THE Bloomfield GROUP

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17 December 2012
Our Ref: DP&I031212PF

Manager – Mining Projects
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Paul Freeman

Dear Mr Freeman,

RE: BLOOMFIELD COAL PROJECT – MODIFICATION OF PA 07-0087

Bloomfield Colliery Pty Limited seeks to modify PA 07_0087 to facilitate a change to areas of vegetation clearing which is covered by our Biodiversity Offset Area. Attachments 1-4 of this letter outlines the proposed modification to the project approval.

Under the proposed modification the Project will remain substantially the same as the approved development.

The Project was approved under Part 3A *Environmental Planning and Assessment Act 1979* (EP&A Act) and Bloomfield Colliery Pty Limited requests that the Minister for Planning approve the proposed modification under Section 75W of the EP&A Act.

Please do not hesitate to contact the undersigned on (02) 4930 2689 if you should have any queries.

Yours faithfully,

Greg Lamb
Environmental Officer
BLOOMFIELD COLLIERIES PTY LIMITED

☎ **(02) 49302689**
✉ **glamb@bloomcoll.com.au**

ATTACHMENT 1

ORIGINAL PROJECT

Approval for the Bloomfield Colliery Pty Limited (Bloomfield) was granted by the Minister for Planning on 3 September 2009. The Approval permits the staged completion of mining and progressive rehabilitation of the mine until 2021. Approved activities include the continued operation of the following mine infrastructure and related activities:

- the current and future open cut mine areas;
- the workshop;
- the road between the open cut pit areas and the run-of-mine (ROM) coal stockpiles at the washery; and
- the road that links the workshop, open cut pits and the washery.

The Approval provides for the extraction of approximately 14 million tonnes of ROM coal at a maximum extraction rate of up to 1.3 million tonnes per annum (mtpa).

Other mining infrastructure and activities at the Colliery were approved under Project Approval 05_0139 for the Abel Underground Mine. Project Approval 05_0139 was issued to Donaldson Coal and was granted in June 2007. It allows for the Abel Underground Mine as well as the continued use of the Bloomfield washery and rail loading facility, management of water associated with the washery, coarse reject and tailings disposal and coal handling.

MAY 2011 MODIFICATION

An application to modify PA 07_0087 was submitted by Bloomfield in September 2010 accompanied by an EA entitled Extension of the Project Approval Area for Out of Pit Overburden Emplacement and Rehabilitation, Alternative Haul Road and Powerline Relocation to facilitate alterations to the Project, specifically:

- To extend the approved Project Area to allow for some minor physical alterations and rehabilitation works to the mine;
- Upgrade and use of Wattle Tree Drive as an alternative haul route;
- Additional overburden emplacement and rehabilitation - east of Save a Mile Haul Road;
- Additional out-of-pit landform reshaping and rehabilitation – northern and south-eastern areas; and
- Construction of a corridor and overhead powerline from an existing powerline onto the open cut mine site.

PA 07_0087 was subsequently modified on 16 May 2011 by the Minister.

MARCH 2012 MODIFICATION

An application to modify PA 07_0087 was submitted by Bloomfield in September 2010 to facilitate an amendment to Schedule 3 Condition 26. The modification was requested to amend the submission date of the Final Void Management Plan and Mine Closure Plan to 30 June 2012.

PA 07_0087 was subsequently modified on 29 March 2012 by the Minister.

PROPOSED MODIFICATION

On 16th May 2011 DP&I approved a modification to the Bloomfield consent (PA 07_0087 Mod 1) which included the establishment of a Biodiversity Offset Area to compensate for approximately 10 Ha of planned vegetation clearing. The approved modification introduced a new condition to the consent, Schedule 3 Condition 29A, requiring the establishment of a Biodiversity Offset Area. Condition Schedule 3 Condition 29A is as follows:

29A. By 31 December 2011, the Proponent shall make suitable arrangements to provide appropriate long-term security for the Biodiversity Offset Area to the satisfaction of the Director-General.

The Biodiversity Offset Area has been established in accordance with the approved modification and consists of a 40 Ha parcel of land identified as Lot 2371 DP1170348 in the Cessnock Local Government Area. Refer to Attachment 2 for Certificate of Title.

The planned clearing area outlined in the May 2011 Modification included a powerline corridor of 1.3 Ha. The vegetation community within the powerline corridor is Lower Hunter Spotted Gum – Ironbark Forest EEC. The powerline corridor has not been cleared and is no longer required for mining operations. An alternate route was used for the electrical cable by utilising an existing contour drain. Refer to Map 1 for details on the location of the powerline corridor.

Due to operational changes Bloomfield would like to clear a narrow strip of vegetation adjacent to an existing highwall for mining infrastructure. The area is located within the project boundary and is 1.6 Ha with 1.3 Ha of Lower Hunter Spotted Gum – Ironbark Forest EEC. Refer to Map 1 for details on the location of the highwall clearing area.

The powerline corridor formed part of the planned vegetation clearing for which the Biodiversity Offset Area has been established as habitat compensation. It is proposed that the Biodiversity Offset Area be linked to the loss of habitat on the proposed highwall area rather than the powerline corridor.

Aboriginal Heritage

An Aboriginal Heritage Assessment has been prepared on the proposed highwall clearing area by SouthEast Archaeology Pty Ltd and is provided in Attachment 3. No Aboriginal heritage evidence was identified within the area and the report concluded that further heritage assessment is not warranted and there are no Aboriginal heritage constraints to the proposed works within survey area.

In accordance with the approved Aboriginal Cultural Heritage Management Plan (ACHMP) Bloomfield will engage the Mindaribba LALC to monitor any initial ground disturbance works (that will affect the upper or A unit soil) that would be required within the highwall clearing area. Any Aboriginal heritage evidence that is identified will be managed in accordance with the ACHMP.

Biodiversity

A Biodiversity Assessment has been prepared on the proposed highwall clearing area by Hunter Eco and is provided in Attachment 4. No threatened flora or fauna species were recorded in the subject area. It is considered the subject area would at best be of minor importance as foraging habitat for some threatened fauna species.

One endangered ecological community, *Lower Hunter Spotted Gum – Ironbark Forest* was identified. The 7-part test of significance and impact showed that there would not be a significant impact on any threatened flora, fauna or endangered ecological community.

Table 1 shows a comparison of the powerline corridor and highwall clearing areas. It can be seen that the highwall clearing area is equivalent to the previously approved powerline easement.

Site	Vegetated Area (ha)	EEC Area (ha)	Habitat Hollow Trees	Threatened Species
Powerline Corridor	1.3	1.3	3	0
Highwall Area	1.61	1.33	0	0

Table 1: Comparison of the main attributes of the two areas

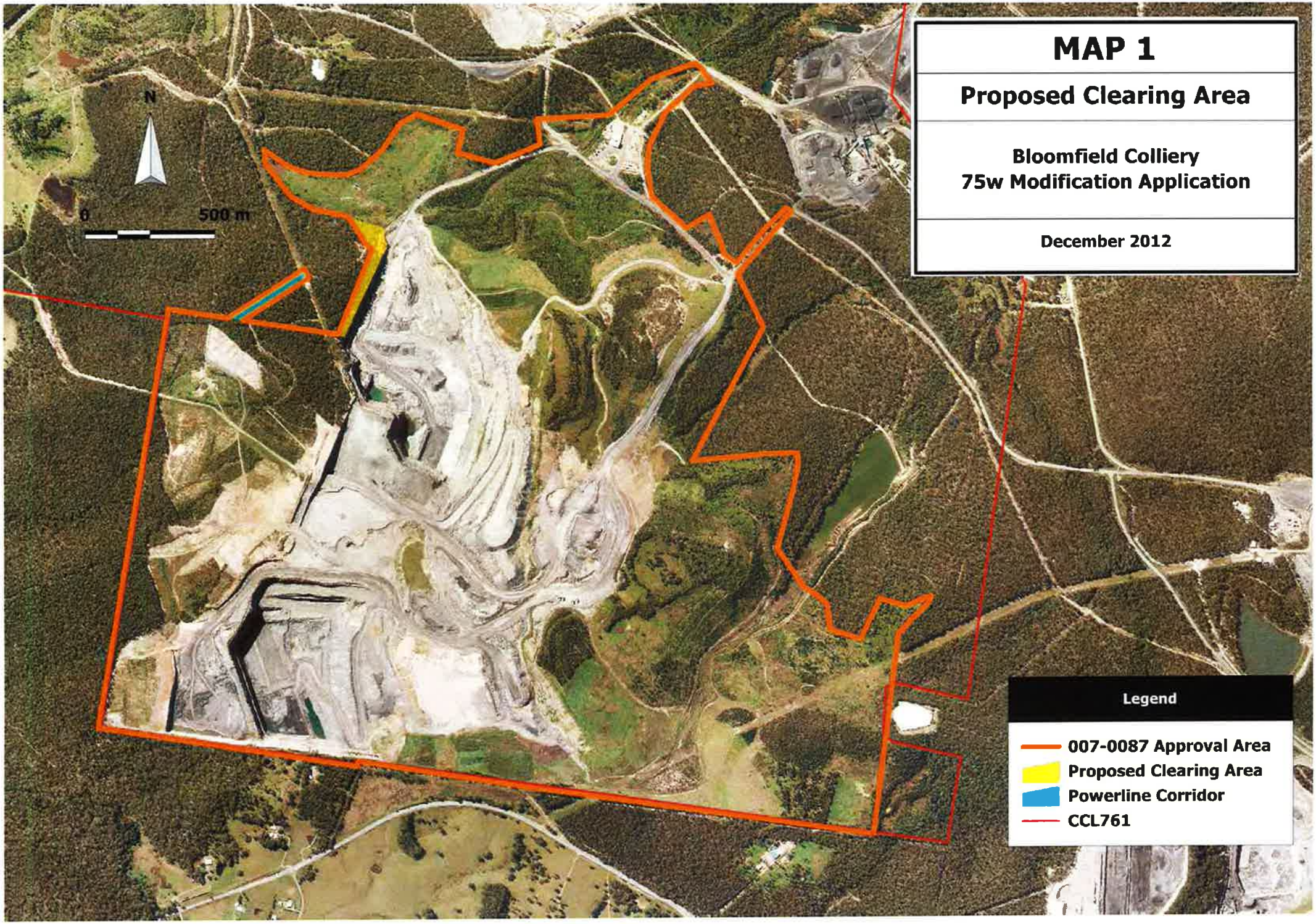
A lot of the habitat in the highwall area has been modified due to past operations. The assessment found that the quality of the habitat in the highwall area is lower than the powerline corridor resulting in an improved environmental outcome if the proposed transfer proceeded.

