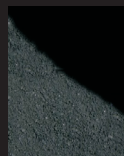


WILPINJONG COAL MINE

REHABILITATION MANAGEMENT PLAN

September 2011

Wilpinjong Coal Pty Limited



WILPINJONG COAL MINE

REHABILITATION MANAGEMENT PLAN

Revision Status Register

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RMP-R03-A	WCPL	DoP	August 2009	-
RMP-R03-C	WCPL	DoP, DECCW & DPI-MR	February 2010	-
RMP-R03-D	WCPL & Landline Consulting	DoP	-	-
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RMP-R03-F	WCPL	DTIRIS NSW, OEH, NOW and DP&I	7 September 2011	
RMP-R03-G	WCPL	DTIRIS NSW, OEH, NOW and DP&I		15 September 2011

September 2011

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Attachment C	Provisional List of Native Species to be used in Revegetation
Attachment D	Noxious Weeds Relevant to the RMP
Attachment E	Flora and Soil Survey Sites

1 INTRODUCTION

The Wilpinjong Coal Mine is an existing open-cut coal mine located approximately 40 kilometres (km) north-east of Mudgee near the village of Wollar in central New South Wales (NSW) (Figure 1). The Wilpinjong Coal Mine is owned and operated by Wilpinjong Coal Pty Limited (WCPL), a wholly owned subsidiary of Peabody Pacific Pty Ltd (Peabody). An aerial photograph of the Wilpinjong Coal Mine illustrating the approved extent of open pits and contained infrastructure is shown on Figure 2.

WCPL was granted Project Approval (05-0021) for the Wilpinjong Coal Mine under section 75J of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act) on 1 February 2006. A copy of the Project Approval is available on the Peabody website (<http://www.peabodyenergy.com.au>).

A modification to the Project Approval (the August 2010 Modification) was granted on 8 September 2010 to increase the run-of-mine (ROM) coal production rate from 13 million tonnes per annum (Mtpa) to 15 Mtpa. The August 2010 Modification also includes the extension of the coal handling and preparation plant (CHPP), the upgrade of coal handling and stockpiling systems, an increase in the operational mobile fleet (e.g. number of haul trucks) and a marginal increase in the maximum annual waste rock production rate.

1.1 PURPOSE AND SCOPE

This Rehabilitation Management Plan (RMP) has been prepared for the Wilpinjong Coal Mine in accordance with Condition 40 of Schedule 3 of the Project Approval.

The relationship of this RMP to the Wilpinjong Coal Mine Environmental Management Structure is shown in Attachment A.

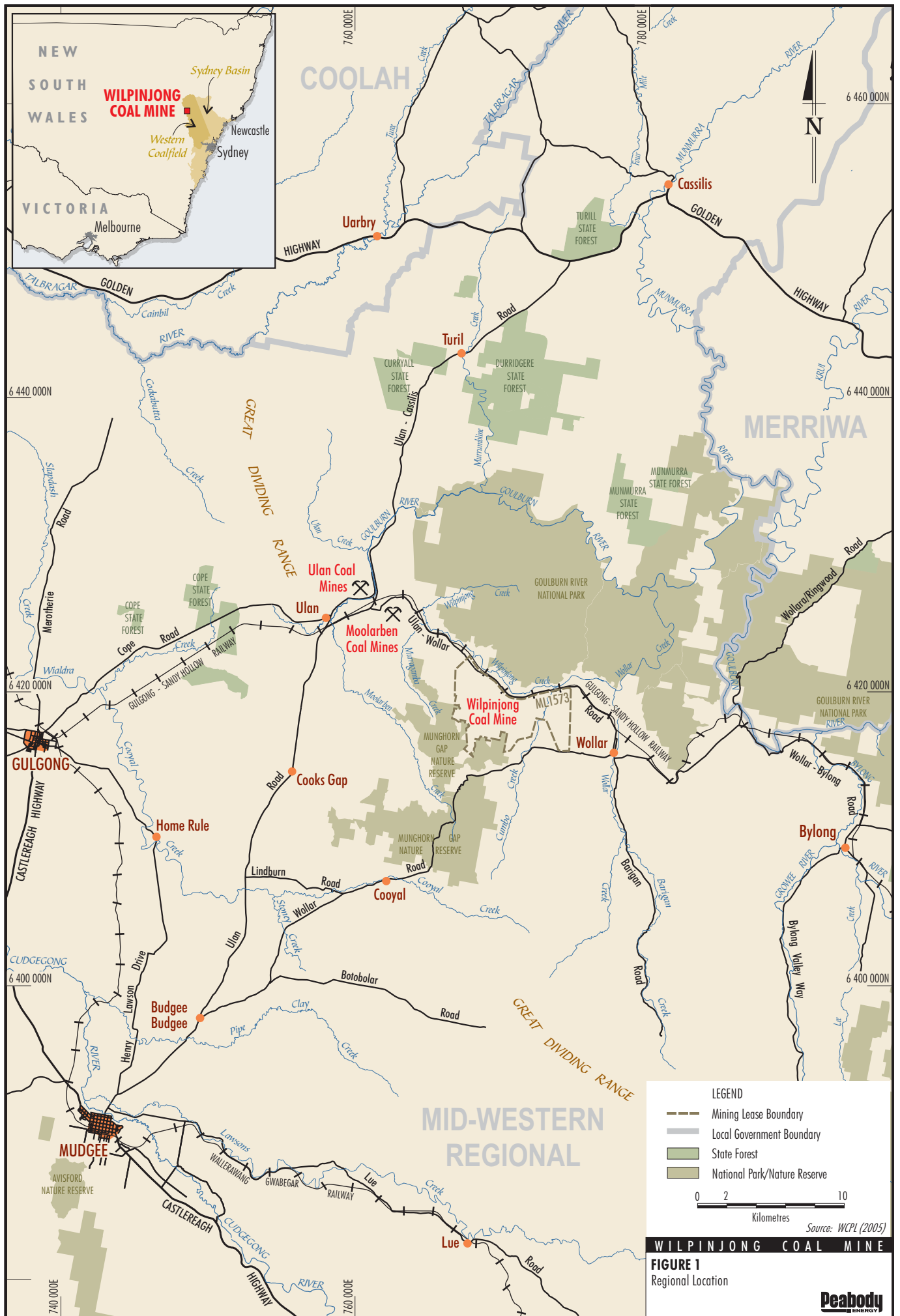
This RMP has been prepared by WCPL and reviewed by Dr Mike Gilbert.

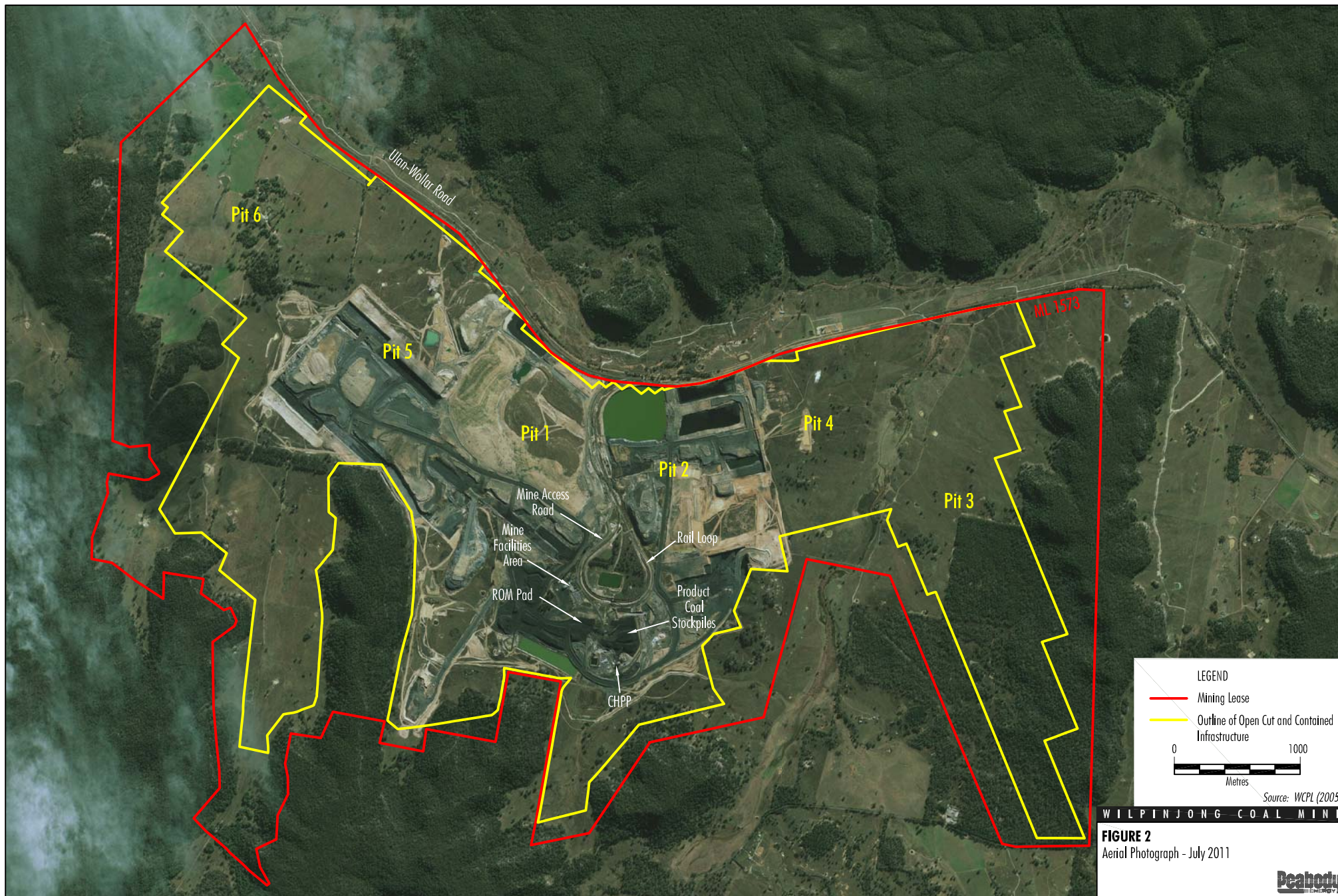
1.2 STRUCTURE OF THE RMP

The remainder of the RMP is structured as follows:

- Section 2: Describes the mechanism for review and update of the RMP.
- Section 3: Outlines the statutory requirements applicable to the RMP.
- Section 4: Provides detailed baseline data relevant to rehabilitation.
- Section 5: Provides an overview of the rehabilitation objectives for the Wilpinjong Coal Mine.
- Section 6: Provides details of the final landform design.
- Section 7: Provides details of the rehabilitation management measures to be implemented including details of the Vegetation Clearance Protocol (VCP) and Threatened Species Management Protocol (TSMP).
- Section 8: Provides a Rehabilitation Monitoring Programme.
- Section 9: Provides the completion criteria which will be utilised to evidence achievement of the objectives of the rehabilitation areas, regeneration areas and the Enhancement and Conservation Areas (ECAs).
- Section 10: Provides a Contingency Plan to manage any unpredicted impacts and their consequences.

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FIGURE 2

Aerial Photograph - July 2011

- Section 11: Describes the roles and responsibilities associated with the RMP.
- Section 12: Describes the annual review and improvement of environmental performance process.
- Section 13: Lists the references cited in the RMP.

Supporting attachments to the RMP are as follows:

- Attachment A Wilpinjong Coal Mine Environmental Management Structure.
- Attachment B Meteorological Data Summary.
- Attachment C Provisional List of Native Species to be used in Revegetation.
- Attachment D Noxious Weeds Relevant to the RMP.
- Attachment E Flora and Soil Survey Sites

2 RMP REVIEW AND UPDATE

The RMP was originally approved by the Director-General in February 2006 for the initial development phase of the Wilpinjong Coal Mine.

This revision of the RMP (RMP-R03-E) has been prepared following approval of the August 2010 Modification (Section 1).

In accordance with Condition 4, Schedule 5 of the Project Approval, this RMP will be reviewed within three months of the submission of:

- an audit under Condition 9 of Schedule 5;
- an Incident Report under Condition 7 of Schedule 5; and
- an Annual Review under Condition 3 of Schedule 5.

In addition, the RMP will be revised to the satisfaction of the Director-General of the NSW Department of Planning and Infrastructure (DP&I) if necessary, to ensure the plan is updated on a regular basis and to incorporate any recommended measures to improve environmental performance.

The RMP will also be reviewed within three months of approval of any modification to the Project Approval and if necessary, revised to the satisfaction of the DP&I.

The revision status of this RMP is indicated on the title page of each copy.

In accordance with Condition 11, Schedule 5 'Access to Information', WCPL will make the RMP publicly available on the Peabody website. A hard copy of the RMP will also be maintained at the Wilpinjong Coal Mine site.

