	1.50	1.50	< 0.01	2.00	2.00	2.00
362	Artefact Scatter	< 20	800	800	800	< 0.5	25	25	25	< 0.01	1.00	1.00	1.00	< 0.01	0.80	0.80	0.80
363	Artefact Scatter	< 20	< 20	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
371	Isolated Find	< 20	< 20	< 20	3700	< 0.5	< 0.5	< 0.5	20	< 0.01	< 0.01	< 0.01	1.50	< 0.01	< 0.01	< 0.01	1.40
372	Isolated Find	< 20	< 20	< 20	4000	< 0.5	< 0.5	< 0.5	20	< 0.01	< 0.01	< 0.01	1.50	< 0.01	< 0.01	< 0.01	1.40
373	Isolated Find	< 20	< 20	< 20	4500	< 0.5	< 0.5	< 0.5	35	< 0.01	< 0.01	< 0.01	0.10	< 0.01	< 0.01	< 0.01	0.00
374	Isolated Find	< 20	< 20	< 20	3100	< 0.5	< 0.5	< 0.5	55	< 0.01	< 0.01	< 0.01	3.00	< 0.01	< 0.01	< 0.01	2.90
ST3 (360)	Scarred Tree	200	300	300	300	7	5	5	5	0.20	0.30	0.30	0.30	0.05	0.10	0.10	0.10
ST4	Scarred Tree	2,300	2,300	2,300	2,300	20	20	20	20	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90

Source: MSEC (2014a, 2014b, 2015).

km – kilometre.

LW – longwall.

m – metre.

mm – millimetres.

mm/m – millimetres per metre.

ATTACHMENT 9

WAMBO COAL MINE CARE AND CONTROL PERMIT #3130

NATIONAL PARKS AND WILDLIFE ACT 1974

SECTION 87(1)

PERMIT FOR CUSTODY AND CONTROL OF ABORIGINAL OBJECTS SALVAGED
UNDER ABORIGINAL HERITAGE IMPACT PERMITS (AHIP) #2085 and #2222 IN
ACCORDANCE WITH SECTION 87/90 OF THE NPW ACT 1974.

Permit issued to: **Sarah Bailey**
WAMBO COAL PTY. LTD.
ABN No. 13 000 668 057

Address: **Wambo Coal Mine**
Jerry's Plains Rd
Warkworth NSW 2330

Authority is hereby given for the organisation named above to have custody and control
of the Aboriginal cultural objects listed below:

1. All objects salvaged from the 257 Sites and 16 Potential Archaeological Deposits listed in AHIP #2222 issued by DECCW on 20 June 2005 (as specified in *Wambo Coal Pty Ltd. April 2005. Wambo Development Project, Application for Permit under Section 87 and consent under Section 90 of the National Parks and Wildlife Act 1974.* – refer Tables 1, 2 and 3)
2. All objects salvaged from the 25 Sites as listed in AHIP #2085 issued by DECCW on 14 December 2004.

TERMS AND CONDITIONS OF THIS PERMIT:

This Permit is issued subject to **General Terms and Conditions** (see over) pertaining to every Permit for Custody and Control. This Permit is also subject to any **Specific Conditions** which are also detailed hereunder.

Dated at Grafton this **2 day of March, 2010.**



Brett Nudd

A/Manager North Coast Region
North East Branch

Issued on behalf of the Director-General of Department of Environment, Climate
Change and Water

General Terms and Conditions

1. Permits are not transferable.
2. A Permit covers only that area, or those objects, stated in the Permit
3. A Permit covers only that area stated in the instrument and in any Schedules thereto.
4. Permits may be revoked at any time at the discretion of the Director-General of DECCW.
5. Terms and conditions of Permits may be varied at any time at the discretion of the Director-General of DECCW.
6. The Person to whom the Permit is issued shall be responsible for the manner in which the work covered by the Permit is performed.
7. An officer of the Department of Environment, Climate Change and Water, acting on the authority of the Director-General, may at any time examine work done or any objects recovered under any Permit.
8. Permits are necessary for all activities for which they are issued or granted, but do not in themselves give authority to enter or work on freehold land or leased Crown Land. Permission must be sought from the owner or occupier and arrangements made with him/her.
9. The holder of the Permit shall furnish, when required to do so, an undertaking to indemnify the DECCW against all actions, suits, claims and demands of whatsoever nature and all costs, charges and expenses in respect of any accident or injury to any person or property which may arise solely out of the existence of any works associated with the Permit.
10. The DECCW shall have the right to copy all such reports prepared under DECCW Permits, to allow consideration thereof by qualified referees.
11. For a period of five years from the date of issue of the Permit, the holder of the Permit may refuse to allow the DECCW to make public any information contained in any report referred to in Condition 10 above, except where it is deemed necessary for management, protection or research reasons.