CONCLUSION

The powerline corridor formed part of the planned vegetation clearing for which the Biodiversity Offset Area has been established as habitat compensation. The powerline corridor is no longer required. It is proposed that the Biodiversity Offset Area be linked to the loss of habitat on the proposed highwall area rather than the powerline corridor.

The approved Biodiversity Offset Area consists of a 40 Ha parcel of land that is considered adequate compensation for the proposed loss of habitat. The proposed change would result in a net gain from the currently approved clearing due to the lower quality habitat of the highwall area.

Under the propose change the Project will remain substantially the same as the approved development. In order to formalise the proposed transfer Bloomfield requests approval of this application. A modification to Schedule 2 Condition 2 of PA 07_0087 is requested to include this letter as part of the Terms of Approval.


MAP 1
Proposed Clearing Area
Bloomfield Colliery
75w Modification Application
December 2012
N
0
500 m
Legend
007-0087 Approval Area
Proposed Clearing Area
Powerline Corridor
CCL761

ATTACHMENT 2

CERTIFICATE OF TITLE

BOX 124E
(AG721816)

S3 C294

NEW SOUTH WALES

CERTIFICATE OF TITLE

REAL PROPERTY ACT, 1900

TORRENS TITLE REFERENCE	
2371/1170348	
EDITION	DATE OF ISSUE
2	5/1/2012
CERTIFICATE AUTHENTICATION CODE	
C5JT-Q2-ZVQ3	

I certify that the person described in the First Schedule is the registered proprietor of an estate in fee simple (or such other estate or interest as is set forth in that Schedule) in the land within described subject to such exceptions, encumbrances, interests and entries as appear in the Second Schedule and to any additional entries in the Folio of the Register.

REGISTRAR GENERAL

LAND

LOT 2371 IN DEPOSITED PLAN 1170348
AT CONGEWAI.
LOCAL GOVERNMENT AREA: CESSNOCK.
PARISH OF ELLALONG COUNTY OF NORTHUMBERLAND
TITLE DIAGRAM: DP1170348

FIRST SCHEDULE

FOUR MILE PTY LTD (T AG721816)

SECOND SCHEDULE
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1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2. DP1046727 EASEMENT FOR ELECTRICITY TRANSMISSION LINE 15 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED THE TITLE DIAGRAM
3. DP1170348 RESTRICTION(S) ON THE USE OF LAND

**** END OF CERTIFICATE ****

I certify that this is a true & correct copy of the original

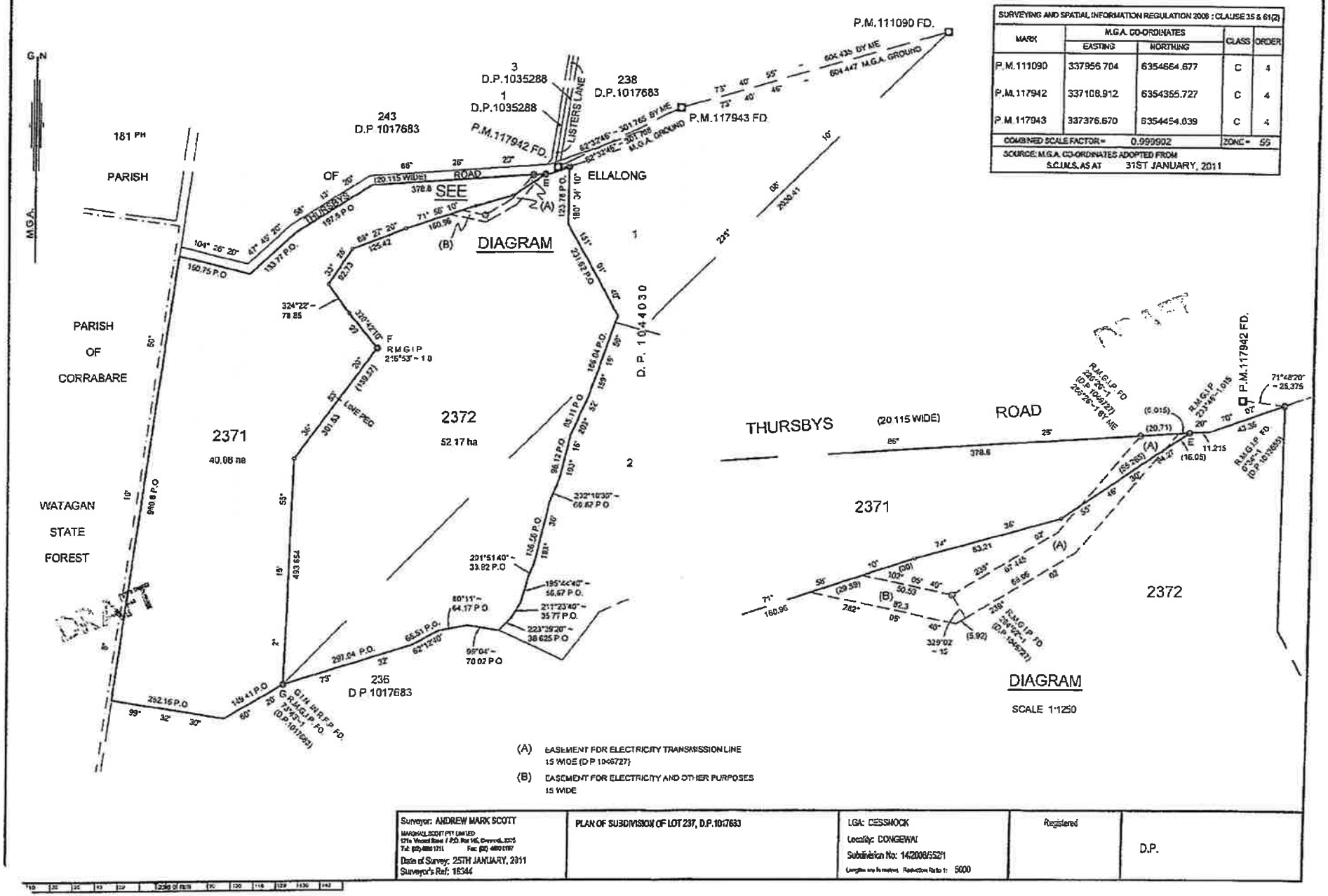
Signed.....

Christine Brewer JP Reg No: 117241

Date 3/10/2012

4319601

PLANFORM 2 (A2) WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION Sheet 1 of 1 sheet(s)



SURVEYING AND SPATIAL INFORMATION REGULATION 2006 : CLAUSE 35 & 61(2)				
MARK	M.G.A. CO-ORDINATES		CLASS	ORDER
	EASTING	NORTHING		
P.M.111090	337956.704	6354664.677	C	4
P.M.117942	337108.912	6354355.727	C	4
P.M.117943	337376.670	6354454.039	C	4
COMBINED SCALE FACTOR =	0.999902		ZONE =	56
SOURCE: M.G.A. CO-ORDINATES ADOPTED FROM S.C.I.M.S. AS AT 31ST JANUARY, 2011				

Surveyor: ANDREW MARK SCOTT MARSHALL SCOTT PTY LIMITED 12 Ha Vincent Road / P.O. Box 145, Greenhills, 2323 Tel: (02) 4966 1211 Fax: (02) 4960 0197 Date of Survey: 25TH JANUARY, 2011 Surveyor's Ref: 16344	PLAN OF SUBDIVISION OF LOT 237, D.P.1017683	LGA: CESSNOCK Locality: CONGEWAI Subdivision No: 142008/5521 (Lengths are in metres) Reduction Ratio 1: 5000	Registered	D.P.

53 C294

ATTACHMENT 3

ABORIGINAL HERITAGE ASSESSMENT

SouthEast archaeology
Pty Limited ABN 35 091 653 048

24 Bamford Street
Hughes ACT 2605
Telephone: (02) 6260 4439
Facsimile: (02) 6260 4439
Mobile: (0417) 691 231
Web: www.southeastarchaeology.com.au
Email: peter@southeastarchaeology.com.au

BLOOMFIELD COLLIERY, HUNTER VALLEY, NEW SOUTH WALES: COMPLETION OF MINING AND REHABILITATION PROJECT - ABORIGINAL HERITAGE IMPACT ASSESSMENT - ADDENDUM REPORT ON ASSESSMENT OF ADDITIONAL AREA, SEPTEMBER 2012

Prepared by Peter Kuskie,
South East Archaeology Pty Ltd

On behalf of Bloomfield Collieries Pty Ltd

24 September 2012

Introduction:

Bloomfield Collieries Pty Ltd has obtained a Part 3A Major Project Approval (MP 07_0087, 3 September 2009) under the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the completion of open-cut coal mining and rehabilitation of areas within Mining Lease CCL761.