2.1 SUITABLY QUALIFIED EXPERTS

The DP&I, as delegate for the Director-General, approved the appointment of Dr Mike Gilbert as a suitably qualified expert for the preparation of the Landscape Management Plan (LMP) (including the RMP) on 3 June 2010.

This RMP has been reviewed by Dr Mike Gilbert.

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3 STATUTORY REQUIREMENTS

WCPL's statutory obligations are contained in:

- (i) the conditions of the Project Approval;
- (ii) relevant licences and permits, including conditions attached to mining leases; and
- (iii) other relevant legislation.

These are described below.

3.1 EP&A ACT APPROVAL

This RMP has been prepared in accordance with Condition 40 of Schedule 3 of the Project Approval (05-0021). Table 1 indicates where each component of Condition 40 is addressed within this RMP.

Table 1
Rehabilitation Management Plan Requirements

Project Approval Condition	RMP Section
Condition 40 of Schedule 3	
40. The Rehabilitation Management Plan must include:	
a) the rehabilitation objectives for the site;	Section 5
b) a description of the short, medium and long term measures that would be implemented to:	Section 7
• rehabilitate the site;	
• implement the Offset Strategy; and	
• manage the remnant vegetation and habitat on the site;	
c) detailed assessment and completion criteria for the rehabilitation of the site;	Section 9
d) a detailed description of how the performance of the rehabilitation of the mine would be monitored over time to achieve the stated objectives;	Section 8
e) a detailed description of what measures would be implemented over the next 3 years to rehabilitate and manage the landscape of the site including the procedures to be implemented for:	
• progressively rehabilitating areas disturbed by mining;	Section 7.1
• implementing revegetation and regeneration within the Offset Strategy;	Section 7.2
• protecting areas outside the disturbance areas;	Sections 7.3 and 7.4
• rehabilitating creeks on the site (including Wilpinjong Creek);	Section 7.5
• undertaking pre-clearance surveys;	Section 7.6
• managing impacts on fauna;	Section 7.7
• landscaping the site to minimise visual impacts;	Section 7.8
• conserving and reusing topsoil;	Section 7.9
• collecting and propagating seed for rehabilitation works;	Section 7.10
• salvaging and reusing material from the site for habitat enhancement;	Section 7.11
• controlling weeds and feral pests;	Section 7.12
• controlling access;	Section 7.13
• bushfire management;	Section 7.14
• managing any potential conflicts between the rehabilitation of the mine and Aboriginal cultural heritage; and	Section 7.15
f) details of who is responsible for monitoring, reviewing, and implementing the plan.	Sections 2 and 10

In accordance with Condition 39 of Schedule 3 of the Project Approval, this RMP is included as part of the LMP for the Wilpinjong Coal Mine.

In addition, Condition 2 of Schedule 5 of the Project Approval outlines the requirements that are applicable to the preparation of the management plans. The LMP indicates where each component of the conditions is addressed within the plans under the LMP (including this RMP). Table 2 indicates where each relevant component of the conditions is addressed within this RMP.

Table 2
Management Plan Requirements

Project Approval Condition	RMP Section
Condition 2 of Schedule 5	
2. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
a) detailed baseline data;	Section 4
b) a description of:	
• the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 3
• any relevant limits or performance measures/criteria;	Section 9
• the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;	Sections 5 and 9
c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Sections 6 and 7
d) a program to monitor and report on the:	Sections 8 and 12
• impacts and environmental performance of the project;	
• effectiveness of any management measures (see c above);	
e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 10
f) a program to investigate and implement ways to improve the environmental performance of the project over time;	Section 12
g) a protocol for managing and reporting any:	
• incidents;	Refer to LMP
• complaints;	Refer to LMP
• non-compliances with statutory requirements; and	Refer to LMP
• exceedances of the impact assessment criteria and/or performance criteria; and	Section 10
h) a protocol for periodic review of the plan.	Section 2

3.2 LICENCES, PERMITS AND LEASES

In addition to the Project Approval, all activities at or in association with the Wilpinjong Coal Mine will be conducted in accordance with the following licences, permits and leases which have been issued or are pending issue.

- The conditions of Mining Lease (ML) 1573 issued under the NSW *Mining Act, 1992*.
- A Department of Trade, Investment, Regional Infrastructure and Services (DTIRIS NSW) approved Mining Operations Plan (MOP).
- The conditions of Environment Protection Licence (EPL) No. 12425 issued under the NSW *Protection of the Environment Operations Act, 1997*.

- Water extraction licences issued under the NSW *Water Act, 1912*.
- Mining and occupational health and safety related approvals granted by I&I NSW and WorkCover NSW.

3.3 OTHER LEGISLATION

WCPL will conduct the Wilpinjong Coal Mine consistent with the Project Approval and any other legislation that is applicable to an approved Part 3A Project under the EP&A Act.

The following Acts may be applicable to the conduct of the Wilpinjong Coal Mine (WCPL, 2005):

- *Fisheries Management Act, 1994*;
- *Heritage Act, 1977*;
- *Mine Subsidence Compensation Act, 1961*;
- *National Parks and Wildlife Act, 1974*;
- *Protection of the Environment Operations Act, 1997*;
- *Roads Act, 1993*;
- *Rural Fires Act, 1997*;
- *Water Act, 1912*; and
- *Water Management Act, 2000*.

Relevant licences or approvals required under these Acts will be obtained as required.

4 BASELINE DATA

4.1 LANDFORMS AND LANDUSE

Landforms in the general Wilpinjong Coal Mine area are characterised by the narrow flood plains associated with the tributaries of the Goulburn River, the undulating foothills, ridges and escarpments of the Great Dividing Range and the dissected landforms of the Goulburn River National Park.

Local elevations range from approximately 350 metres (m) Australian Height Datum (AHD) on Wilpinjong Creek just to the east of the confluence with Cumbo Creek, to approximately 745 m AHD at a series of peaks to the south of the Wilpinjong Coal Mine along the Great Dividing Range. Elevations in the Goulburn River National Park to the north of the Wilpinjong Coal Mine are generally less than 600 m AHD.

Within ML 1573, elevations generally range from approximately 350 to 440 m AHD, while escarpment areas and narrow ridges adjoining the Munghorn Gap Nature Reserve rise to above 510 m AHD in places.

The Goulburn River National Park adjoins the Wilpinjong Coal Mine to the north and covers an area of approximately 71,000 hectares (ha).

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The Munghorn Gap Nature Reserve covers an area of some 5,900 ha and straddles the Great Dividing Range. Wilpinjong and Cumbo Creeks drain parts of the northern and eastern sides of the Munghorn Gap Nature Reserve, respectively, before flowing through the Wilpinjong Coal Mine area.

Landuse in the vicinity of the Wilpinjong Coal Mine is characterised by a combination of coal mining operations (Ulan & Moolarben Coal Mines), agricultural land uses (primarily grazing) and rural residential development (evident in the local villages of Wollar, Ulan and the localities of Cumbo, Slate Gully and Araluen). WCPL-owned lands are currently utilised for the agistment of livestock.

4.2 METEOROLOGY

For the *Wilpinjong Coal Project Environmental Impact Statement* (EIS) (WCPL, 2005), meteorological data was collected from a number of regional monitoring stations (Gulgong Post Office, Mudgee [George Street] and Jerrys Plains Post Office) and local monitoring stations (Wollar, Maree, Budgee Budgee, Ulan [Mittaville] and Ulan Post Office).

Climate monitoring stations at Gulgong Post Office and Mudgee and rainfall monitoring stations at Wollar (Barrigan Street and Maree) provide indicative climatic data for the Wilpinjong Coal Mine area. The locations and recording periods for these stations are provided in Table 3.

Table 3
Bureau of Meteorology Station Locations and Recording Periods

Station Name	Station Number	Location	Latitude	Longitude	Elevation (m AHD)	Period of Record
Mudgee (George Street)	062021	Approximately 40 km south-west of the Wilpinjong Coal Mine	32.5956	149.5956	454	1870-2004
Gulgong Post Office	062013	Approximately 30 km west of the Wilpinjong Coal Mine	32.3634	149.5329	475	1881-2004
Wollar (Barrigan Street)	062032	Approximately 7 km east of the Wilpinjong Coal Mine	32.3592	149.9484	366	1901-2004
Wollar (Maree)	062056	Approximately 14 km south-east of the Wilpinjong Coal Mine	32.4261	149.9535	410	1962-2004

Source: Bureau of Meteorology (2005).

In addition to the Bureau of Meteorology stations, a meteorological station which continuously records wind speed and direction, temperature, relative humidity, net solar radiation, rainfall, and sigma theta (the rate of change of wind direction) was installed at the Wilpinjong Coal Mine site in May 2004.

Generally the rainfall records indicate moderate seasonality, with the higher rainfall totals being recorded in the summer months and lower rainfall in the winter months (Attachment B). A long-term annual average rainfall of approximately 650 millimetres (mm) at the Wilpinjong Coal Mine site is inferred.

The data presented in Attachment B indicate that regional temperatures are warmest from November through March and coolest from May through September. Average daily maximum temperatures peak in January (31 degrees Celsius [°C] and 30.8°C for Mudgee [George Street] and Gulgong Post Office, respectively), while average daily minimum temperatures are lowest in July (1.3°C at Mudgee [George Street] and 2.5°C at Gulgong Post Office, respectively).

Relative humidity records from all sites indicate a seasonal difference with higher humidity in winter and lower humidity in summer (Attachment B). Average morning (9.00 a.m.) relative humidity recorded at the Mudgee (George Street) and Gulgong Post Office meteorological stations was lowest in December (60% and 61%, respectively). The highest recorded average morning (9.00 a.m.) relative humidity at the stations was in June (80% and 84%, respectively). Average afternoon (3.00 p.m.) monthly relative humidity ranged from 37 to 56% for Mudgee (George Street) and from 36% to 57% for Gulgong Post Office.

Wind roses for the Wilpinjong Coal Mine area indicate that relatively strong winds from the west are dominant during winter and while they are also common during spring, spring exhibits an almost equal distribution of easterly and westerly winds. The wind roses also indicate that winds from the east and east south-east are more common during summer and autumn, respectively. Comparison of measured on-site wind data with The Air Pollution Model (TAPM) indicates seasonal wind direction compares favourably, with measured on-site wind speeds generally lower than the wind speeds generated by TAPM.

The average annual evapotranspiration at the Wilpinjong Coal Mine is estimated to be approximately 1,730 mm, with monthly evapotranspiration highest in December (235 mm) and January (220 mm) and lowest in June (65 mm) and July (70 mm). Evapotranspiration rates differ markedly between summer and winter (Attachment B).

4.3 GEOLOGY

The Wilpinjong Coal Mine is located in the Western Coalfield near the margin of the Sydney-Gunnedah Basin. The Wilpinjong resource is contained in the Ulan Seam which occurs in the lower part of the Late Permian Illawarra Coal Measures. The coal measures are overlain by the Triassic Narrabeen Group (locally known as the Wollar Sandstone) comprising mainly conglomerate and sandstone.

The Narrabeen Group sandstones, conglomerates and siltstones are the dominant geology of the Goulburn River National Park and Munghorn Gap Nature Reserve to the north and south of the Wilpinjong Coal Mine respectively, and overlie the Permian coal measures.

4.4 SOILS

Soil landscapes were classified and mapped in accordance with descriptions in the Soil Landscapes of the Dubbo 1:250,000 Sheet (NSW Department of Land and Water Conservation [DLWC], 1998) and Wilpinjong Coal Mine field surveys. Three soil landscapes, viz. Ulan, Barigan Creek and Lees Pinch (DLWC, 1998) were identified in the vicinity of the Wilpinjong Coal Mine area (Table 4).

Major soil types identified include red podzolic soils which occur over the majority of ML 1573 on lower to mid slopes, yellow podzolic soils which occur on lower slopes and minor drainage lines, and earthy sands which occur along Bens Creek and at the bases of sandstone escarpments. Brown earths occur in small patches on the eastern bank of Cumbo Creek and yellow solodic soils occur as a thin band in the south-east of ML 1573. Lithosols occur on the higher plateaus and escarpments adjoining the Munghorn Gap Nature Reserve and the steeper slopes in the east of ML 1573. Alluvial soils occur along drainage lines.

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Table 4
Soil Landscapes of the Wilpinjong Coal Mine Area

Landscape	Landform	Lithology	Typical Soils	Limitations
Barigan Creek	Lower slopes of sandstone plateau escarpments. Undulating low rises and flats.	<i>Illawarra Coal Measures and Shoalhaven Group</i> Shale, sandstone, siltstone, conglomerate, chert.	Yellow podzolic soils and red podzolic soils.	Moderate erosion hazard with surface soils subject to structural degradation with mechanical disturbance. Imperfectly to moderately drained.
Ulan	Low undulating rises and creek flats.	<i>Undifferentiated and Illawarra Coal Measures</i> Shale, sandstone, conglomerate, chert, coal and torbanite.	Yellow podzolic, yellow solodic/ solonetz, yellow and brown earths, and earthy sands.	Moderate to high erosion hazard and susceptible to soil structure degradation. Imperfectly drained on the lower slopes and depressions.
Lees Pinch	Sandstone plateau and hillslopes with boulder debris.	<i>Narrabeen Group and Illawarra Coal Measures</i> Sandstone, Wollar sandstone, conglomeratic sandstone, chert, shale coal, torbanite.	Shallow siliceous sands, shallow acid soils, yellow earths, yellow podzolic soils.	Steep slopes have high erosion hazard when cover is low. Low to very low waterholding capacity and high permeability.