After this period of five years from the date of issue of the Permit, the DECCW shall have the right to use and authorise the use of information contained in all reports submitted under the Permit, except where specifically requested by the holder of the Permit.

12. Upon publication of any information relating to work done under a Permit, a copy of such publication(s) shall be forwarded to the DECCW, north east branch.

13. The holder of the Permit shall consult with the local Aboriginal community regarding the work covered by the Permit and shall respond to any reasonable request to involve the Aboriginal community in the work.
14. The DECCW may supply copies of relevant reports as furnished by the holder of the Permit to local Aboriginal communities. Upon request by the Service, the holder of the Permit shall supply a summary of his/her findings with photographs, diagrams, etc., as required, to local Aboriginal communities or other interested local groups.
15. The holder of the Permit shall keep field records and a copy of all such records shall be lodged with the DECCW at the termination of each field work period if requested.
16. The holder of the Permit shall notify the local office of the DECCW at the commencement and completion of fieldwork, and shall supply to District officers details of field work programs and results if requested.
17. In the event of a Permit being revoked -
 - a) The Person to whom that Permit was issued shall
 - (i) Furnish an undertaking to indemnify the DECCW against all actions, suits, claims and demands of whatsoever nature, and all costs, charges and expenses in respect of any accident or injury to any person or property which may arise solely out of the existence of any works associated with the Permit;
 - (ii) leave the areas, the subject of that Permit, in a condition satisfactory to the DECCW within two weeks from the date of revocation of that Permit;
 - (iii) furnish the DECCW within six months from the date of revocation of the Permit, a full report on the work completed at the date of revocation. Such a report shall include a complete list of any material recovered.
 - (iv) deposit any Aboriginal objects removed during work associated with #2222 and #2085, together with a copy of all field records, at The Australian Museum or at another place designated by the Museum, within 1 month from the date of the revocation of that Permit.
 - (b) The DECCW shall have the right to use and authorise the use of information collected under the Permit.

Specific Terms and Conditions

1. Aboriginal objects are to be stored securely by the Permit holder as described in the application dated 23 February 2009 (Job Reference 25586451) and registered with DECCW as DOC09/30002 in FIL09/8301.
2. The Permit holder is to notify DECCW in writing within 7 days of relocation of the Aboriginal objects under Condition 1.
3. Should Aboriginal objects be loaned out for an educational or display purpose, the responsibility for the safe keeping still rests with the Permit holder.
4. The Aboriginal objects may not be moved to a new location without the approval of the Director-General of DECCW. If it is proposed to transfer custody and control, the intended recipient must forward an application for a Custody and Control Permit prior to the transfer taking place.
5. Access to the Aboriginal objects is to be provided to bona fide researchers and organisations.
6. Access under condition 5 must be approved by the Permit holder.
7. Site cards must be submitted and registered with the DECCW Aboriginal Heritage and Information System (AHIMS) for the following sites prior to the relocation of any objects within them under this Permit. It is the responsibility of the Permit holder to obtain confirmation from the DECCW that registration has occurred.

Wambo Sites 23, 47, 48, 74, 77-80, 85-97, 108, 113, 116, 154 and 166.

Please also note:

- a. Sites 98 (37-5-0186), 102-105 (37-5-0183), 117-120 (37-5-0173, 37-5-0488, 37-5-0489, 37-5-0490) and 122-126 (37-5-0172) listed on AHIP Permit #2222 and Sites JP5 to 31 (37-6-1434 to 37-6-1450) listed on AHIP Permit #2085 as being unregistered at the time are now confirmed by DECCW as being registered and subject to this Permit.
 - b. It is a requirement under Section 91 of the NPW Act that all outstanding Aboriginal Sites discovered are registered with the DECCW.
8. All Potential Archaeological Deposits (PADs) listed in Table 2 of AHIP # 2222 are to be registered as Sites (if not already) in AHIMS, in the event that any objects associated with them are or already have been discovered.
 9. This Permit is valid for five years from the date of signature by the Director-General's delegate or until such time as AHIP #2222 is varied to address the temporary storage of objects or a permanent location for the objects is agreed with the Aboriginal Working Group and approved by the DECCW whichever is the sooner.