The Bloomfield Colliery project area is located several kilometres south of East Maitland in the lower Hunter Valley of NSW. It measures a total of 290 hectares and includes all of the existing Mining Operations Plan approved area, as well as a workshop area, an access road to the workshop and a haul road from the active mining area to the washery coal stockpile pad.

South East Archaeology (Kuskie 2008) undertook an Aboriginal heritage impact assessment for the Part 3A project application. The investigation proceeded by recourse to the archaeological and environmental background of the locality, followed by a field survey undertaken with representatives of the local Aboriginal community, in accordance with the then relevant Department of Environment, Climate Change and Water (DECCW)[1] policies and Department of Planning (DoP)[2] requirements.

The investigation focused on the "unmodified" portion of the study area of approximately 108 hectares (land yet to be mined area immediately west of the S-Cut and southwest of the Creek Cut) in which there remained some potential for heritage evidence. The remainder of the project area comprised land that had been extensively impacted by earthmoving works and building, such that there was negligible potential for any Aboriginal heritage evidence to survive.

[1] From April 2011 the structure of the DECCW (Department of Environment, Climate Change and Water) altered, with the Environment Protection and Regulation Division (EPRD) now forming part of the Office of Environment and Heritage (OEH) in the Department of Premier and Cabinet.
[2] The Department of Planning is now known as the Department of Planning and Infrastructure (DP&I).

The "unmodified" portion of the study area was subdivided and inspected within 26 environmentally discrete survey areas. Even within this "unmodified" area, levels of ground disturbance were typically high, due to the removal of the forest vegetation in early 2004 by earthmoving equipment under existing approvals (Kuskie 2008).

Six Aboriginal heritage sites, comprising 19 loci of identified evidence, were recorded within the 108 hectare unmodified portion of the study area. These site loci were all stone artefact occurrences and contained a total of 53 artefacts.

The identified artefact evidence occurred in a very low density distribution. Further artefacts were expected to occur across the unmodified study area in a distribution and density consistent with the survey results. However, notwithstanding that shallow deposits may be present in some forested areas or along the drainages where the A unit soil may have been retained, the potential for sub-surface deposits of artefacts that may be *in situ* and/or of research value was considered to be low to very low. Other types of heritage evidence (for example, scarred trees and grinding grooves) were not anticipated to occur within the unmodified study area (ie. very low or negligible potential) and other Aboriginal cultural values or associations had not been identified (Kuskie 2008).

An Aboriginal Cultural Heritage Management Plan (ACHMP) (Bloomfield Collieries Pty Ltd 2010) was subsequently prepared by Bloomfield Collieries to address the Project Approval conditions. The ACHMP was approved by the Department of Planning on 27 May 2010.

South East Archaeology subsequently undertook the archaeological salvage required under the Part 3A Project Approval Conditions and ACHMP (Kuskie 2012). This included the surface collection of all visible artefacts from sites B2, B16, B18, B19, B20 and B22, which was undertaken with the Mindaribba Local Aboriginal Land Council (LALC). Artefacts collected by the Mindaribba LALC during monitoring were also the subject of analysis and reporting.

South East Archaeology also assessed a proposed variation under Section 75W of the EP&A Act to the Part 3A Major Project Approval to permit relocation of an existing powerline outside of the project approved area (Kuskie 2009). An area of five hectares was assessed with the Mindaribba LALC, following the same methodology and consultation procedures established for the main project. No additional Aboriginal sites were located.

Purpose and Scope of Additional Aboriginal Heritage Assessment:

Bloomfield Collieries will be undertaking works within the areas marked on Figure 1 as survey areas B34, B35 and B36. This area of approximately three hectares is situated immediately adjacent to the existing open cut, within the approved Project boundary (as modified through a Section 75W Modification in 2010).

South East Archaeology was commissioned by Bloomfield Collieries to assess the area of three hectares, none of which had previously been surveyed.

Consistent with the investigation undertaken to date for the approved project (Kuskie 2008), the principal aims of the additional assessment were to identify and record any Aboriginal heritage evidence or cultural values within the study area, assess the potential impacts of the proposal on this evidence, assess the significance of this evidence, and formulate recommendations for the conservation and management of this evidence, in consultation with the local Aboriginal community.

Methodology of Additional Aboriginal Heritage Assessment:

As an addendum to the investigation undertaken to date for the approved project (Kuskie 2008) and in consideration of the requirements of the Bloomfield ACHMP, the additional assessment has involved:

- Updated searches of the OEH Aboriginal Heritage Information Management System (AHIMS) and other relevant indigenous heritage registers and planning instruments, along with a review of other relevant information;
- Systematic archaeological survey of the study area with the Mindaribba LALC, following the same methodology and consultation procedures established for the main project (Kuskie 2008). This was undertaken on 18 September 2012 by a qualified archaeologist, Leigh Bate of South East Archaeology, and a representative of the Mindaribba LALC, Kellie Griffiths; and
- Preparation of this addendum report to present the results of the investigation, assessment of the significance of any Aboriginal evidence identified, and recommendations for the management of such evidence, in consultation with the Mindaribba LALC.

Results and Discussion of Additional Aboriginal Heritage Assessment:

The additional study area was subdivided into three survey areas (B34, B35 and B36), on the basis of landform element and class of slope, each of which was inspected for Aboriginal heritage evidence (refer to Plates 1 and 2 in Appendix 1). The locations of the individual survey areas are marked on Figure 1. A summary of the survey coverage is presented in Table 1.

The total survey coverage (ground physically inspected for heritage evidence) equated to approximately 4,020 m^2, or 12% of the study area. As this coverage only refers to an area of several metres width directly inspected by each member of the survey team, the actual coverage for obtrusive site types, such as rock shelters, scarred trees and grinding grooves, was significantly greater than this. The total effective survey coverage (*visible* ground surface physically inspected with potential to host heritage evidence) equated to around 116 m^2, or 0.4% of the study area.

No Aboriginal heritage evidence was identified within the study area, and no Aboriginal heritage sites have previously been recorded in this location.

These additional survey areas (B34, B35 and B36) are located some distance from any higher order watercourses, and are therefore outside of what could be considered to be primary or secondary resource zones, in areas where Aboriginal occupation is inferred to have occurred at a low intensity. In these areas, a very low density sub-surface deposit of artefacts may be present. In general, this evidence is likely to be consistent with background discard and will not represent focused occupation. The potential for sub-surface deposits of artefacts that may be *in situ* and/or of research value is very low.

The heritage potential of the study area is also low due to the high level of existing impacts. Other types of heritage evidence (such as grinding grooves or scarred trees) are not anticipated to occur within the study area and other Aboriginal cultural values or associations have not been identified during the course of the assessment.

Any works within survey areas B34, B35 and B36 will not result in impacts to any identified heritage evidence, and the impacts of the proposal on any potential resource will be very low or negligible.

Recommendations:

In consideration of the absence of identified Aboriginal heritage evidence from within the investigation area, the high level of existing impacts, the limited extent of proposed impacts, and the assessed very low or negligible potential for impacts of significance to occur to the heritage resource, further heritage assessment is not warranted and there are no Aboriginal heritage constraints to the proposed works within survey areas B34, B35 and B36.

All other provisions of the Bloomfield ACHMP (Bloomfield Collieries Pty Ltd 2010) need to be implemented where relevant.

If any Aboriginal objects are identified during construction within the Part 3A Project area, they will require management in accordance with the procedures specified in the ACHMP.

References:

Bloomfield Collieries Pty Ltd 2010 *Mining Operations (Bloomfield Mine): Aboriginal Cultural Heritage Management Plan*. Unpublished report.

Kuskie, P. J. 2008 *Bloomfield Colliery, Hunter Valley, New South Wales: Completion of Mining and Rehabilitation Project - Aboriginal Heritage Impact Assessment*. Unpublished report to Bloomfield Collieries Pty Ltd.

Kuskie, P. J. 2009 *Bloomfield Colliery, Hunter Valley, New South Wales: Completion of Mining and Rehabilitation Project - Aboriginal Heritage Impact Assessment - Addendum Report to Assess Powerline Relocation*. Unpublished report to Bloomfield Collieries Pty Ltd.