After: DLWC (1998).

4.5 FLORA

The Wilpinjong Coal Mine area and surrounds support a diversity of flora species and communities. Remnant vegetation is dominated by eucalypt woodland and forests. A number of tree species including Narrow-leaved Ironbark (*Eucalyptus crebra*), Coast Grey Box (*E. moluccana*), Black Cypress Pine (*Callitris endlicheri*), and Rough-barked Apple (*Angophora floribunda*) are widespread and common and associate with many other species. Other dominant tree species include Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*), White Box (*E. albens*) and Grey Gum (*E. punctata*). Table 5 and Figure 3 provide a summary of the vegetation communities identified within the Wilpinjong Coal Mine area and surrounds.

One threatened flora species listed as Vulnerable under both the NSW *Threatened Species Conservation Act, 1995* (TSC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act) was recorded by the surveys, viz. Cannon's Stringybark (*Eucalyptus cannonii*). One population of *E. cannonii* was recorded on the midslopes of the sandstone range to the west of the Wilpinjong Coal Mine (Figure 3). This population is not located within the Wilpinjong Coal Mine disturbance area (Figure 3).

The White Box, Yellow Box and Blakely's Red Gum Woodland (WBYBBRG) Endangered Ecological Community (EEC) listed under the TSC Act and the Grassy White Box Woodlands EEC listed (at that time) under the EPBC Act were also recorded in the Wilpinjong Coal Mine area and surrounds by the flora surveys and both are represented by communities 1 and 5a on Figure 3.

Two regionally significant species were recorded by the surveys, viz., *Boronia angustisepala* and *Gonocarpus longifolius*. Both are listed as rare nationally in Rare or Threatened Australian Plants (ROTAP)¹ (Briggs and Leigh, 1996). Neither species was recorded within the Wilpinjong Coal Mine disturbance area. Both were recorded within vegetation community 6 on the upper slopes of the sandstone ranges to the south-west of the Wilpinjong Coal Mine (Figure 3).

¹ *B. angustisepala* is listed in ROTAP as *Boronia rubiginosa* (Duretto, 1999).

Table 5
Vegetation Communities Identified within the Wilpinjong Coal Mine Area and Surrounds

Vegetation Community		Dominant Species		Landscape Position
		Scientific Names	Common Names	
1	Yellow Box and Blakely's Red Gum Woodlands	<i>Eucalyptus melliodora</i> / <i>E. blakelyi</i> / <i>Angophora floribunda</i> ± <i>E. moluccana</i>	Yellow Box/Blakely's Red Gum/Rough-barked Apple ± Coast Grey Box	Permian or volcanic soils of the valley floor, lower south-facing slopes of sandstone ranges north of Wilpinjong Creek, drainage lines.
2	Coast Grey Box Woodlands	<i>E. moluccana</i> ± <i>E. crebra</i> ± <i>A. floribunda</i> ± <i>Callitris endlicheri</i>	Coast Grey Box ± Narrow-leaved Ironbark ± Rough-barked Apple ± Black Cypress Pine	Upslope of vegetation community 1, drainage lines and gentle slopes of valleys.
3	Rough-barked Apple Woodlands	<i>A. floribunda</i> ± <i>E. crebra</i> ± <i>C. endlicheri</i>	Rough-barked Apple ± Narrow-leaved Ironbark ± Black Cypress Pine	Slopes, rises and low hills on the valley floor on shallow stony soil, sheltered slopes and gullies of sandstone ranges.
4	Narrow-leaved Ironbark Forest	<i>E. crebra</i> / <i>C. endlicheri</i> ± <i>E. macrorhyncha</i> ± <i>A. floribunda</i> ± <i>E. caleyi</i>	Narrow-leaved Ironbark/Black Cypress Pine ± Red Stringybark ± Rough-barked Apple ± Calleys Ironbark	Gravelly soils of cleared lands, lower hill slopes, stony rises.
5a	Grassy White Box Woodlands	<i>E. albens</i> ± <i>E. moluccana</i> ± <i>C. endlicheri</i>	White Box ± Coast Grey Box ± Black Cypress Pine	Permian clay hills, north-facing colluvial footslopes of sandstone ranges.
5b	Shrubby White Box Woodlands	<i>E. albens</i> / <i>C. endlicheri</i> ± <i>A. floribunda</i> ± <i>E. moluccana</i> ± <i>E. crebra</i>	White Box/Black Cypress Pine ± Rough-barked Apple ± Coast Grey Box ± Narrow-leaved Ironbark	East, south and west-facing lower and mid slopes of sandstone ranges, dry elevated flats on sandstone ranges.
6	Sandstone Range Shrubby Woodlands	<i>E. punctata</i> / <i>E. sparsifolia</i> / <i>C. endlicheri</i> ± <i>E. agglomerata</i> ± <i>E. fibrosa</i> ± <i>E. crebra</i> ± <i>A. floribunda</i> ± <i>E. dawsonii</i>	Grey Gum/Narrow-leaved Stringybark/Black Cypress Pine ± Blue-leaved Stringybark ± Broad-leaved Ironbark ± Narrow-leaved Ironbark ± Rough-barked Apple ± Slaty Gum	Upper slopes and ridges of sandstone ranges, steep stony hills.
7	Cleared Agricultural Land	N/A	N/A	Permian soils of the valley floor.
8	Secondary Shrubland	<i>Acacia ixiophylla</i> / <i>Bursaria spinosa</i> / <i>Cassinia quinquefaria</i> / <i>Acacia implexa</i> / <i>Acacia linearifolia</i>	Sticky Wattle/Kangaroo Thorn/Sticky Cassinia/Hickory Wattle/Narrow-leaved Wattle	Recently cleared areas of sandstone range footslopes.

Source: Appendix HA of the EIS (WCPL, 2005).



In addition, one potential new species of Yellow Buttons (*Chrysocephalum* sp.) was recorded in Vegetation Community 6 about half way up the slope of a sandstone range to the south-west of the Wilpinjong Coal Mine. The Sydney Royal Botanic Gardens has confirmed that the specimens collected appear to represent a new species. The *Chrysocephalum* sp. population is located outside the Wilpinjong Coal Mine disturbance area.

4.6 FAUNA

Mammals, avifauna, reptiles and amphibians were surveyed in autumn (mid to late April and mid to late May) and spring (late November) 2004 by Mount King Ecological Surveys as part of the Wilpinjong Coal Mine Terrestrial Fauna Assessment (WCPL, 2005). Bat fauna were surveyed separately in autumn (late March to early April) and spring (late November) 2004 by Greg Richards and Associates as part of the Wilpinjong Coal Mine Bat Fauna Assessment (WCPL, 2005).

Mammals (including Bats)

Twenty-nine native mammals were recorded by the EIS surveys including the Short-beaked Echidna (*Tachyglossus aculeatus*), Yellow-footed Antechinus (*Antechinus flavipes*), Common Wombat (*Vombatus ursinus*), Squirrel Glider (*Petaurus norfolcensis*), Sugar Glider (*Petaurus breviceps*), Common Brushtail Possum (*Trichosurus vulpecula*), Common Ringtail Possum (*Pseudocheirus peregrinus*), Southern Bush Rat (*Rattus fuscipes*), four macropods (kangaroos and wallabies) and 17 bat species. The assemblage of terrestrial mammals was considered to be typical of the region. Four of the 17 bat species identified by the surveys (i.e. Large-eared Pied Bat, Little Bentwing Bat, Large Bentwing Bat and Eastern Horseshoe Bat) are known to roost in caves or their substitutes (examples of cave substitutes include Mine adits and road culverts). No cave structures are known to occur in the Wilpinjong Coal Mine disturbance area. However, there are caves located in the Munghorn Gap Nature Reserve and Goulburn River National Park, as well as rock shelters/caves in sandstone escarpments and rock shelters associated with isolated tors on slopes proximal to the Wilpinjong Coal Mine disturbance area.

Avifauna

A total of 122 native bird species were recorded by the EIS surveys. The richness of bird species was low compared with records from the surrounding region (namely, the Goulburn River National Park, Munghorn Gap Nature Reserve, and at the Ulan Coal Mines). Woodland birds dominated the assemblage of birds recorded, with all survey sites sampling woodland remnants disturbed to varying degrees.

Reptiles

Seventeen reptile species were recorded by the EIS surveys. The diversity and number of reptiles recorded was low with only single individuals of most species recorded. Three burrowing reptile species were recorded including the Prong-snouted Blind Snake (*Ramphotyphlops bituberculata*), Blackish Blind Snake (*Ramphotyphlops nigrescens*) and Two-clawed Worm-skink (*Anomalopus leuckartii*).

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Amphibians

Six species of frogs were recorded by the EIS surveys, namely, the Long-thumbed Frog (*Limnodynastes fletcheri*), Striped Marsh Frog (*Limnodynastes peronii*), Common Eastern Froglet (*Crinia signifera*), Peron's Tree Frog (*Litoria peronii*), Rocket Frog (*Litoria nasuta*) and Broad-palmed Frog (*Litoria latopalmata*). The amphibians recorded by the surveys were associated with waterbodies, namely, Wilpinjong Creek, Cumbo Creek and some farm dams.

Threatened Fauna

Eighteen fauna species listed as threatened under the TSC Act including one species also listed under the EPBC Act were recorded within the Wilpinjong Coal Mine area and surrounds by the EIS surveys.

The Gang-gang Cockatoo (*Callocephalon fimbriatum*), while recorded by the EIS surveys, was not listed as threatened until 22 July 2005. Table 6 summarises the threatened fauna species recorded in the Wilpinjong Coal Mine area and surrounds. Figure 4 illustrates the approximate location at which threatened species were recorded.

Table 6
Threatened Fauna Species Recorded by Wilpinjong Coal Mine Surveys

Common Name	Scientific Name	Conservation Status	
		TSC Act ¹	EPBC Act ²
Black-chinned Honeyeater	<i>Melithreptus gularis gularis</i>	V	-
Painted Honeyeater	<i>Grantiella picta</i>	V	-
Brown Treecreeper	<i>Climacteris picumnus victoriae</i>	V	-
Diamond Firetail	<i>Stagonopleura guttata</i>	V	-
Glossy Black-cockatoo	<i>Calyptorhynchus lathami</i>	V	-
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	V	-
Hooded Robin	<i>Melanodryas cucullata cucullata</i>	V	-
Speckled Warbler	<i>Pyrrholaemus sagittatus</i>	V	-
Square-tailed Kite	<i>Lophoictinia isura</i>	V	-
Masked Owl	<i>Tyto novaehollandiae</i>	V	-
Turquoise Parrot	<i>Neophema pulchella</i>	V	-
Squirrel Glider	<i>Petaurus norfolkensis</i>	V	-
Yellow-bellied Sheath-tail Bat	<i>Saccolaimus flaviventris</i>	V	-
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	V	V
Eastern Falsistrelle	<i>Falsistrellus tasmaniensis</i>	V	-
Little Bentwing Bat	<i>Miniopterus australis</i>	V	-
Large Bentwing Bat	<i>Miniopterus schreibersii</i>	V	-
East-coast Freetail Bat	<i>Mormopterus norfolkensis</i>	V	-

Source: Appendices HB and HC of the EIS (WCPL, 2005).