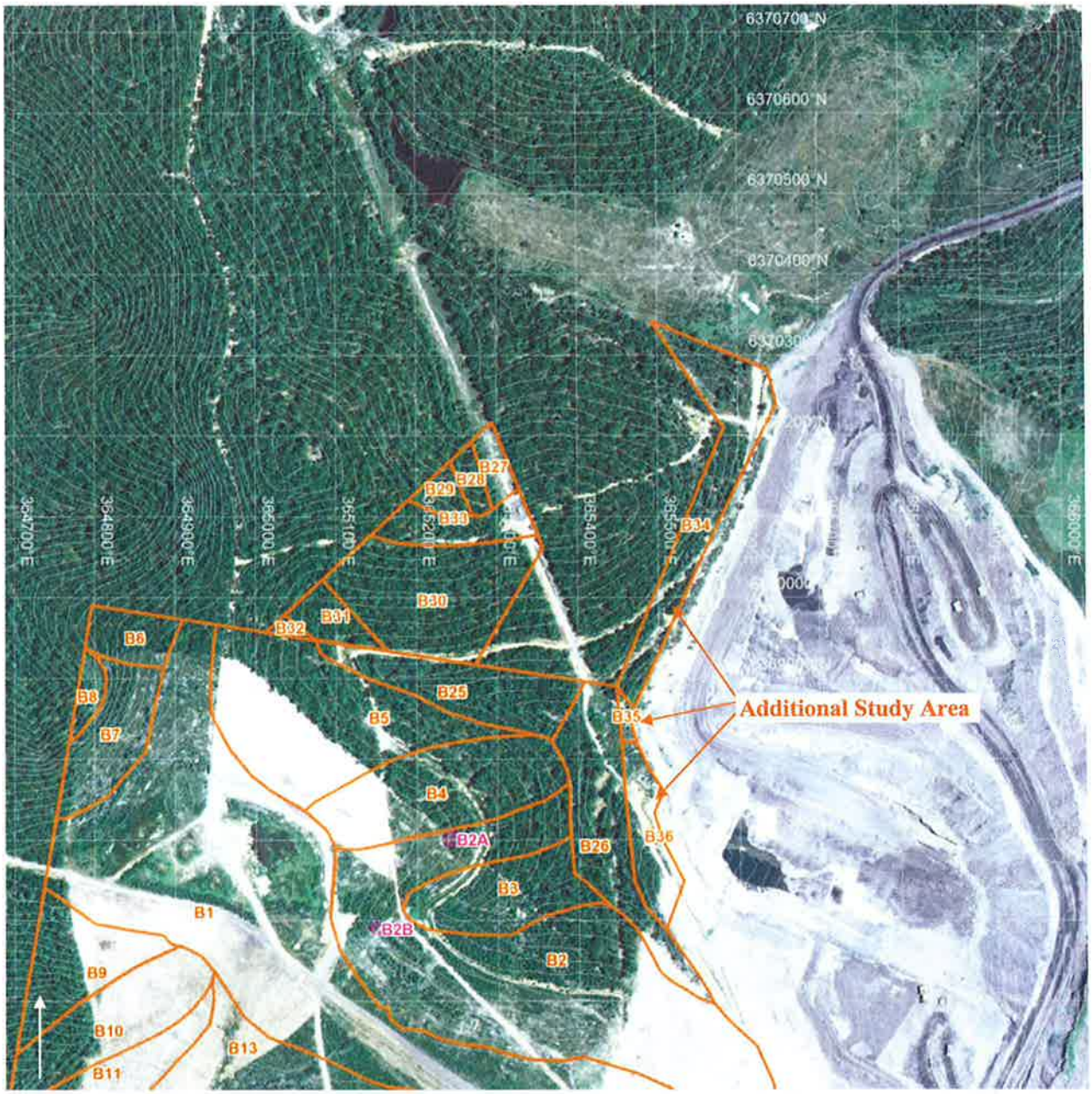
Kuskie, P. J. 2012 *Bloomfield Colliery, Hunter Valley, New South Wales: Completion of Mining and Rehabilitation Project - Report on Salvage of Aboriginal Objects*. Unpublished report to Bloomfield Collieries Pty Ltd.

Table 1: Archaeological survey coverage of additional study area September 2012.

Survey Area	Landform Element	Slope	Distance to Water (metres)	Vegetation	Land Surface	Total Sample Area (m^2)	Surface Visibility (%)	Detection Limiting Factors	Archaeological Visibility %	Ground Disturbance	Effective Survey Coverage (m^2)	# of Artefacts	Artefact Density/m^2 of Effective Survey Coverage	Comments
B34	simple slope	moderate	>50	2	4, 5	2700	30	1, 2	2	high	54	0	-	area highly impacted by earthworks associated with adjacent open cut, including drainage control and excavation; regrowth vegetation
B35	drainage depression	moderate	<50	1, 2	4	120	10	1, 2, 3	2	high	2	0	-	highly impacted by previous earthworks and vegetation removal; regrowth shrubs
B36	simple slope	moderate	>50	1, 2	4, 5	1200	25	1, 2, 3	5	high	60	0	-	adjacent to existing open cut; high impacts from earthworks, vegetation removal and vehicle tracks

Vegetation: 1 = cleared/grass/crop; 2 = regrowth/native forest.
Land Surface: 1 = sheet erosion; 2 = gully erosion; 3 = stream bank erosion; 4 = vegetated; 5 = modified (eg. vehicle track).
Detection Limiting Factors: 1 = vegetation; 2 = leaf litter/gravel; 3 = sediment deposition; 4 = other.

Figure 1: Aboriginal heritage investigation area September 2012 (survey areas B34 - B36, brown shapes) and Aboriginal heritage sites (pink shapes) (100 metre MGA grid).



Appendix 1: Plates.

Plate 1: Mindaribba LALC representative Kellie Griffiths inspecting survey area B34, with extent of previous impacts evident.

Plate 2: Survey area B36, adjacent to the existing open cut.

ATTACHMENT 4

BIODIVERSITY ASSESSMENT

Bloomfield Colliery East Maitland

Biodiversity Assessment – Creek Cut Highwall

Biodiversity Assessment – Creek Cut Highwall

HUNTER ECO

Colin Driscoll

Colin Driscoll
Environmental Biologist
NPWS Scientific Licence S10565

CONTENTS

TABLES

FIGURES

Biodiversity Assessment – Creek Cut Highwall

1.0 Introduction

Bloomfield collieries operate an open cut coal mine and coal handling and preparation plant approximately 4 km south west of Maitland in the lower Hunter Valley.

In 2011 Bloomfield received approval from the NSW Department of Planning for certain variations to their operations. One of these variations was for clearing of vegetation for the construction of a powerline corridor. Subsequently Bloomfield no longer have need of the powerline corridor and wish to exchange that approved clearing with an area that would involve clearing along the 'Creek Cut' highwall. The proposed disturbance area, referred to herein as the 'subject area' is located within the original modification application area (**Figure 1**).

As part of the 2011 modification a Biodiversity Offset Area was established to compensate for the clearing of remnant vegetation which included the powerline corridor. The Biodiversity Offset Area for the Bloomfield Colliery is identified as Lot 2371 DP1170348 located at the western end of Thursbys Road, off Congewai Road in the Cessnock Local Government Area. The land is 40 ha in area and the western boundary abuts the Watagan State Forest on the eastern side of the Corrabare Range.

This is a report of the ecological attributes of the subject area compared with those of the currently approved area. An impact assessment is also provided.

2.0 Methods

2.1 Flora and Vegetation

The investigation of the subject area involved determining and mapping the vegetation community types present and assessing the suitability of the habitat for threatened fauna species. The primary targets of the survey and assessment were species and communities listed as threatened in the schedules of the NSW *Threatened Species Conservation Act 1995* (TSC Act).

The subject area was just over two hectares in size and as such could be searched thoroughly. Initially, the area was inspected to determine the main vegetation types present. One standard 20 m x 20 m floristic plot was sampled in

each identified community with all flora species and an index of their abundance recorded using the modified Braun-Blanquet 1-6 scale (**Table 1**).

Table 1 The modified Braun-Blanquet cover-abundance scale

Cover range	Score
<5% few individuals	1
<5% many individuals	2
5% - <25%	3
25% - <50%	4
50% - <75%	5
75% - 100%	6

Vegetation communities were identified by comparing their floristic content with the profiles contained in the regional classification of NPWS (2000). Threatened vegetation communities were identified with reference to the NSW Scientific Committee determinations of endangered ecological communities.

All trees were inspected for the presence of potential habitat hollows.

2.1 Threatened Species

As a guide to the threatened species that might occur in and around the subject area data were extracted from the Atlas of NSW Wildlife of records from within a five kilometre radius of the subject area. These species were subsequently assessed for the likelihood of their occurring in the subject area given the habitat types present. **Tables 2** and **3** show the extracted threatened flora and fauna species respectively.

Table 2 Threatened flora species recorded within 5 km of the subject area
Source: Atlas of NSW Wildlife

Family Name	Scientific Name	Common Name	Status
Elaeocarpaceae	*Tetratheca juncea*	Black-eyed Susan	V
Fabaceae (Mimosoideae)	*Acacia bynoeana*	Bynoe's Wattle	E1
Menispermaceae	*Tinospora tinosporoides*	Arrow-head Vine	V
Myrtaceae	*Eucalyptus parramattensis subsp. decadens*		V
Proteaceae	*Grevillea parviflora subsp. parviflora*	Small-flower Grevillea	V