1 NSW *Threatened Species Conservation Act*, 1995.

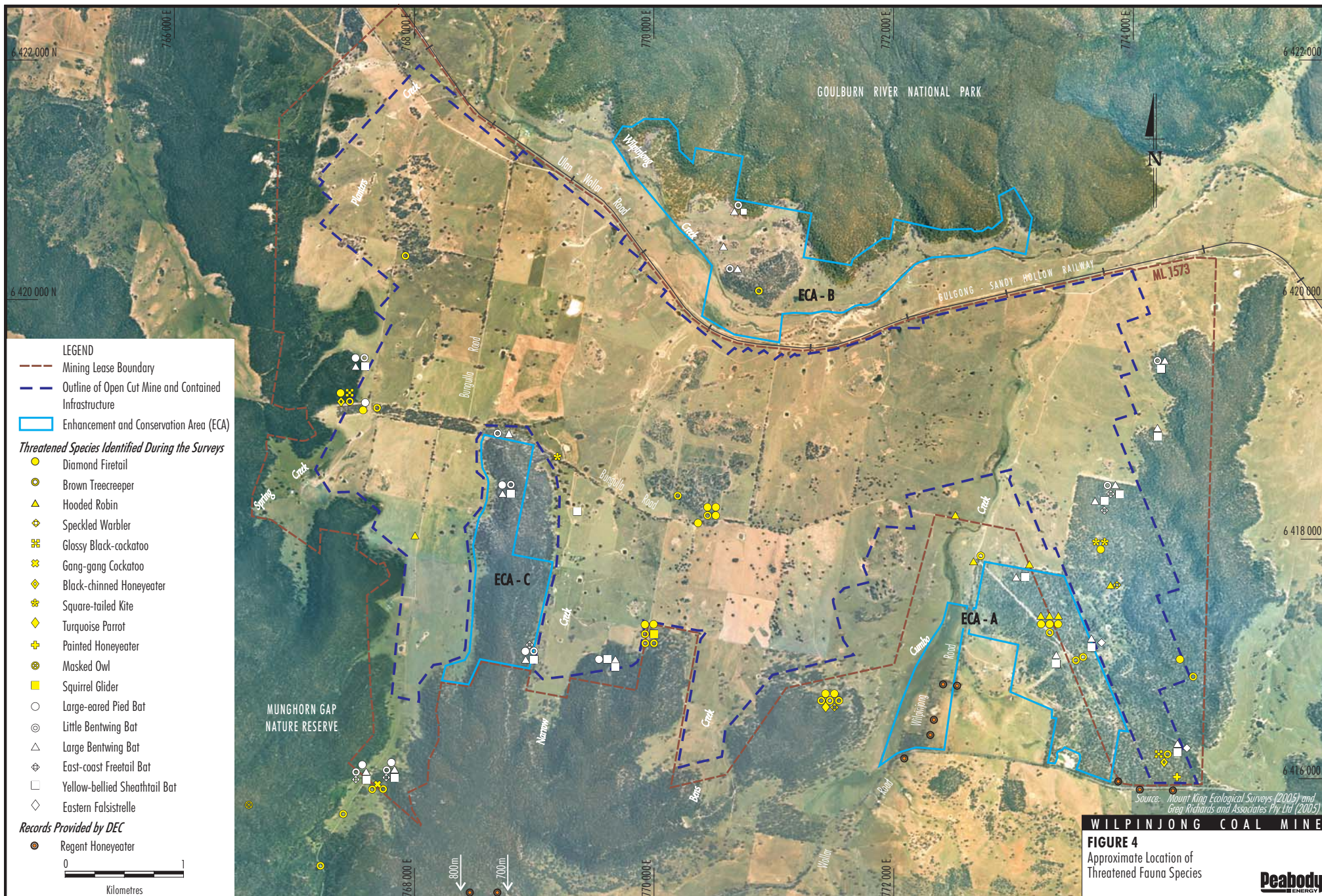
2 Commonwealth *Environment Protection and Biodiversity Conservation Act*, 1999.

V Vulnerable.

Introduced Fauna

Eleven introduced species were recorded by the surveys, namely, the Common Starling (*Sturnus vulgaris*), House Mouse (*Mus musculus*), Black Rat (*Rattus rattus*), Cat (*Felis catus*), Dog (*Canis familiaris*), Red Fox (*Vulpes vulpes*), Brown Hare (*Lepus capensis*), Rabbit (*Oryctolagus cuniculus*), Goat (*Capra hircus*), Feral Pig (*Sus scrofa*) and European Cattle (*Bos taurus*).

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5 REHABILITATION OBJECTIVES

This section outlines the rehabilitation objectives of three types of Wilpinjong Coal Mine areas (i.e. rehabilitation areas, regeneration areas and ECAs) (Figure 5). These areas are described in the EIS (WCPL, 2005). A description, including the rehabilitation objectives, for each type of area is provided below.

Rehabilitation Areas

Rehabilitation areas include areas disturbed by the Wilpinjong Coal Mine which will be rehabilitated and revegetated. Rehabilitation and revegetation would be undertaken progressively as mining proceeds. Section 7.1 describes the proposed management and implementation of rehabilitation works in areas disturbed by mining, including progressive rehabilitation and revegetation.

Specific rehabilitation objectives for the rehabilitation areas are as follows:

- To create safe, stable, adequately drained post-mining landforms that are consistent with the local surrounding landscape. Landforms would be monitored to ensure early identification of potential problems with landform development.
- To produce a net increase in woodland vegetation relative to the landscape described in the EIS (WCPL, 2005).
- To increase the continuity of woodland vegetation by establishing links between woodland vegetation in the rehabilitation areas, regeneration areas and existing remnant vegetation in the Munghorn Gap Nature Reserve, Goulburn River National Park and the ECAs.
- To preserve the existing beneficial use of water resources.
- Future landuse options for the rehabilitation areas include grazing activities of varying intensity and establishment of woodland habitat.

Regeneration Areas

Regeneration areas, which predominantly comprise cleared agricultural land, will be established on areas of WCPL-owned land situated proximal to the Wilpinjong Coal Mine rehabilitation areas (Figure 5). WCPL will establish woodland vegetation in the Regeneration Areas through natural regeneration and selective planting if monitoring demonstrates lack of regeneration.

Specific rehabilitation objectives for the Regeneration Areas include:

- To establish woodland vegetation in the Regeneration Areas (including the banks of Wilpinjong and Cumbo Creeks) through natural regeneration and selective planting if required (i.e. in areas where natural regeneration is unsuccessful).
- To increase the continuity of woodland vegetation in the region. This will be done by providing woodland corridors between Goulburn River National Park and the remnant to the east as well as between an ECA and remnant vegetation adjoining the Munghorn Gap Nature Reserve (Figure 5).

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Enhancement and Conservation Areas

The ECAs have been established on areas of WCPL-owned land containing remnant vegetation and grazing land (Figure 5). Rehabilitation objectives for the ECAs include:

- enhancement through the implementation of the land management practices such as the exclusion of livestock to encourage natural regeneration and selective planting if required (Section 7.2); and
- conservation through voluntary conservation agreement which has rezoned the land in the ECAs for the purpose of protecting the land for conservation (Section 7.3).

6 LANDFORM DESIGN

The final landform for the project including location and site drainage has been designed to complement the natural landforms in and around the site. Catchment surface flow will be reinstated from the base of the Munghorn Gap Nature Reserve area north to Wilpinjong Creek and onto the Goulburn River as shown in the proposed final landform design (Figure 6).

The final landform is to drain in a generally south to north direction. Drainage lines with greater than 3% fall will need to be armoured to reduce scouring and erosion.

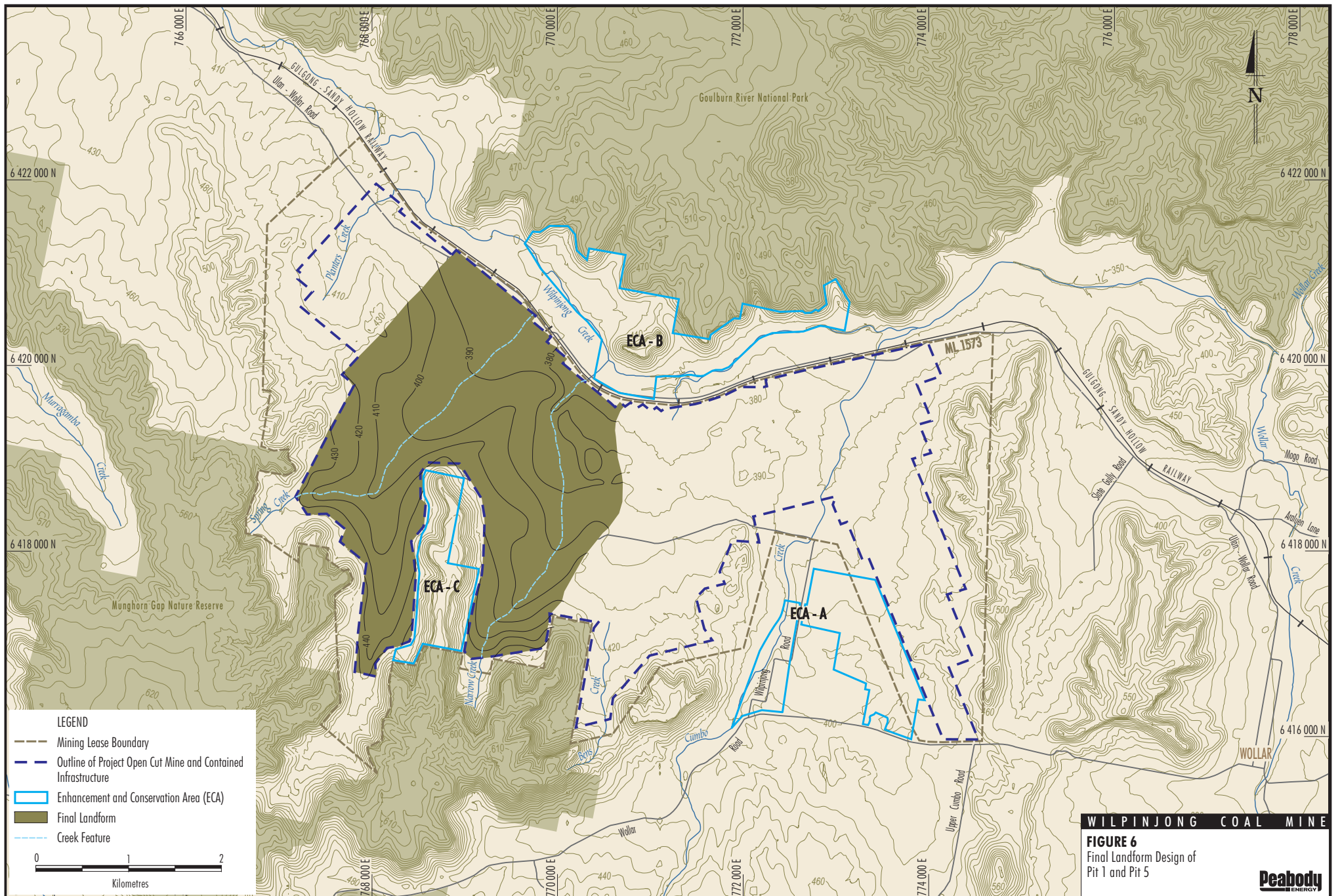
Sediment control dams are to be constructed along major drainage lines in rehabilitated landforms to reduce suspended solids in surface flow from the site. Sediment dams will be placed along the main drainage lines as close as practical to the northern edge of the mining lease.

7 REHABILITATION MANAGEMENT MEASURES

The rehabilitation management measures to be implemented for the Wilpinjong Coal Mine (including measures applicable to site rehabilitation, the ECAs and management of remnant vegetation and habitat) are outlined below and include:

- progressive site rehabilitation;
- revegetation and regeneration within the ECAs;
- protecting the ECAs;
- creek rehabilitation;
- a VCP (including pre-clearance surveys and managing impacts on fauna);
- a TSMP;
- landscaping within the Wilpinjong Coal Mine area to minimise visual impacts;
- conservation and re-use of topsoil;
- collection and propagation of seed for rehabilitation works;
- salvage and re-use of material from the Wilpinjong Coal Mine area for habitat enhancement;
- weed and animal pest control;
- restrictions on site access;
- bushfire management; and
- Aboriginal community consultation.

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The rehabilitation management measures comprise short, medium and long-term measures to be implemented over the life of the Wilpinjong Coal Mine. The expected timing (i.e. commencement and frequency) of the rehabilitation management measures required during the operational phase of the Wilpinjong Coal Mine is summarised in Table 7.

Table 7
Timing of Rehabilitation Management Measures

Management Measure	Commencement	Frequency
General Management of Remnant Vegetation/Habitat		
Seed collection	2008	On a progressive basis
Salvage of materials for use in habitat creation	2008	On a progressive basis
Weed surveys of disturbance areas and ECAs	February 2011	Annually over life of mine
Weed control of disturbance areas and ECAs	During pre-clearance survey for vegetation clearance	On-going over the life of the mine
Pest surveys of disturbance areas and ECAs	During pre-clearance survey for vegetation clearance	Triennially
Pest control of disturbance areas and ECAs	During pre-clearance survey for vegetation clearance	Annually
Fencing of ECAs and rehabilitation areas	2008	Repairs as required
Bushfire management	September 2007	Annually in September
Regeneration Areas		
Selective planting if required	September 2011	As required
Rehabilitation Areas		
Fencing	Disturbance sites have been stock proof fenced in 2008	Repairs as required over the life of the mine
Revegetation	Within 12 months of rehabilitation land becoming available. First parcel of land rehabilitated in October 2008	On a progressive basis over the life of the mine, as land becomes available
ECAs		
Fencing	February 2008	Repairs as required over the life of the mine
Weed survey	September 2010	Annual over the life of the mine
Weed control	February 2008	Ongoing/as required over the life of the mine
Pest survey	February 2008	Annual over the life of the mine
Pest control	February 2008	Ongoing/as required over the life of the mine
Selective planting if required	October 2011	As required over the life of the mine
Provision of roosting/nesting resources	2015, if monitoring shows action required	As required over the life of the mine
Rezoning application	Within 2 years of Project Approval	Not applicable
Bushfire management	February 2008	Ongoing over the life of the mine

7.1 PROGRESSIVE SITE REHABILITATION

Revegetation of mine disturbance areas (rehabilitation areas) will be conducted progressively as mining proceeds with consideration of tailings dams and areas required for stockpiling pre-strip material. A Tailings Management Strategy will be developed for the Wilpinjong Coal Mine. WCPL will implement several management measures during progressive site rehabilitation.