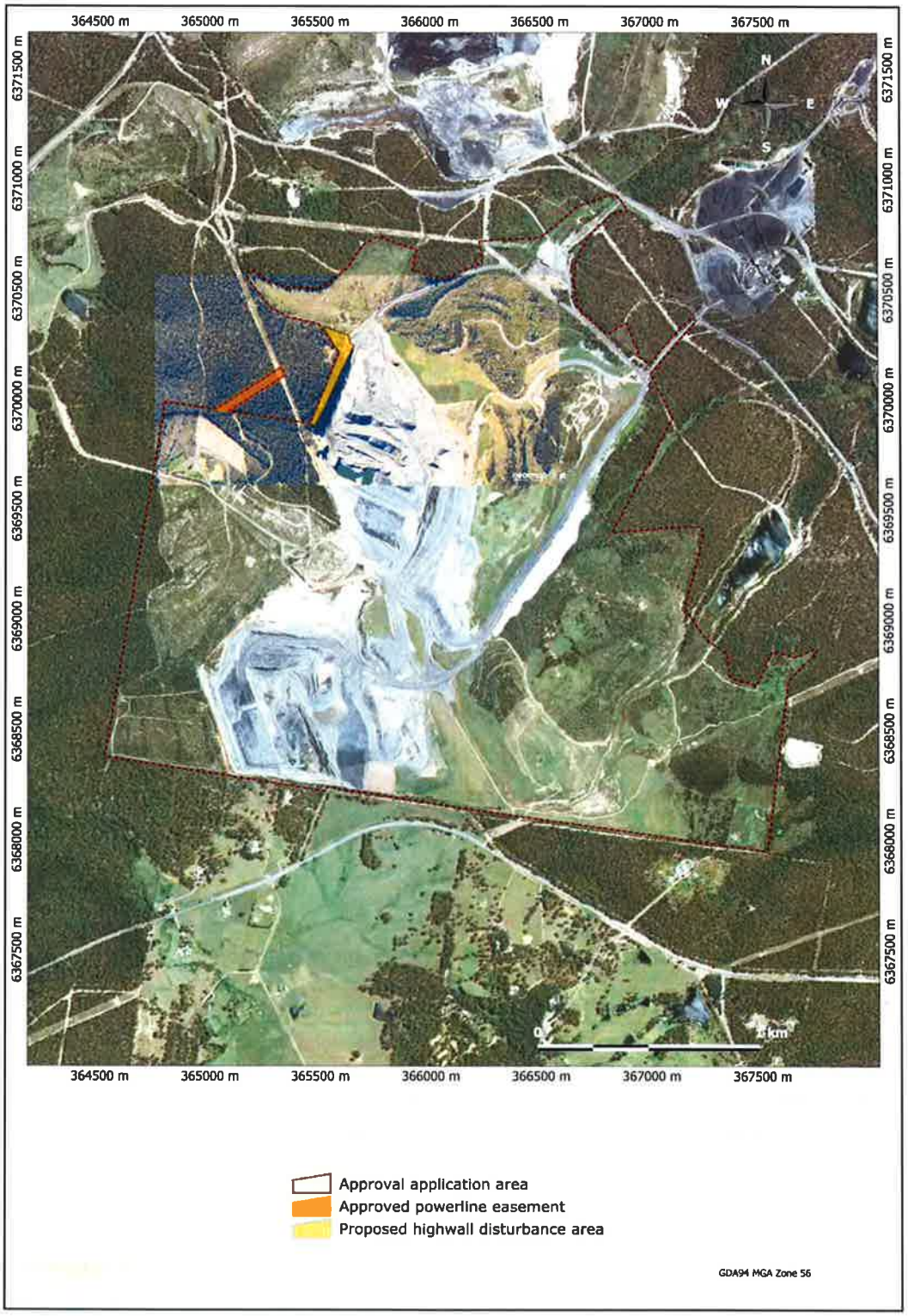


Figure 1 The general arrangement

Table 3 Threatened fauna species recorded within 5 km of the subject area
Source: Atlas of NSW Wildlife

Family	Scientific Name	Common Name	Status
	Birds		
Cacatuidae	*Callocephalon fimbriatum*	Gang-gang Cockatoo	V
Meliphagidae	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	V
Neosittidae	*Daphoenositta chrysoptera*	Varied Sittella	V
Petroicidae	*Petroica boodang*	Scarlet Robin	V
Pomatostomidae	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	V
Psittacidae	*Glossopsitta pusilla*	Little Lorikeet	V
Psittacidae	*Lathamus discolor*	Swift Parrot	E1
Psittacidae	*Neophema pulchella*	Turquoise Parrot	V
Strigidae	*Ninox connivens*	Barking Owl	V
Strigidae	*Ninox strenua*	Powerful Owl	V
Tytonidae	*Tyto novaehollandiae*	Masked Owl	V
Tytonidae	*Tyto tenebricosa*	Sooty Owl	V
	Marsupials		
Phascolarctidae	*Phascolarctos cinereus*	Koala	V
Petauridae	*Petaurus norfolcensis*	Squirrel Glider	V
	Megachiropteran Bats		
Pteropodidae	*Pteropus poliocephalus*	Grey-headed Flying-fox	V
	Microchiropteran Bats		
Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V
Molossidae	*Mormopterus norfolkensis*	Eastern Freetail-bat	V
Vespertilionidae	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	V
Vespertilionidae	*Miniopterus australis*	Little Bentwing-bat	V
Vespertilionidae	*Miniopterus schreibersii oceanensis*	Eastern Bentwing-bat	V
Vespertilionidae	*Myotis macropus*	Southern Myotis	V
Vespertilionidae	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V
Vespertilionidae	*Vespadelus troughtoni*	Eastern Cave Bat	V

3.0 Results

A lot of the habitat in the subject area was either cleared or had been substantially modified. Several tracks were present that were either still cleared of vegetation, or had some regrowth. A wide stormwater diversion drain had been cut about 20 m in from the pit high wall edge. At the eastern end of the subject area was a portion that had once been completely cleared but was now

regenerating. In all, over 50% of the subject area had been modified in some way.

3.1 Flora and Vegetation Communities

Appendix 1 lists the 94 flora species recorded across the subject area; no listed threatened flora species were recorded. Data collected from three floristic plots (**Appendix 2**) were used to identify the representative communities. Two main vegetation communities were present as shown in **Table 4** and **Figure 2**, one of which was the listed (TSC Act) endangered ecological community *Lower Hunter Spotted Gum – Ironbark Forest in the Sydney Basin Bioregion*.

Table 4 Vegetation communities mapped in the subject area

Community	Area (ha)
Cleared	0.61
MU30 Coastal Plains Smooth-barked Apple Woodland	0.08
MU17 Lower Hunter Spotted Gum - Ironbark Forest (EEC)	0.90
MU17 Lower Hunter Spotted Gum - Ironbark Forest - regenerating (EEC)	0.63

MU17 Lower Hunter Spotted Gum – Ironbark Forest

Canopy: *Eucalyptus fibrosa, Corymbia maculata* and *Eucalyptus umbra* were the main canopy species along with scattered *Eucalyptus punctata* and *Syncarpia glomulifera.* A few *Allocasuarina torulosa* occupied a sparse mid-storey.

Shrubs: A sparse shrub layer consisted of *Maytenus silvestris, Breynia oblongifolia, Daviesia ulicifolia, Dillwynia sieberi* and *Acacia elongata*.

Ground: The main grasses were *Joycea pallida, Aristida vagans* and *Entolasia stricta*. Other species were *Cheilanthes sieberi, Phyllanthus hirtellus, Dianella caerulea, Grevillea montana* and *Goodenia hederacea*.

Vines and Creepers: *Parsonsia straminea, Pandorea pandorana, Hardenbergia Violaceae* and *Billardiera scandens*.

MU30 Coastal Plains Smooth-barked Apple Woodland

Canopy: *Angophora costata, Corymbia gummifera, Eucalyptus umbra* and *Syncarpia glomulifera*.

Shrubs: *Astrotricha obovata, Maytenus silvestris, Leucopogon juniperinus, Pultenaea villosa, Podolobium ilicifolium, Acacia falcata* and *Myrsine variabilis*.

Ground: The main grasses were *Anisopogon avenaceus, Aristida vagans, Imperata cylindrica, Microlaena stipoides* and *Themeda australis*. Other species were *Adiantum aethiopicum, Phyllanthus hirtellus, Gonocarpus teucrioides, Lomandra longifolia, Galium binifolium* and *Goodenia heterophylla*.

Vines and Creepers: *Pandorea pandorana, Hardenbergia Violaceae, Cassytha glabella, Geitonoplesium cymosum* and *Clematis glycinoides*.