On completion of landform contouring, topsoiling and erosion and sediment control works, a vegetative cover will be established as soon as practicable. Depending on the proposed post-mining landuse proposed for areas of rehabilitation land, a decision will be made, based on vegetation monitoring results, to boost rehabilitation performance. Remedial action will involve direct seeding or planting of appropriate woody species.

Topsoil conditioning involving the addition of lime, gypsum or fertiliser will be used where required, based on an assessment of soil fertility. Seeding and planting activities will take into account seasonal factors and will be scheduled, where possible, prior to the expected onset of seasonal rains in September/October. Revegetation of rehabilitation areas will result in a combination of woodland areas, pasture areas and mixed woodland/pasture areas.

The aim of revegetation in woodland areas is to establish floristic diversity. Revegetation will include the use of endemic plant species characteristic of the vegetation communities to be disturbed by the mine. A provisional list of species for the woodland areas is provided in Attachment C. Revegetation of the woodland areas would include seeding or planting of species characteristic of the WBYBBRG EEC (e.g. White Box [*Eucalyptus albens*], Yellow Box [*E. melliodora*] and Blakely's Red Gum [*E. blakelyi*]).

Pasture areas would be revegetated using either native and/or improved pasture species. A proposed list of native grasses that could potentially be used in the revegetation of mixed woodland/pasture areas is provided in Attachment C.

Rehabilitation of the pasture areas will be conducted in consideration of guidelines such as those presented in the *Rehabilitation of Open Cut Coal Mines using Native Grasses: Management Guidelines* (DLWC, 2003) and use species which are commercially available.

Rehabilitation areas will be fenced to prevent the uncontrolled entry of livestock and to minimise vehicular traffic during the establishment phase.

Prior to the 2011 growing season (September/October expected rainfalls) Wilpinjong Coal has rehabilitated a total of 100ha of previously mined land, predominantly in Pit 1 (Figure ???). The total rehabilitated area is a combination of three annual campaigns, 2008 = 7ha, 2009 = 28ha and 2010 = 65ha.

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WILPINJONG COAL MINE

FIGURE 7
Rehabilitated Areas -
December 2010

Peabody
ENERGY

7.1.1 Progressive Rehabilitation Specifications

The following technical standards will be implemented during construction of the final landform at Wilpinjong Coal Mine.

Inert Cover Depth

Inert cover will be placed on top of the rehabilitated final landform surface to provide a benign barrier between any overburden that has not completely equilibrated with surface geochemical conditions.

The final landform surface will be reshaped using spoil from the mining operation. The landform surface will then be capped with at least 2 m of semi-consolidated inert cover. Semi-consolidated means inert material that has been paddock dumped and then partially consolidated by the reshaping and grading of the inert material.

Inert cover is defined as overburden ranging from the existing natural land surface that has been stripped of topsoil down to 300 mm above the uppermost stratigraphy of the Ulan Seam geological sequence. Excess inert material can be placed into general low wall spoil once sufficient inert cover has been recovered to achieve at least 2 m of inert cover over mine spoil.

Inert cover is generally friable, non carbonaceous subsoil material and light to dark brown in colour. Inert cover should not contain black carbonaceous material, partings, coarse reject or any other potentially reactive material.

Coarse Reject Disposal

Coarse reject is produced as part of the coal washing process. Some of the coarse reject may have either spontaneous combustion or acid generating potential which needs to be managed. For this reason coarse reject is to be disposed of in mined out final voids as close to the pit floor as practically possible. The reject will be covered with overburden material and then at least 2 m of inert cover when creating the final landform surface.

Drainage Control

The natural pre-mining drainage direction at Wilpinjong Coal Mine is from south to north. Water drains from the base of the Munghorn Gap Nature Reserve area north to Wilpinjong Creek and onto the Goulburn River. This drainage pattern will be reinstated during construction of the final landform and completion of rehabilitation works.

The final landform is to drain in a generally south to north direction. Drainage lines with greater than 3% fall will need to be armoured to reduce scouring and erosion. Specifications for graded banks and rock waterways are set out below should they be required.

Sediment Control Structures

Sediment control dams are to be constructed along major drainage lines in rehabilitated landforms to reduce suspended solids in water flowing from site. The dams need to be spaced to control sediment transfer from site with the final dam on the northern end of the mining operation used as the final control point. The dams should be sized to contain rainfall events in accordance with the Wilpinjong Coal Mine Erosion and Sediment Control Plan (ESCP).

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All other sediment control works are to be consistent with the Wilpinjong Coal Mine ESCP.

Topsoil Placement

Topsoil is to be placed on top of the final landform to act as germination medium for vegetation and as a seed source from the natural seed bank present at the time of topsoil stripping.

Topsoil placement shall only proceed once the final landform and major drainage works (i.e. graded banks, drainage channels and rock waterways if required) have been completed. Topsoil is to be applied at a minimum of 200 mm thickness and maximum of 300 mm in all areas. Statistical methods will not be used to average thickness. The specified minimum depth refers to each and every square metre of applied topsoil.

Topsoiling must be undertaken from the top of slopes or top of sub drainage catchment to minimise erosion damage created by storm runoff from bare upslope areas. Care should be taken to minimise the travel over previously spread topsoil by running on bare spoil and turning onto the spreading run. Topsoiling must be conducted along the general run of the contour. Topsoil is not to be placed in down slope bands as this increases the incidence of erosion. No topsoil is to be placed in the invert of drainage lines or drainage works.

Topsoil will not be required where vegetation trials have demonstrated that inert cover can be used as a suitable substitute.

Slope Angles

Rehabilitated slopes are to be constructed to no greater than 1:6 (10 degrees or 17%) across the entire ML area.

Vegetation Species Selection

Species to be planted in the rehabilitated landforms will be a mixture of native and introduced locally successful tree, grass and legume species. Locally collected tree and shrub seed will be used where practical. Ripping, seeding and fertilising will be undertaken between September and December to take advantage of the growing season to optimise germination and vegetation establishment.

Rhodes grass has been used as it provides early stage vigorous stabilisation of the landform and quickly introduces organic matter to assist with moisture retention and habitat creation. Natives and other slower growing grasses do not provide the same initial stabilisation and organic matter introduction which can expose the landform to instability. Rhodes grass is not drought tolerant or low fertility tolerant so will gradually become less dominant as the initial fertiliser fertility in the soil profile runs down and dry conditions prevail. This is illustrated in the local area where Rhodes grass is only found in moist more fertile areas such as table drains on roadside verges. Rhodes grass can also be controlled using grazing pressure.

Initial trials of Rhodes Grass at Wilpinjong have shown that it's dominance needs to be reduced by reducing the volume of seed in the grass mix. However, it is not dominant to the point of excluding all other grasses and trees. A detailed analysis of the 2008 and 2009 rehabilitation shows significant floristic diversity across a range of landform areas

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Graded Banks

Graded banks are constructed across the slope of rehabilitated areas and are used to collect and direct water flowing from newly rehabilitated areas into rock waterways.

All graded banks shall be constructed at 1% longitudinal grade to the contour of the slope. Cross-fall from the outside edge of the bank to the invert will be between 2% to 3%. Construction of the graded banks is to be programmed to ensure there is no breaching or trafficking over constructed banks.

These structures will most likely only be required when rehabilitating out of pit dumps with 1:6 slopes. Graded banks will generally be constructed at 50 m intervals down a slope i.e. the first graded bank will be constructed at 1% to the contour 50 m from the top of the slope, the second bank at 100 m, etc.

Rock Waterways

The function of rock waterways is to collect and safely discharge flows from graded banks to natural or rehabilitated ground with low slope angles.

Rock waterways are to be excavated following the completion of landform reshaping. Geo-textile will be laid and secured in the excavated structure followed by the placement of suitably sized rock. The base of all major rock waterways is to be constructed with a concave finish which allows for an average maximum cross fall to the centre line of 5%. Base width is measured on top of the rock floor of the waterway and not across the excavated earth base. The base width of all major waterways shall be 2 m.

Rock lined wo-boys will be constructed every 10 m along the rock water ways to act as energy dissipation structures. The crest of wo-boys will be concave rather than convex. This is to encourage flow to the centre of the waterway rather than to the outside where erosive forces may cause damage to the sides of the waterway.

Rock waterways are most likely to be required when rehabilitating out of pit dumps as these landforms will have the steepest slopes (see Slope Angles section above) and therefore the highest velocity water flows from the top to the bottom of the landforms.

Contour Ripping, Seeding and Fertilising

Ripping, seeding and fertilizing will be undertaken following the placement of topsoil and construction of drainage structures on the reshaped final landform. Ripping will be carried out to a depth of 300 mm to 500 mm on the contour and undertaken with survey control. Full and continuous ripping is to be undertaken between surveyed rip lines. The maximum permissible distance between any two rip lines and or rip sets is 1.5 m. Mould boards or equivalent will be used in conjunction with ripping so that rip lines remain open for erosion control and to encourage infiltration of water.

Seeding and fertilising should be undertaken contemporaneously with contour ripping.

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7.2 ENHANCEMENT AND CONSERVATION AREAS

The ECAs have been established on areas of WCPL-owned land containing remnant vegetation and proximal grazing land (Figure 5). The ECAs are placed under a voluntary conservation agreement with the NSW Minister of the Environment. The ECAs will allow for the enhancement and conservation of existing remnant vegetation, including the WBYBBRG EEC.

Management measures to be implemented within the ECAs include enhancement strategies such as fencing, selective planting if required, weed and animal pest control and bushfire management, as detailed below.

Fencing

The perimeter of the ECAs will be fenced to allow for the exclusion of livestock which will assist with natural regeneration in these areas.

Weed and Animal Pest Control

Weed and animal pest control will be implemented for the ECAs. Further information on weed and animal pest control is provided in Section 7.12.

Selective Planting of Native Vegetation

Selective planting of native vegetation will be undertaken to enlarge the WBYBBRG EEC remnants and to link existing remnant vegetation, if monitoring shows lack of revegetation progress. Areas will be revegetated with native species, especially those found in the Wilpinjong Coal Mine area such as *E. blakelyi* and *Angophora floribunda*.

Native vegetation will also be selectively planted along Wilpinjong and Cumbo Creeks where required. Further detail on creek rehabilitation is provided in Section 7.5.

Seed collection and propagation activities will contribute to revegetation associated with the ECAs (Section 7.10).

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Roosting/Nesting Resources

Where practicable, habitat features (e.g. large hollows) would be salvaged during vegetation clearance activities and utilised in the rehabilitation areas, regeneration areas and ECAs (Section 7.11). In addition, artificial roosting/nesting boxes for fauna, particularly threatened fauna, may be used in the rehabilitation areas, regeneration areas and ECAs to provide short-term habitat resources.

Bushfire Management

Bushfire management will be implemented for the ECAs. Further detail on bushfire management is provided in Section 7.14.

Details of the rehabilitation management measures undertaken within the ECAs will be reported in the Annual Review (Section 12).

7.3 PROTECTING THE ECAS

WCPL will implement a range of management measures in order to protect the ECAs, including those listed below:

- conserve and manage the land in the ECAs in accordance with the RMP;
- exclude all stock grazing;
- rezone the land in the ECAs for the purpose of protecting the land for conservation; and
- exclude future open cut mining in the ECAs, unless, in the opinion of the Minister for Planning and Infrastructure, WCPL has demonstrated that there is a clear justification for this on social, economic and/or environmental grounds.

WCPL will provide the Federal Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) with a copy of the rezoning documents, once finalised.

7.4 REGENERATION AREAS

As discussed in Section 5, regeneration areas will be established on WCPL-owned land, creating a corridor between the surrounding protected areas of Goulburn River National Park and Munghorn Gap Nature Reserve, the ECAs and rehabilitated woodlands. Approximately 350 ha of woodland vegetation will be established through natural regeneration and selective planting where required. The regeneration areas will also encompass the revegetation of riparian sections of Wilpinjong Creek and a relocated Cumbo Creek. Apart from property covered by grazing licences prior to March 2009, stock grazing and cultivation will be excluded on WCPL-owned land on the northern side of the Gulgong Sandy Hollow railway line to further assist with local regeneration of these areas.

Regeneration areas were established following extensive consultation with the then DIPNR and DEC during development of the WCPL EIS. Regeneration areas will be established on cleared agricultural land. Agricultural land in the Wollar Ulan area is considered to be low value and low productivity grazing land. The key objectives to be achieved as part of the establishment of regeneration areas as set out in the original WCPL EIS are as follows:

- To establish woodland vegetation on predominantly cleared agricultural land
- To be established through natural regeneration and selective planting where necessary

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- To provide connected uninterrupted woodland corridors between the Munghorn Gap Nature Reserve, mine site woodland rehabilitation and the Goulburn River National Park

Woodland is defined as “ecosystems that contain widely spaced trees with their crowns largely not touching. Temperate woodlands support scattered or widely spaced stands of trees, 10 – 30 metres tall, with projected foliage cover of 10 – 30% (except in dense regenerating stands comprised of many saplings).

One of the main risks to the early establishment of regeneration areas is stock animals (sheep and cattle), rabbits and to a lesser extent kangaroos. Protection from browsing animals is essential for early development of regeneration areas. Stock must be excluded from regeneration areas as they will eat seedlings saplings and damage stems in the first 10 years of planting. Fencing of regeneration areas will assist with excluding stock and other problematic grazing animals. In summary, the steps to be undertaken to establish the Wilpinjong regeneration areas include:

- Fencing to exclude stock and implement rabbit control measures. Stock should be excluded for an initial 10 year period to allow trees to establish to a stage where they are able to withstand the impacts of stock grazing
- Monitor regeneration areas to determine natural regeneration processes and to identify areas that may need assistance with the regeneration process
- Undertake a tree planting and seeding program to assist with regeneration. Tree planting and seeding will be introduced where monitoring shows sluggish establishment of tree species
- Continue to monitor regeneration areas with the aim of achieving a 30% canopy cover for the long term
- rezone the land in the regeneration areas for the purpose of protecting the land for conservation (similar to the arrangements for ECA areas) to the satisfaction of the Director – General prior to the introduction of any agricultural activities in these areas.

Monitoring of the regeneration performance is outlined in Section 8.

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7.5 CREEK REHABILITATION

WCPL will implement several management measures in order to rehabilitate the creeks in the Wilpinjong Coal Mine area. As discussed in Section 7.1, the riparian zone of the permanent creek features formed within the rehabilitation areas will be revegetated where required. Revegetation will include the use of native flora species such as those listed in Attachment C. This will include the exclusion of stock as set out in Section 7.4 above.

The banks of Wilpinjong and Cumbo Creeks in the rehabilitation areas and regeneration areas will be revegetated to increase the quantity of riparian vegetation along these creeks.

A revegetation programme using appropriate native riparian species consistent with works in the upstream regeneration areas will be included in the Cumbo Creek Relocation Plan.

7.6 VEGETATION CLEARANCE PROTOCOL

A VCP will be implemented to minimise impacts on threatened flora and fauna (as listed under the TSC Act or EPBC Act) (Figure 7). The key components of the VCP are outlined below and include:

- delineation of areas to be cleared of remnant vegetation;
- pre-clearance surveys;
- managing impacts on fauna; and
- vegetation clearance procedures including restrictions on clearing times for fauna breeding seasons.

7.6.1 Delineation of Disturbance Areas

This component involves the delineation of areas that are to be cleared of remnant vegetation. Vegetation adjoining the proposed clearance areas will be clearly marked to prevent accidental damage during vegetation clearance activities or Wilpinjong Coal Mine works.

7.6.2 Pre-Clearance Surveys

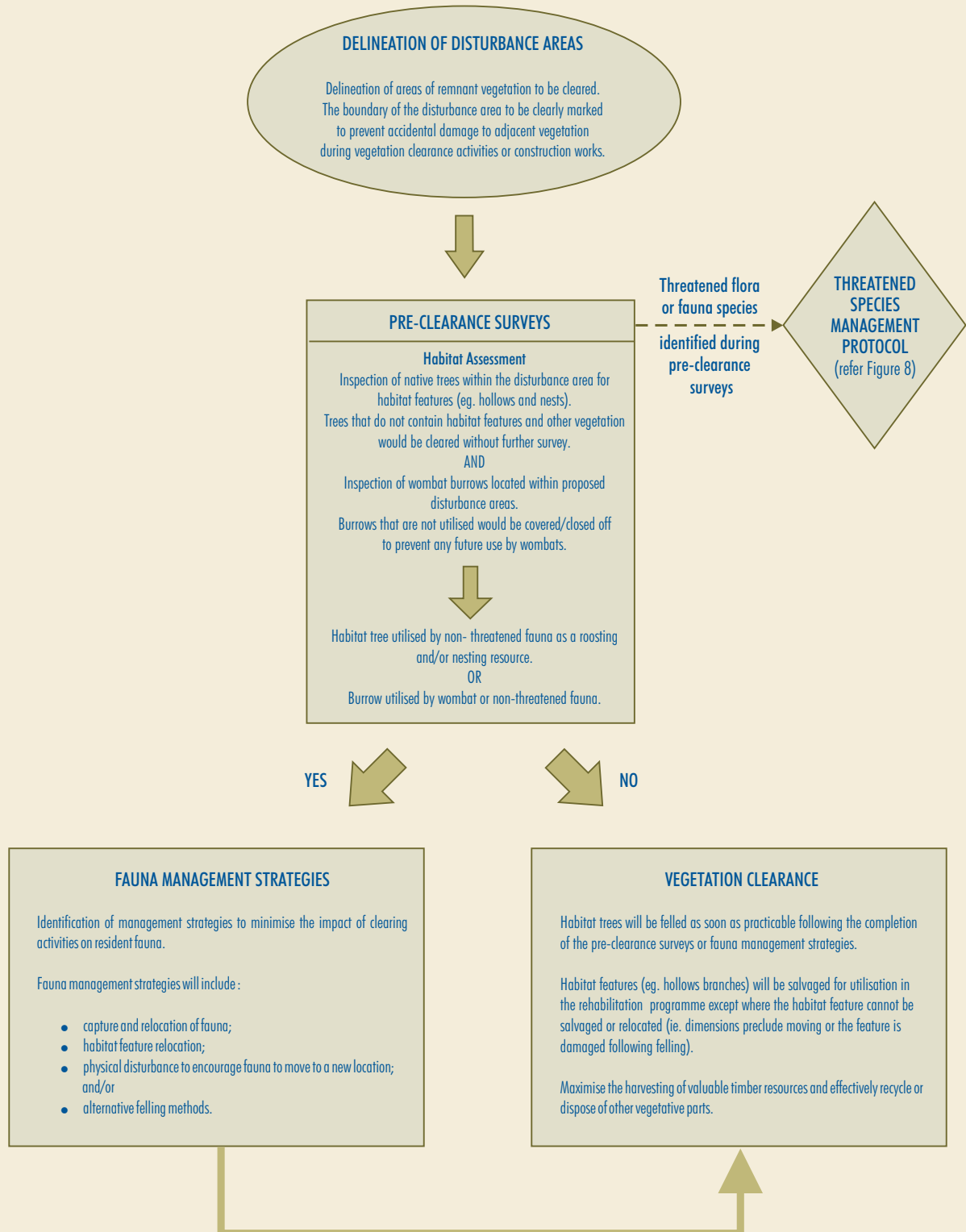
Pre-clearance surveys include habitat assessments which involve the inspection of potential habitat features located within proposed disturbance areas.

Features with the potential to provide roosting and/or nesting resources for birds, bats and/or arboreal mammals (i.e. hollow openings, cracks, loose bark and/or wombat burrows) will be identified during the habitat assessment.

Trees containing features with the potential to provide resources for birds, bats and/or arboreal mammals are referred to as potential habitat trees and will be retained wherever practicable (i.e. when outside of the Wilpinjong Coal Mine disturbance area). Following the identification of potential habitat trees, preliminary and secondary habitat assessments will be undertaken to determine appropriate fauna management strategies.

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VEGETATION CLEARANCE PROTOCOL



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FIGURE 8

Vegetation Clearance Protocol

Parameters recorded at each habitat tree during the preliminary habitat assessment may include:

- estimated height of tree;
- estimated diameter at breast height;
- living status of the tree;
- habitat features (e.g. hollow, opening, crack, loose bark, bird nest);
- whether the habitat feature is considered to provide potential habitat for birds, bats and/or arboreal mammals (by assessing the feature in terms of location, height, size and aspect);
- the potential for the habitat features to be used in rehabilitation;
- fauna observed in the area and surrounds, particularly bird activity at hollows and nests; and
- evidence of fauna in the area and surrounds (e.g. scats, tracks, scratches, remains of prey, etc.).

Following the preliminary habitat assessment, a secondary habitat assessment may be conducted to assess the usage of habitat features by fauna. The secondary habitat assessment may include:

- spotlighting for arboreal mammals; and/or
- observation of hollows and nests/roosts for usage by bird and/or bat species.

Habitat features such as large hollows identified during the pre-clearance surveys will be salvaged and relocated to existing areas of remnant vegetation or rehabilitation areas where practical.

In addition to the above, wombat burrows in the proposed disturbance area will be identified prior to disturbance. A visual inspection of all identified burrows will be undertaken to determine those burrows most likely to contain wombats. The visual inspection may involve raking the dirt at the entrance to each burrow and checking if wombat tracks, scratch marks or scats appear around the burrow over a period of a few days.

Any wombat burrows considered likely to contain wombats after visual inspection will be targeted during trapping (Section 7.6.3). The burrows with larger entrance holes will be particularly targeted during trapping because they are more likely to be occupied than smaller burrows (Triggs, 1996).

In the event that any threatened flora or fauna species are observed during the habitat assessment for the pre-clearance surveys, the TSMP (Section 7.7) will be initiated.

Weed infestations adjacent to or within the proposed disturbance area will be identified during pre-clearance surveys. The following weed control measures have been developed to minimise the potential for weed invasion and competition with native flora during the vegetation clearance activities. Weed control measures will include:

- identification of weed infestations adjacent to or within the proposed disturbance area during pre-clearance surveys;
- implementation of weed management measures such as mechanical removal and application of approved herbicides in authorised areas when conditions are favourable (i.e. when light winds and dry weather prevail); and
- follow-up inspections to assess the effectiveness of the weed management measures implemented and the requirement for any additional management measures.

Further information regarding weed control is provided in Section 7.12.

Following pre-clearance surveys and assessment of potential habitat trees, fauna management strategies (Section 7.6.3) will be implemented if necessary, or vegetation clearance procedures (Section 7.6.4) will commence.

7.6.3 Managing Impacts on Fauna

The fauna management strategies described below have been developed to minimise impacts of the Wilpinjong Coal Mine on fauna.

The practicality of implementing each management strategy will be dependent on the characteristics of the habitat tree/wombat burrow in question and will be determined by the supervising ecologist in consultation with the Peabody Environmental Advisor.

Appropriate licences for the implementation of fauna management strategies will be obtained in consultation with the NSW Office of Environment and Heritage (OEH).

Fauna Management Strategies

The general fauna management strategies to be implemented during the life of the Wilpinjong Coal Mine will include:

- timing of vegetation clearance to avoid nesting/breeding activities. Clearing of identified habitat trees will only be undertaken at times when arboreal fauna and birds are unlikely to be raising young. Clearing of identified habitat trees will therefore be restricted to times between March and July inclusive; and
- when fauna (particularly bats) are identified in the habitat tree, the following will be utilised selectively to minimise the potential for injury to fauna:
 - fell surrounding non-habitat trees to encourage the colony/individuals in the habitat tree to move to an alternative location;
 - cause sufficient physical disturbance to the tree (i.e. shake tree with a dozer) to encourage fauna to relocate;
 - as gently as possible, fell the tree using an excavator and inspect on felling;
 - capture existing fauna for later release at a suitable time;
 - relocate the habitat feature to adjacent remnant vegetation; or
 - block the entrance to habitat features to prevent re-entry prior to felling.

Specific fauna management strategies to minimise Wilpinjong Coal Mine impacts on the Common Wombat (*Vombatus ursinus*) will be implemented. The key components of these strategies, where practical, will include use of a deterrent, trapping, and sealing the burrow to prevent wombats from returning.

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The method of trapping to be implemented will be dependent on the number of burrows present at the time and the nature of the burrow. However, the most likely methods of trapping to be used are:

- Traps inserted into burrow entrances so that any wombats leaving the burrow are automatically trapped (Skerratt *et al.*, 2004). These traps would be set for a period of no more than four nights and checked regularly. When a wombat is caught, it would be removed and the trap re-set. These methods would prevent the same wombat (or other wombats) from re-entering the burrow while the trap is in place.
- Large wire cage traps containing vegetarian bait placed near the entrance of the wombat burrow and left overnight.

All captured wombats will be removed from the traps and released into proximal suitable habitat away from the disturbance area on WCPL-owned land.