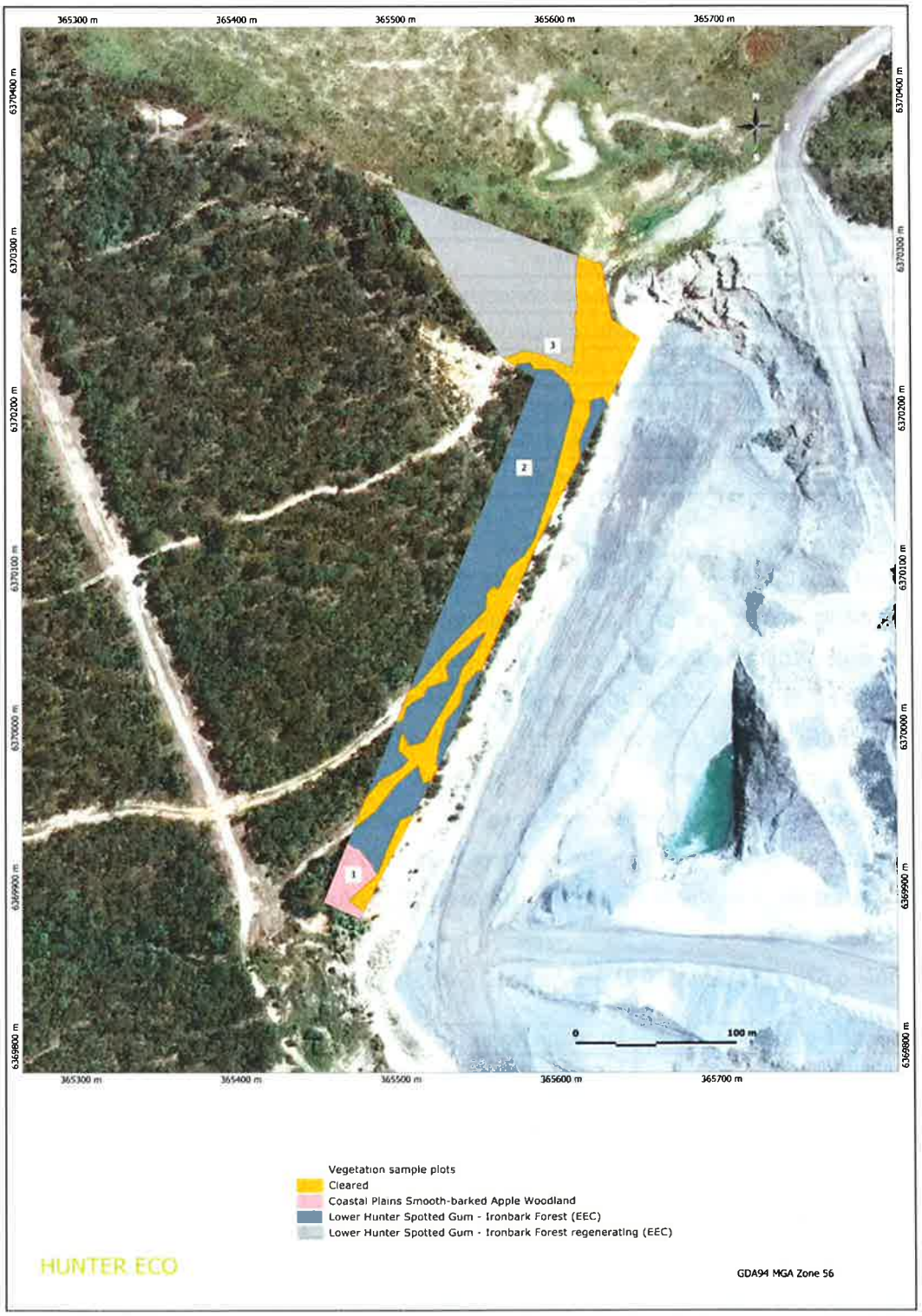


Figure 2 Vegetation communities mapped in the proposed disturbance area

4.0 Fauna

The only fauna species encountered were ten bird species as listed in **Table 5**. None of these birds were listed as threatened species.

Table 5 Bird species recorded in the subject area

Family	Scientific Name	Common Name
Artamidae	*Cracticus tibicen*	Australian Magpie
Columbidae	*Leucosarcia picata*	Wonga Pigeon
Cuculidae	*Cacomantis flabelliformis*	Fan-tailed Cuckoo
Maluridae	*Malurus cyaneus*	Superb Fairy-wren
Meliphagidae	*Lichenostomus chrysops*	Yellow-faced Honeyeater
Meliphagidae	*Myzomela sanguinolenta*	Scarlet Honeyeater
Nectariniidae	*Dicaeum hirundinaceum*	Mistletoebird
Pachycephalidae	*Colluricincla harmonica*	Grey Shrike-thrush
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler
Timaliidae	*Zosterops lateralis*	Silvereye

4.1 SEPP44 Koala Habitat

State Environmental Planning Policy (SEPP) 44 requires that, for proposals involving 1 hectare or more of clearing, the habitat should be evaluated for potential Koala habitat and core Koala Habitat. Potential Koala habitat is defined as 'areas of native vegetation where the trees listed in Schedule 2 (of SEPP 44) *'constitute at least 15% of the total number of trees in the upper and lower strata of the tree component'*. Should potential Koala habitat be found, further investigation for the existence of core Koala habitat should be undertaken and if this habitat is found to be present then a detailed Plan of Management should be prepared for the Koala colony in the area. Schedule 2 feed trees are listed in **Table 6**.

Table 6 SEPP 44 Schedule 2 Koala Feed Tree Species

Scientific Name	Common Name
Eucalyptus tereticornis	Forest Red Gum
Eucalyptus microcorys	Tallowwood
Eucalyptus punctata	Grey Gum
Eucalyptus viminalis	Ribbon or Manna Gum
Eucalyptus camaldulensis	River Red Gum
Eucalyptus haemastoma	Broad-leaved Scribbly Gum
Eucalyptus signata	Scribbly Gum
Eucalyptus albens	White Box
Eucalyptus populnea	Bimble Box or Poplar Box
Eucalyptus robusta	Swamp Mahogany

Some scattered *Eucalyptus punctata* were present but these did not make up 15% of the total number of trees so potential Koala habitat did not exist and further assessment was not required.

5.0 Threatened Species Assessment

Following identification of the habitat types present in the subject area, an assessment was made as to the likelihood of the habitat being important to any of the threatened species reported in Section 2.2.

5.1 Threatened Flora

Table 7 summarises the likelihood of threatened flora species recorded within 5 km of the subject area occurring in the subject area.

Table 7 The likelihood of threatened flora species occurring

Scientific Name	Common Name	Likelihood of Occurring
Tetratheca juncea	Black-eyed Susan	This species is often recorded in MU30 habitat. The amount of this habitat present was so small that it could be thoroughly searched and none were found.
Acacia bynoeana	Bynoe's Wattle	There was no suitable habitat for this small wattle. The species is generally found in sandy or lateritic heath.
Tinospora tinosporoides	Arrow-head Vine	Most known occurrences of this vine are from far northern NSW. It is a rainforest species and no suitable habitat was present.
Eucalyptus parramattensis subsp. decadens		This species was not present. In the region it is only associated with Kurri Sands Swamp Woodland, none of which was present.
Grevillea parviflora subsp. *parviflora*	Small-flower Grevillea	This species can be found in both MU17 and MU30 communities. However, the amount of this habitat present was so small that it could be thoroughly searched and none were found.

5.2 Threatened Fauna

Table 8 provides a simple yes/no answer to the likelihood of each species occurring in the subject area. In this context, 'occurrence' implies that the species would be using the habitat for a variety of purposes rather than just passing through. Such purpose might be foraging, denning or roosting or breeding.

Table 8 The likelihood of threatened fauna species occurring

Scientific Name	Common Name	Likelihood of Occurring
Birds		
Callocephalon fimbriatum	Gang-gang Cockatoo	Yes
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Yes
Daphoenositta chrysoptera	Varied Sittella	Yes
Petroica boodang	Scarlet Robin	Yes
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	No
Glossopsitta pusilla	Little Lorikeet	Yes
Lathamus discolor	Swift Parrot	Yes
Neophema pulchella	Turquoise Parrot	No
Ninox connivens	Barking Owl	No
Ninox strenua	Powerful Owl	Yes
Tyto novaehollandiae	Masked Owl	Yes
Tyto tenebricosa	Sooty Owl	No
Marsupials		
Phascolarctos cinereus	Koala	No
Petaurus norfolcensis	Squirrel Glider	Yes
Megachiropteran Bats		
Pteropus poliocephalus	Grey-headed Flying-fox	Yes
Microchiropteran Bats		
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Yes
Mormopterus norfolkensis	Eastern Freetail-bat	Yes
Falsistrellus tasmaniensis	Eastern False Pipistrelle	Yes
Miniopterus australis	Little Bentwing-bat	Yes
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	Yes
Myotis macropus	Southern Myotis	Yes
Scoteanax rueppellii	Greater Broad-nosed Bat	Yes
Vespadelus troughtoni	Eastern Cave Bat	Yes

All of the birds that were considered as likely to occur at some time in the subject area are foragers on seed, insects, nectar or, in the case of the owls, are apex predators of other birds and mammals. The small size of the subject area means that it would only form part of a much larger area in which these species would forage. There were no trees with habitat hollows for breeding or roosting.

The Squirrel Glider feeds on both insects and arthropods as well as nectar and pollen. Flowering eucalypts could attract this glider to the subject area but it would only be part of a larger foraging area.

The Grey-headed Flying-fox also feeds on pollen and nectar of blossoming eucalypts but covers a vastly larger range than the subject area. Any of the insectivorous bats (the microchiroptera) could forage through the subject area but there were no possible denning locations.

The habitat was too dense for the Grey-crowned Babbler or the Turquoise Parrot. The Barking and Sooty Owls are generally found in moist forest. As noted in Section 4.1 there were insufficient recognised feed trees for Koala.

6.0 Impact Assessment

A formal assessment is made here of the level of impact on threatened flora, fauna and ecological communities resulting from the loss of the habitat on the subject area. Because no threatened species were recorded, a general assessment is conducted. Assessment is made through the application of the 7-part test (TSC Act).

6.1 Threatened Flora

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

A thorough search of the entire subject area resulted in no threatened flora species being recorded. Consequently no viable local population of any threatened flora species would be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population of this species has been listed.

(c) in the case of an endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

Not applicable

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

Just over 2 ha of habitat would be removed through clearing of the subject area. The subject area is at the edge of the open cut pit and its clearing would not result in any isolation or fragmentation of habitat. No threatened flora species were present so the habitat to be removed was not important to the long-term survival of any threatened flora species.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat was present.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

While just over 2 ha of habitat would be lost, this has been offset by the 40Ha Biodiversity Offset Area identified as Lot 2371 DP1170348. Consequently the proposed action would result in a net gain in habitat.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The clearing of native vegetation is a key threatening process. However the proposed action involves offsetting any clearing with the 40Ha Biodiversity Offset Area identified as Lot 2371 DP1170348. Resulting in a net gain in habitat.

6.2 Threatened Fauna

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

No diurnal threatened fauna species were recorded. Nocturnal species such as gliders, owls and bats were not surveyed. However, the small size of the subject area meant that it would be of limited value as important habitat for any threatened fauna species. As Figure 1 shows, the subject area was located at the edge of a large amount of continuous habitat. It is reasonable to assume that the loss of habitat in the subject area would not place any viable local fauna populations at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered population of this species has been listed.