7.6.4 Vegetation Clearance Procedures

Following implementation of the relevant fauna management strategies (Section 7.6.3), vegetation clearance will proceed in accordance with the following vegetation clearance procedures:

- Clear delineation of disturbance areas prior to clearance commencing in each area of works.
- In areas of significant earthworks, topsoil resources will be identified, stripped and stockpiled (Section 7.9).
- Trees may be examined for their provision of seed prior to vegetation clearance (Section 7.10).
- Habitat trees are to be felled as soon as practicable after a negative survey result.
- Those features identified for use in rehabilitation programs (e.g. hollow branches) are to be salvaged (Section 7.11).
- Collection of harvestable timber for commercial purposes. Where practicable, trees identified for clearing will be classified as suitable for firewood or commercial milling prior to clearing. This timber will then be salvaged for firewood or milled to optimise the use of this natural resource.
- Collection of viable seed from felled trees (Section 7.10).

7.7 THREATENED SPECIES MANAGEMENT PROTOCOL

A TSMP has been developed to facilitate implementation of threatened species management strategies to minimise the potential impacts on threatened flora and fauna species (Figure 8). The key components of the TSMP are outlined below and include site observations/surveys, threatened species management strategies and reporting.

7.7.1 Site Observations/Surveys

In the event a threatened species listed under the TSC Act or the EPBC Act is identified in the Wilpinjong Coal Mine area or immediate surrounds (for example, during the preliminary or secondary habitat assessments), the Threatened Species Management Strategies phase (Section 7.7.2) of the TSMP will be initiated.

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SITE OBSERVATIONS/SURVEYS

Observations/surveys conducted prior to disturbance (eg. during pre-clearance surveys) and/or during construction result in the identification of threatened flora or fauna species.



THREATENED SPECIES MANAGEMENT STRATEGIES

Management strategies will be implemented to minimise potential impact(s) associated with the development on threatened species.

Management strategies may include threat abatement measures, capture and release, relocation and provision of habitat resources.



REPORTING

The activities conducted as a result of the Threatened Species Management Protocol are reported in the Annual Review.

WILPINJONG COAL MINE

FIGURE 9

Threatened Species
Management Protocol

Peabody
ENERGY

7.7.2 Threatened Species Management Strategies

Management strategies will include threat abatement measures, capture and release, relocation and provision of habitat resources. The management strategies will be determined on a case-by-case basis. Some examples of possible management strategies are provided below.

Threat Abatement

Threat abatement is the implementation of management strategies at the site to alleviate threatening processes. Actions may include the modification of disturbance areas, the scheduling of vegetation clearance activities to occur at a particular time (e.g. when the hollow is not being utilised as a nesting/roosting resource by the threatened fauna species), or relocation (see below). Such strategies will be dependent on the degree of flexibility provided by mine planning.

Capture and Release

This option involves the capture and release of threatened fauna into proximal suitable habitat. Where threatened fauna is observed using a particular habitat feature, an attempt will be made utilising accepted trapping techniques by a suitably qualified and licensed ecologist, to capture the particular animal for the purpose of later release in suitable habitat.

Relocation

This option involves the relocation of roosting/nesting resources to proximal suitable habitat. For example, the Yellow-bellied Sheathtail Bat has been found to utilise a network of roosts, rather than being fixed to one roost. Hence, there is potential to relocate known roosts/nests to nearby suitable vegetation, when the roost/nest is unoccupied by the threatened species.

7.8 VISUAL IMPACTS

Revegetation will be progressive, commencing soon after the completion of landform shaping. Visual impacts associated with unvegetated mine landforms is expected to progressively reduce once the vegetative cover begins to establish. Revegetation in woodland areas will utilise native tree/shrub species, as well as grasses, characteristic of the area for consistency of colour and visual texture such as those listed in Attachment C.

Further information on the revegetation of the rehabilitation areas, regeneration areas and ECAs is provided in Section 5.

7.9 TOPSOIL MANAGEMENT

In areas of significant earthworks, topsoil and subsoil resources will be identified, stripped and, wherever practicable, spread directly onto areas prepared for rehabilitation to make use of the potential seed bank. Prior to soil stripping, soil resources will be quantified. Where a deficit of topsoil is identified, investigations will be undertaken to determine the viability of the use of subsoils and to identify the need for treatment measures (e.g. use of fertilisers) applied where there is a deficit of topsoil. Where direct spreading is not practicable, the stripped soil will be stockpiled and seeded with grasses to maintain soil viability prior to being re-spread (Table 8).

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Table 8
Soil Resource Management Strategies

Prior to Soil Stripping	During Soil Stripping and Stockpiling	Stockpiled Soil Awaiting use in Rehabilitation Works
<ul style="list-style-type: none"> Quantification of soil resources. Characterisation of the suitability of soil resources for rehabilitation works. Topsoil will be stripped prior to any land disturbance. Stripping depths will be guided by the soil survey in the WCPL EIS. Topsoil will be placed directly onto reshaped areas where possible. 	<ul style="list-style-type: none"> Minimisation of vegetation clearance. Selective stockpiling of soil according to soil type and salinity. Stockpiling of soils in a manner that does not compromise the long-term viability of the soil resource. Maximum height for stockpiles will be 3 m. 	<ul style="list-style-type: none"> Implementation of measures to ensure long-term viability of soil resources and manage soil salinity.

After: WCPL (2005).

Spoil areas will be reshaped following mining to construct a post mining landform. Appropriate drainage works will be constructed, topsoil applied and the areas will then be ripped and seeded using direct seeding techniques.

WCPL will use measures to ameliorate mine waste rock/soil materials used in rehabilitation where necessary (e.g. the use of lime, gypsum and/or fertiliser to improve the chemical and/or nutrient properties of the soil).

7.10 SEED COLLECTION AND PROPOGATION

Seed collection and propagation activities where practical, will contribute to revegetation associated with the rehabilitation of Wilpinjong Coal Mine disturbance areas. Seed collection and propagation activities will include:

- Examination of trees for their provision of seed prior to vegetation clearance.
- Collation of relevant information on target species (e.g. from past ecological studies, nurseries, local landholders, Landcare groups and/or members of the Aboriginal community).
- Progressive collection of native seed from the local area to augment revegetation resources.
- The use of collection methods such as the manual removal of plant cuttings and stripping of seed pods, fruiting cones or berries directly off the plant into collection bags for transfer to drying rooms.
- Seed extraction methods such as sun drying, oven-baking, light firing, high heat drying rooms and/or water soaking.
- The storage of seed in paper and/or calico bags in temperature controlled rooms.
- The labelling of seed collection bags with the species collected, collection location, harvest date and dry weight details.
- The maintenance of a seed inventory which will record the amount of seed collected, species type and treatment and propagation specifications.

7.11 HABITAT SALVAGE

Clearing operations will be managed to maximise the re-use of cleared vegetative material. Cleared vegetation will be re-used for a number of purposes including habitat for fauna and fence posts where practical. Habitat features such as logs, fallen limbs and hollows will be collected/salvaged where practicable to provide habitat features for fauna in rehabilitation areas, regeneration areas and ECAs.

7.12 WEED AND FERAL ANIMAL CONTROL

Weed Control

The Mid-Western Regional Council is the primary authority with responsibility for weed control in the Mid-Western Regional Shire. The declared noxious weed species list for the Mid-Western Regional Council control area is provided in Attachment D.

A weed control program will be implemented to limit the spread and colonisation of noxious and environmental weeds on WCPL-owned land and will include:

- regular inspections of WCPL-owned lands to identify areas requiring the implementation of weed management measures;
- the implementation of weed management measures including mechanical removal and application of approved herbicides in authorised areas when conditions are favourable (i.e. when light winds and dry weather prevail);
- control of noxious weeds identified on WCPL-owned land in accordance with the relevant DTIRIS NSW control category and the relevant regional weed management plan;
- follow-up inspections to assess the effectiveness of the weed management measures implemented and the requirement for any additional management measures;
- minimisation of the potential for the establishment of new weeds on ECAs by minimising the transport of weed species to and from ECAs (e.g. limiting vehicle access and minimising stock access); and
- on-going consultation with relevant agencies such as DTIRIS NSW and/or the Mid-Western Regional Council regarding weed occurrence and management technologies.

In addition, WCPL personnel and contractors will be requested as part of the site induction process to report any observations of noxious and environmental weeds.

In regard to weed management measures, physical removal and chemical application are the main weed control methods available. However, the implementation of measures that favour the restoration of healthy native vegetation is also considered an effective method of weed management.

Chemicals to be used in the chemical control of weed species will be evaluated with their Material Safety Data Sheet and chemical label to determine their registration for control of target species and the handling and safety requirements prior to spraying.

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Feral Animal Control

The Livestock Health and Pest Authority (replaces the former Rural Lands Protection Board) is the primary authority with responsibility for implementation of feral animal control in the Mid-Western Regional Shire in accordance with the requirements of the *Rural Lands Protection Act, 1998*.

A feral animal control program will be implemented to control the occurrence of animal pests. The feral animal control program will include the following:

- implementation of pest control measures (e.g. the destruction of rabbit burrows, feral cat trapping and baiting of foxes and wild dogs);
- maintenance of a clean, rubbish-free environment, particularly around administration and contractor areas in order to discourage scavenging and reduce the potential for colonisation of these areas by non-endemic fauna (e.g. rodents);
- mandatory pest control for any declared pests (i.e. rabbits, pigs and wild dogs) known to occur on WCPL-owned land;
- no domestic pets such as cats or dogs will be permitted to be brought onto the site; and
- pest control in accordance with any Pest Control Orders issued under the *Rural Lands Protection Act, 1998*.

In addition to the above, WCPL personnel and contractors will be requested as part of the site induction process to report any observations of animal pests.

7.13 RESTRICTIONS ON AREA ACCESS

Damage by vehicles can result in the compaction of soil (which can reduce the infiltration of water into the soil and restrict root growth, and consequently reduce natural regeneration), the spread of weeds and disturbance to vegetation. In order to reduce the degree of disturbance to the rehabilitation areas and ECAs, these areas will be fenced and signposted to limit access to authorised personnel only. Authorisation for vehicular entry into the ECAs will be determined by the Environmental Advisor at the time of request.

7.14 BUSHFIRE MANAGEMENT

The objective of bushfire management is to minimise the risk of bushfires on WCPL-owned land and rapidly control any bushfires, in order to minimise potential impacts to people, property and the environment.

Bushfire prevention and control measures implemented on WCPL-owned land will include:

- The training of WCPL employees and contractors in general fire awareness and response procedures.
- The provision and maintenance of on-site fire fighting equipment.
- Appropriate management of dangerous goods.
- Regular inspections of WCPL-owned land to assess the adequacy of the fire control measures and to identify areas requiring bushfire control measures to be implemented.
- Fuel management by means other than burning such as grazing and slashing.

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- Fuel management by burning where conventional fuel management strategies are inappropriate, impracticable or not successful (undertaken in consultation with relevant authorities and with relevant permits).
- Maintenance of designated firebreaks (which can act as control lines for low-intensity fires, and assist with safer access and egress for high-intensity fires, as well as providing for a defence line for back burnings) by a combination of slashing, grading or spraying.
- On-going consultation with the NSW Rural Fire Service.

In the event that bushfire management requires the clearance of vegetation (e.g. for firebreaks), the VCP will be implemented (Section 7.6).

7.15 ABORIGINAL COMMUNITY CONSULTATION

Meetings of the Cultural Heritage Liaison Sub-committee (CHLSC) will be held to discuss Wilpinjong Coal Mine activities that pertain to matters of Aboriginal cultural heritage management. Members of the Aboriginal community will be encouraged to raise any concerns regarding the rehabilitation of the mine and any potential effects rehabilitation has on Aboriginal cultural heritage.

Further detail of aboriginal community consultation is provided in the Aboriginal Cultural Heritage Management Plan and North Eastern Wiradjuri Cultural Heritage Management Plan (ACHMP).

8 REHABILITATION MONITORING PROGRAMME

Rehabilitation performance will be monitored to ensure vegetation is establishing and to determine the need for any maintenance and/or contingency measures. An overview of the content of the Rehabilitation Monitoring Programme is provided below.

The Rehabilitation Monitoring Programme includes two main components:

- monitoring of the rehabilitation areas and regeneration areas; and
- monitoring of the ECAs.

The two monitoring components are outlined in Section 8.1.

In the event that a threatened species listed under the TSC Act or EPBC Act is identified in the mine area or immediate surrounds during the implementation of the Rehabilitation Monitoring Program, the Threatened Species Management Strategies phase of the TSMP will be initiated (Section 7.7.2).

8.1 MONITORING OF REHABILITATION, ECA AND REGENERATION AREAS

A number of techniques will be utilised to monitor the performance of the rehabilitation areas, ECAs and regeneration areas including visual monitoring and flora surveys. These techniques are described below.