(c) in the case of an endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

Not applicable

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

Just over 2 ha of habitat would be removed through clearing of the subject area. The subject area is at the edge of the open cut pit and its clearing would not result in any isolation or fragmentation of habitat. As explained in Part (a) habitat to be removed would not be important to the long-term survival of any threatened fauna species.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat was present.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

While just over 2 ha of habitat would be lost, this has been offset by the 40Ha Biodiversity Offset Area identified as Lot 2371 DP1170348. Consequently the proposed action would result in a net gain in habitat.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The clearing of native vegetation is a key threatening process. However the proposed action involves offsetting any clearing with the 40Ha Biodiversity Offset Area identified as Lot 2371 DP1170348. Resulting in a net gain in habitat.

6.3 Endangered Ecological Community

This test evaluates the impact on the endangered ecological community *Lower Hunter Spotted Gum – Ironbark Forest in the Sydney Basin Bioregion.*

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Not applicable to the consideration of an EEC

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

Not applicable to the consideration of an EEC

(c) in the case of an endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

There is at least 145 ha of this community, continuous with that in the subject area (Bloomfield Colliery Section 75W Modification, September 2010). The proposed clearing of the subject area would result in loss of 0.9 ha of relatively undisturbed habitat and 0.63 ha of early regenerating habitat. This would not place the local occurrence of this community at risk of extinction.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

Just over 2 ha of habitat would be removed through clearing of the subject area. The subject area is at the edge of the open cut pit and its clearing would not result in any isolation or fragmentation of habitat.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat was present.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

While just over 2 ha of habitat would be lost, this has been offset by the 40Ha Biodiversity Offset Area identified as Lot 2371 DP1170348. Consequently the proposed action would result in a net gain in habitat.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The clearing of native vegetation is a key threatening process. However the proposed action involves offsetting any clearing with the 40Ha Biodiversity Offset Area identified as Lot 2371 DP1170348. Resulting in a net gain in habitat.

7.0 Conclusion

No threatened flora or fauna species were recorded in the subject area. It is considered the subject area would at best be of minor importance as foraging habitat for some threatened fauna species.

One endangered ecological community, *Lower Hunter Spotted Gum – Ironbark Forest in the Sydney Basin Bioregion was identified*.

The 7-part test of significance and impact showed that there would not be a significant impact on any threatened flora, fauna or endangered ecological community.

This was an investigation into the ecological attributes of the subject area with the express aim of transferring prior approval for clearing of a powerline easement that is no longer needed. **Table 9** shows a comparison of the two areas. It can be seen that the subject area is equivalent to the previously approved powerline easement.

Table 9 Comparison of the main attributes of the two areas

Site	Vegetated area (ha)	EEC area (ha)	Habitat hollow trees	Threatened species
Powerline easement	1.3	1.3	3	0
Subject area	1.61	1.33	0	0

The preferred outcome of any proposed development involving habitat loss is that the overall action should result in no net loss. This was achieved in the current approval that included the powerline easement through the provision of land set aside as an offset reserve. The offset reserve for the Bloomfield Colliery is identified as Lot 2371 DP1170348. The land is 40 ha in area and the western boundary abuts the Watagan State Forest on the eastern side of the Corrabare Range. It is proposed that this offset be linked to the loss of habitat on the subject area. The quality of the habitat in the subject area is lower than the powerline easement resulting in an improved environmental outcome.

Appendix 1 Combined Floristic List

Acanthaceae	**Fabaceae (Mimosoideae)**	**Phormiaceae**
Pseuderanthemum variabile	*Acacia elongata*	*Dianella caerulea*
Adiantaceae	*Acacia falcata*	*Dianella longifolia*
Adiantum aethiopicum	*Acacia linifolia*	**Pittosporaceae**
Cheilanthes sieberi	*Acacia longifolia*	*Billardiera scandens*
Apocynaceae	*Acacia myrtifolia*	*Bursaria spinosa*
Parsonsia straminea	*Acacia parvipinnula*	**Poaceae**
Araliaceae	*Acacia ulicifolia*	**Chloris gayana*
Astrotricha obovata	**Goodeniaceae**	**Cortaderia jubata*
Polyscias sambucifolia	*Goodenia hederacea*	**Pennisetum*
Asteraceae	*Goodenia heterophylla*	*Anisopogon*
**Senecio madagascariensis*	**Haloragaceae**	*Aristida vagans*
**Taraxacum officinale*	*Gonocarpus teucrioides*	*Austrodanthonia fulva*
Cassinia sp.	**Lauraceae**	*Dichelachne rara*
Chrysocephalum semipapposum	*Cassytha glabella*	*Echinopogon*
Ozothamnus diosmifolius	**Lobeliaceae**	*Entolasia stricta*
Bignoniaceae	*Pratia purpurascens*	*Imperata cylindrica*
Pandorea pandorana	**Loganiaceae**	*Joycea pallida*
Casuarinaceae	*Logania albiflora*	*Microlaena stipoides*
Allocasuarina torulosa	**Lomandraceae**	*Panicum simile*
Celastraceae	*Lomandra cylindrica*	*Themeda australis*
Maytenus silvestris	*Lomandra filiformis subsp.*	**Proteaceae**
Dilleniaceae	*Lomandra longifolia*	*Grevillea montana*
Hibbertia empetrifolia	*Lomandra multiflora*	*Persoonia linearis*
Epacridaceae	**Loranthaceae**	**Ranunculaceae**
Leucopogon juniperinus	*Amyema miquelii*	*Clematis glycinoides*
Euphorbiaceae	**Luzuriagaceae**	**Rubiaceae**
Breynia oblongifolia	*Geitonoplesium cymosum*	*Galium binifolium*
Glochidion ferdinandi	**Myrsinaceae**	*Pomax umbellata*
Phyllanthus hirtellus	*Myrsine variabilis*	**Santalaceae**
Poranthera ericifolia	**Myrtaceae**	*Exocarpos*
Poranthera microphylla	*Angophora costata*	**Sapindaceae**
Fabaceae (Faboideae)	*Corymbia gummifera*	*Dodonaea triquetra*
Daviesia ulicifolia	*Corymbia maculata*	**Thymelaeaceae**
Desmodium rhytidophyllum	*Eucalyptus fibrosa*	*Pimelea linifolia*
Dillwynia sieberi	*Eucalyptus punctata*	**Verbenaceae**
Glycine clandestina	*Eucalyptus umbra*	**Lantana camara*
Glycine microphylla	*Leptospermum polygalifolium*	**Violaceae**
Hardenbergia violacea	*Melaleuca styphelioides*	*Hybanthus*
Hovea linearis	*Syncarpia glomulifera*	*Viola hederacea*
Kennedia rubicunda	**Oleaceae**	**Zamiaceae**
Podolobium ilicifolium	*Notelaea venosa*	*Macrozamia flexuosa*
Pultenaea spinosa	**Orchidaceae**	*Macrozamia reducta*
Pultenaea villosa	*Calochilus campestris*	

Appendix 2 Floristic plot details

PLOT 1		
Family Name	**Scientific Name**	**CA**
Adiantaceae	*Cheilanthes sieberi*	1
Araliaceae	*Polyscias sambucifolia*	1
Araliaceae	*Astrotricha obovata*	1
Asteraceae	**Senecio madagascariensis*	1
Bignoniaceae	*Pandorea pandorana*	2
Casuarinaceae	*Allocasuarina torulosa*	3
Dilleniaceae	*Hibbertia empetrifolia*	2
Epacridaceae	*Leucopogon juniperinus*	1
Euphorbiaceae	*Poranthera microphylla*	1
Euphorbiaceae	*Glochidion ferdinandi*	1
Euphorbiaceae	*Phyllanthus hirtellus*	1
Fabaceae (Faboideae)	*Glycine microphylla*	1
Fabaceae (Faboideae)	*Hovea linearis*	1
Fabaceae (Faboideae)	*Pultenaea villosa*	1
Fabaceae (Faboideae)	*Daviesia ulicifolia*	2
Fabaceae (Faboideae)	*Podolobium ilicifolium*	2
Fabaceae (Mimosoideae)	*Acacia elongata*	1
Fabaceae (Mimosoideae)	*Acacia falcata*	1
Fabaceae (Mimosoideae)	*Acacia ulicifolia*	1
Fabaceae (Mimosoideae)	*Acacia linifolia*	2
Goodeniaceae	*Goodenia heterophylla*	1
Haloragaceae	*Gonocarpus teucrioides*	1
Lauraceae	*Cassytha glabella*	1
Lobeliaceae	*Pratia purpurascens*	1
Lomandraceae	*Lomandra multiflora*	1
Lomandraceae	*Lomandra filiformis subsp. coriacea*	1
Lomandraceae	*Lomandra longifolia*	1
Luzuriagaceae	*Geitonoplesium cymosum*	2
Myrsinaceae	*Myrsine variabilis*	2
Myrtaceae	*Leptospermum polygalifolium*	1
Myrtaceae	*Syncarpia glomulifera*	2
Myrtaceae	*Eucalyptus umbra*	3
Myrtaceae	*Corymbia maculata*	3
Myrtaceae	*Angophora costata*	3
Myrtaceae	*Corymbia gummifera*	3
Oleaceae	*Notelaea venosa*	1
Phormiaceae	*Dianella caerulea*	2
Pittosporaceae	*Billardiera scandens*	1
Poaceae	*Themeda australis*	1

Poaceae	*Aristida vagans*	1
Poaceae	*Echinopogon caespitosus*	1
Poaceae	*Joycea pallida*	1
Poaceae	*Anisopogon avenaceus*	2
Poaceae	*Imperata cylindrica*	3
Poaceae	*Microlaena stipoides*	3
Proteaceae	*Persoonia linearis*	1
Ranunculaceae	*Clematis glycinoides*	1
Thymelaeaceae	*Pimelea linifolia*	1
Violaceae	*Hybanthus monopetalus*	1
Zamiaceae	*Macrozamia reducta*	1
Zamiaceae	*Macrozamia flexuosa*	1

PLOT 2		
Family Name	**Scientific Name**	**CA**
Acanthaceae	*Pseuderanthemum variabile*	1
Adiantaceae	*Cheilanthes sieberi*	1
Apocynaceae	*Parsonsia straminea*	2
Asteraceae	**Taraxacum officinale*	1
Asteraceae	*Cassinia sp.*	1
Asteraceae	*Ozothamnus diosmifolius*	1
Bignoniaceae	*Pandorea pandorana*	1
Dilleniaceae	*Hibbertia empetrifolia*	1
Euphorbiaceae	*Phyllanthus hirtellus*	1
Euphorbiaceae	*Poranthera ericifolia*	1
Fabaceae (Faboideae)	*Glycine microphylla*	1
Fabaceae (Faboideae)	*Pultenaea villosa*	1
Fabaceae (Faboideae)	*Podolobium ilicifolium*	1
Fabaceae (Faboideae)	*Glycine clandestina*	1
Fabaceae (Faboideae)	*Hardenbergia violacea*	1
Fabaceae (Faboideae)	*Dillwynia sieberi*	1
Fabaceae (Faboideae)	*Daviesia ulicifolia*	3
Fabaceae (Mimosoideae)	*Acacia elongata*	1
Fabaceae (Mimosoideae)	*Acacia parvipinnula*	1
Goodeniaceae	*Goodenia hederacea*	1
Lobeliaceae	*Pratia purpurascens*	1
Lomandraceae	*Lomandra multiflora*	1
Lomandraceae	*Lomandra filiformis subsp. coriacea*	1
Lomandraceae	*Lomandra cylindrica*	1
Luzuriagaceae	*Geitonoplesium cymosum*	1
Myrtaceae	*Eucalyptus umbra*	3
Myrtaceae	*Eucalyptus fibrosa*	3
Myrtaceae	*Corymbia maculata*	4
Phormiaceae	*Dianella caerulea*	1

Phormiaceae	*Dianella longifolia*	1
Pittosporaceae	*Billardiera scandens*	1
Poaceae	*Themeda australis*	1
Poaceae	*Aristida vagans*	1
Poaceae	*Dichelachne rara*	1
Poaceae	*Entolasia stricta*	2
Poaceae	*Joycea pallida*	5
Proteaceae	*Persoonia linearis*	3
Zamiaceae	*Macrozamia reducta*	1
Zamiaceae	*Macrozamia flexuosa*	1

PLOT 3		
Family Name	**Scientific Name**	**CA**
Asteraceae	*Ozothamnus diosmifolius*	3
Fabaceae (Faboideae)	*Hardenbergia violacea*	1
Fabaceae (Faboideae)	*Daviesia ulicifolia*	2
Fabaceae (Faboideae)	*Pultenaea villosa*	4
Fabaceae (Mimosoideae)	*Acacia parvipinnula*	2
Fabaceae (Mimosoideae)	*Acacia elongata*	6
Myrtaceae	*Eucalyptus umbra*	3
Poaceae	**Cortaderia jubata*	1
Poaceae	*Entolasia stricta*	4
Poaceae	**Chloris gayana*	4
Verbenaceae	**Lantana camara*	2

Appendix 3 Floristic list for each mapped community

MU30 Smooth-barked Apple Woodland

Adiantaceae		**Lomandraceae**
Adiantum aethiopicum		*Lomandra filiformis subsp. coriacea*
Cheilanthes sieberi		*Lomandra longifolia*
Araliaceae		*Lomandra multiflora*
Astrotricha obovata		**Luzuriagaceae**
Polyscias sambucifolia		*Geitonoplesium cymosum*
Asteraceae		**Myrsinaceae**
**Senecio madagascariensis*		*Myrsine variabilis*
Bignoniaceae		**Myrtaceae**
Pandorea pandorana		*Angophora costata*
Casuarinaceae		*Corymbia gummifera*
Allocasuarina torulosa		*Corymbia maculata*
Celastraceae		*Eucalyptus umbra*
Maytenus silvestris		*Leptospermum polygalifolium*
Dilleniaceae		*Melaleuca styphelioides*
Hibbertia empetrifolia		*Syncarpia glomulifera*
Epacridaceae		**Oleaceae**
Leucopogon juniperinus		*Notelaea venosa*
Euphorbiaceae		**Phormiaceae**
Breynia oblongifolia		*Dianella caerulea*
Glochidion ferdinandi		**Pittosporaceae**
Phyllanthus hirtellus		*Billardiera scandens*
Poranthera microphylla		**Poaceae**
Fabaceae (Faboideae)		*Anisopogon avenaceus*
Daviesia ulicifolia		*Aristida vagans*
Desmodium rhytidophyllum		*Echinopogon caespitosus*
Glycine microphylla		*Imperata cylindrica*
Hardenbergia violacea		*Joycea pallida*
Hovea linearis		*Microlaena stipoides*
Podolobium ilicifolium		*Themeda australis*
Pultenaea villosa		**Proteaceae**
Fabaceae (Mimosoideae)		*Persoonia linearis*
Acacia elongata		**Ranunculaceae**
Acacia falcata		*Clematis glycinoides*
Acacia linifolia		**Rubiaceae**
Acacia ulicifolia		*Galium binifolium*
Goodeniaceae		**Thymelaeaceae**
Goodenia heterophylla		*Pimelea linifolia*
Haloragaceae		**Violaceae**
Gonocarpus teucrioides		*Hybanthus monopetalus*
Lauraceae		*Viola hederacea*
Cassytha glabella		**Zamiaceae**
Lobeliaceae		*Macrozamia flexuosa*
Pratia purpurascens		*Macrozamia reducta*

MU17 Lower Hunter Spotted Gum – Ironbark Forest

Acanthaceae		**Lomandraceae**
Pseuderanthemum variabile		*Lomandra cylindrica*
Adiantaceae		*Lomandra filiformis subsp. coriacea*
Cheilanthes sieberi		*Lomandra multiflora*
Apocynaceae		**Loranthaceae**
Parsonsia straminea		*Amyema miquelii*
Araliaceae		**Luzuriagaceae**
Polyscias sambucifolia		*Geitonoplesium cymosum*
Asteraceae		**Myrtaceae**
Cassinia sp.		*Corymbia maculata*
Chrysocephalum semipapposum		*Eucalyptus fibrosa*
Ozothamnus diosmifolius		*Eucalyptus punctata*
**Taraxacum officinale*		*Eucalyptus umbra*
Bignoniaceae		*Syncarpia glomulifera*
Pandorea pandorana		**Oleaceae**
Casuarinaceae		*Notelaea venosa*
Allocasuarina torulosa		**Orchidaceae**
Celastraceae		*Calochilus campestris*
Maytenus silvestris		**Phormiaceae**
Dilleniaceae		*Dianella caerulea*
Hibbertia empetrifolia		*Dianella longifolia*
Euphorbiaceae		**Pittosporaceae**
Breynia oblongifolia		*Billardiera scandens*
Phyllanthus hirtellus		**Poaceae**
Poranthera ericifolia		*Aristida vagans*
Fabaceae (Faboideae)		*Austrodanthonia fulva*
Daviesia ulicifolia		*Dichelachne rara*
Dillwynia sieberi		*Entolasia stricta*
Glycine clandestina		*Joycea pallida*
Glycine microphylla		*Panicum simile*
Hardenbergia violacea		*Themeda australis*
Hovea linearis		**Proteaceae**
Kennedia rubicunda		*Grevillea montana*
Podolobium ilicifolium		*Persoonia linearis*
Pultenaea spinosa		**Rubiaceae**
Pultenaea villosa		*Galium binifolium*
Fabaceae (Mimosoideae)		*Pomax umbellata*
Acacia elongata		**Santalaceae**
Acacia myrtifolia		*Exocarpos cupressiformis*
Acacia parvipinnula		**Sapindaceae**
Goodeniaceae		*Dodonaea triquetra*
Goodenia hederacea		**Verbenaceae**
Goodenia heterophylla		*Lantana camara*
Lobeliaceae		**Zamiaceae**
Pratia purpurascens		*Macrozamia flexuosa*
Loganiaceae		*Macrozamia reducta*
Logania albiflora		

MU17 Lower Hunter Spotted Gum – Ironbark Forest regenerating

Asteraceae
Ozothamnus diosmifolius
Casuarinaceae
Allocasuarina torulosa
Dilleniaceae
Hibbertia empetrifolia
Euphorbiaceae
Breynia oblongifolia
Fabaceae (Faboideae)
Daviesia ulicifolia
Hardenbergia violacea
Podolobium ilicifolium
Pultenaea villosa
Fabaceae (Mimosoideae)
Acacia elongata
Acacia longifolia
Acacia parvipinnula
Myrtaceae
Corymbia maculata
Eucalyptus fibrosa
Eucalyptus umbra
Pittosporaceae
Bursaria spinosa
Poaceae
Austrodanthonia fulva
**Chloris gayana*
**Cortaderia jubata*
Entolasia stricta
Pennisetum clandestinum
Proteaceae
Grevillea montana
Verbenaceae
**Lantana camara*
Zamiaceae
Macrozamia reducta