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8.1.1 Visual Monitoring

Visual monitoring of revegetation will be conducted as part of other routine environmental activities to ensure vegetation is establishing and to determine the need for any maintenance and/or contingency measures (such as the requirement for supplementary plantings, erosion control and weed and animal pest control). Visual assessments allow for the rapid application of remedial actions where necessary.

8.1.2 Flora and Soil Surveys for Rehabilitation Areas, ECA and Regeneration Areas

A series of monitoring locations have been set up in the ECAs to monitor regeneration of vegetation in September 2007 (Attachment E). A similar program was established in the first rehabilitation areas on the Wilpinjong Coal Mine site in September 2009 following commencement of rehabilitation work in October 2008. Regeneration monitoring sites will be established in the final quarter of 2010.

Reference sites in the undisturbed woodland will be also be established in the final quarter of 2010 to develop suitable completion criteria against which rehabilitation/regeneration performance can be assessed.

Sites will be monitored annually to record changes in vegetation progress. At each site a 50 m transect is established and the following measurements carried out:

- tree and shrub density;
- tree height;
- tree species and health rating;
- groundcover;
- biomass;
- species composition; and
- rating soil erosion.

Trees and shrubs are counted and identified within a 3 m band along each transect and height and health assessed. Measurements of groundcover, biomass and species composition are also taken in a 0.25 square metre (m²) quadrat placed at 5 m intervals along the transect. The tree health rating ranges from 0 (dead) to 5 (live, healthy, well-structured woody plant). A photograph is taken along each transect as a long term visual record of vegetation performance.

An estimate of erosion is also made at 5 m intervals along each transect, with ratings of 0 (no erosion), 1 (erosion rills < 0.1 m), 2 (erosion rills > 0.1 m), 3 (erosion gullies > 0.2 m deep), 4 (erosion gullies > 0.3 m deep) and 5 (erosion gullies > 0.5 m deep).

The parameters, methodology and units of measures used during flora sampling are outlined in Table 9.

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Table 9
Parameters, Methodology and Units of Measure for Vegetation Monitoring

Parameter	Survey Method	Units of Measure
Flora species diversity	<ul style="list-style-type: none"> Each transect will be systematically monitored to compile a list of vascular plant species (i.e. trees, shrubs, grasses and herbs) observed. 	<ul style="list-style-type: none"> Total number of flora species. Number and percent of native flora species. Number and percent of introduced flora species.
Cover	<ul style="list-style-type: none"> A count will be made of the number of individuals of each tree and shrub species on each transect. Groundcover percentage is rated along the transect. 	<ul style="list-style-type: none"> Total number of each tree species. Total number of each shrub species. Groundcover percentage for each species.
Vegetation height	<ul style="list-style-type: none"> The height of each tree or shrub is recorded. 	<ul style="list-style-type: none"> Height of woody species.
Vegetation progress	<ul style="list-style-type: none"> Photographs along each transect are taken as a visual record of long term changes in vegetation performance. 	<ul style="list-style-type: none"> At least 1 photo of each transect.

8.1.3 Geochemical Monitoring

Rehabilitated spoil areas will be monitored for spoil pH, electrical conductivity (EC) and major cations to determine whether the vegetation substrate is approaching conditions similar to those found in the reference sites. These data will be used to identify potential spoil deficiencies over time and assist with the development of maintenance programs if under-performing areas are identified during visual and other monitoring. This will also assist with determining/demonstrating whether the spoil is suitable as a long term substrate for sustainable rehabilitation.

Spoil samples will be taken to a minimum depth of 300 mm and samples taken from the 0 mm – 100 mm, 100 – 200 mm intervals and 200 – 300 mm. The samples will be taken at 10 m intervals along the monitoring transect described in Section 8.1.2 and sampled every three years.

8.1.4 Terrestrial Fauna Surveys

Terrestrial fauna surveys will be conducted to sample fauna species diversity and abundance in the rehabilitation areas, ECAs and regeneration areas. Systematic survey sites will be established to monitor amphibians, reptiles, birds and mammals. At least one survey site will be established in each major habitat type present within each ECA where practical (Figure 5), viz.:

- creek line and riparian habitats;
- woodland/open forest; and
- predominantly cleared land previously used for grazing.

Corresponding survey sites will also be established in areas of equivalent habitat type adjacent to the rehabilitation areas, ECAs and regeneration areas to provide analogue sites. These analogue sites will provide comparative data so that the long term progress of the ECAs can be determined.

The above terrestrial fauna surveys will be undertaken approximately every five years commencing five years after Project Approval. The terrestrial fauna survey methods that may be used for the flora surveys are outlined in Table 10.

Table 10
Overview of Fauna Survey Methods

Survey Technique	Description
Elliott Trapping	Small and large Elliott traps will be baited with a mixture of peanut butter and oatmeal (or similar mix) and placed at regular intervals along a transect at the survey site. In addition, small Elliott traps will be baited and mounted on trees to sample small arboreal mammals.
Cage Traps	Cage traps will be utilised to target medium sized terrestrial and arboreal mammals. The cage traps will be baited with a combination of vegetarian and meat baits.
Hair Tubes	Small and large hair tubes will be baited with a combination of vegetarian and meat baits and placed in pairs at regular intervals on the ground. In addition, large hair tubes will be baited with a combination of vegetarian and meat baits and placed in trees to survey arboreal mammals.
Pitfall Traps	Pitfall traps with drift fences (at least 5 m either side of each trap) will be established at the survey site.
Spotlighting	Spotlighting will involve two observers traversing each sampling site and immediate surrounds on foot.
Anabat Detection	Anabat™ echolocation call detector systems, each controlled by a call-activated switching device will be utilised to survey bat fauna. This will allow automatic operation of each detector from dusk to dawn.
Herpetological Searches	Systematic searches will be conducted for reptiles and amphibians. Active searching will be conducted of potential sites such as logs, leaf litter, flaking bark and rocks.
Bird Surveys	Diurnal bird censuses will be undertaken within each survey site on two separate days. The census will survey avifauna species diversity, abundance and behaviour (e.g. breeding/nesting activities). The abundance data obtained for each species by the surveys will enable an estimate to be made of the size of the population.
Call Broadcasting	Standard call playback procedures will be utilised for a range of vertebrate fauna species.
Opportunistic Observations	Opportunistic observations for vertebrate fauna, including scats and tracks, will be noted during the survey.
Tracks and Traces	Searches for tracks and traces (e.g. animal droppings, diggings and scratch marks) will be combined with other activities during the survey.
Estimation of Relative Abundance	The number of individuals observed/captured will be recorded during the survey, from which an estimate of the relative abundance of each species will be made.

8.1.5 Monitoring of Specific Enhancement Initiatives

The enhancement strategies for the ECAs (Section 7.2) will be visually monitored for their effectiveness. These enhancement strategies include fencing, selective planting, weed and pest control, and the provision of nesting/roosting boxes where necessary.

9 COMPLETION CRITERIA

Completion criteria would be used to evidence achievement of the objectives of the rehabilitation areas, regeneration areas and the ECAs.

Upon cessation of mining operations, it would be expected that tenure of the ML would be maintained by WCPL until such time as these completion criteria are achieved along with any relevant statutory requirements (e.g. fulfilment of ML conditions). WCPL would then seek to surrender the ML.

Key completion criteria for Wilpinjong Coal Mine components are proposed in Table 11. The quantitative criteria outlined in Table 12 are tentative in 2010, and will be verified following monitoring and analysis of the analogue sites between 2010 and 2012. Analogue sites will be established in the final quarter of 2010.

Table 11
Key Completion Criteria for Wilpinjong Coal Mine Components

Mine Component	Key Completion Criteria
Rehabilitation Areas	<ul style="list-style-type: none"> Woodland/riparian areas on trajectory toward self-sustaining ecosystem. Woodland/riparian areas contain flora species characteristic of native vegetation communities.
Regeneration Areas	<ul style="list-style-type: none"> Woodland/riparian areas on trajectory toward self-sustaining ecosystem. Woodland/riparian areas contain flora species characteristic of native vegetation communities.
Enhancement and Conservation Areas	<ul style="list-style-type: none"> Habitats available to flora and fauna are enhanced/improved.
– Enhancement of existing remnant vegetation (including the WBYBBRG EEC*).	
– Establishment of woodland vegetation (excluding the WBYBBRG EEC).	<ul style="list-style-type: none"> Woodland (including riparian areas) on trajectory toward self-sustaining ecosystem. Woodland (including riparian areas) contain flora species characteristic of native vegetation communities.
– Establishment of the WBYBBRG EEC.	<ul style="list-style-type: none"> EEC establishment areas on trajectory toward self-sustaining ecosystem.

* White Box, Yellow Box and Blakey's Red Gum Woodland Endangered Ecological Community.

Table 12
Quantitative Completion Criteria for Wilpinjong Coal Mine Components

Mine Component	Quantitative Completion Criteria		
	Year 1	Year 5	Year 15
Rehabilitation Areas	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 3 Stem density of woody plants > 3000 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species 	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 3 Stem density of woody plants > 1000 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species Erosion less than score 3 	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 3 Stem density of woody plants > 800 stems/ha or similar to that in analogue site Woody plant diversity > 3 upper storey species and > 3 under storey species Natural regeneration woody species > 10 stem/ha Erosion less than score 3 Soil chemistry parameters similar to those on analogue sites
Regeneration Areas	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 3 Stem density of woody plants > 1000 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species 	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 3 Stem density of woody plants > 1000 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species 	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 3 Stem density of woody plants > 800 stems/ha or similar to that in analogue site Woody plant diversity > 3 upper storey species and > 3 under storey species Natural regeneration woody species > 10 stem/ha Similar species occurrence to adjacent reference sites
Enhancement and Conservation Areas -Enhancement of existing remnant vegetation (including the WBYBBRG EEC).	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 4 Stem density of woody plants > 500 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species 	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 4 Stem density of woody plants > 500 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species 	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 4 Stem density of woody plants > 800 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species Natural regeneration woody species > 10 stem/ha Similar species occurrence to adjacent reference sites
- Establishment of woodland vegetation (excluding the WBYBBRG EEC).	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 3 Stem density of woody plants > 500 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species 	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 3 Stem density of woody plants > 500 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species 	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 3 Stem density of woody plants > 800 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species Natural regeneration woody species > 10 stem/ha Similar species occurrence to adjacent reference sites

Table 12 (Continued)
Quantitative Completion Criteria for Wilpinjong Coal Mine Components

Mine Component	Quantitative Completion Criteria		
	Year 1	Year 5	Year 15
Enhancement and Conservation Areas (Continued) – Establishment of the WBYBBRG EEC.	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 4 Stem density of woody plants > 500 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species 	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 4 Stem density of woody plants > 500 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species 	<ul style="list-style-type: none"> Groundcover > 60% Groundcover species > 4 Stem density of woody plants > 800 stems/ha Woody plant diversity > 3 upper storey species and > 3 under storey species Natural regeneration woody species > 10 stem/ha Similar species occurrence to adjacent reference sites

10 CONTINGENCY PLAN

In the event that completion criteria detailed in Section 9 are not being achieved, WCPL will implement the following Contingency Plan:

- Completion criteria that are not being achieved will be reported to the Peabody Environment and Community Manager and/or the Peabody Environmental Advisor within 24 hours of assessment completion.
- The Peabody Environment and Community Manager or the Peabody Environmental Advisor will report any completion criteria that are not being achieved to the General Manager as soon as practicable after becoming aware of the assessment results.
- WCPL will report the performance of rehabilitation/regeneration in relation to the completion criteria in the Annual Review and the MOP to DTIRIS NSW and DP&I (Section 12), including any completion criteria that are not being achieved.
- WCPL will identify an appropriate course of action with respect to achieving the identified completion criteria, in consultation with specialists and DTIRIS NSW, as necessary. For example:
 - proposed contingency measures; and
 - a program to review the effectiveness of the contingency measures.

Contingency measures will be developed in consideration of the specific circumstances of the rehabilitation/regeneration area and the assessment of environmental consequences. Potential contingency measures include the management measures described in Section 10.1 of this RMP.

- WCPL will submit the proposed course of action and the program to review the effectiveness of the contingency measures to DTIRIS NSW and DP&I in the Annual Review and the MOP for approval.
- WCPL will implement the approved course of action to the satisfaction of the DTIRIS NSW and DP&I.

10.1 POTENTIAL CONTINGENCY MEASURES

Potential contingency measures will be reviewed during revisions of this RMP. Key potential contingency measures to be implemented if completion criteria detailed in Section 9 are not being achieved may include the following:

- WCPL will complete additional monitoring of the rehabilitation/regeneration area and a review in consultation with specialists to ensure the rehabilitation/regeneration area is progressing towards the completion criteria.
- WCPL will implement additional rehabilitation/regeneration measures including: revegetation measures (e.g. supplementary planting); erosion and sediment control; and weed and animal pest control.
- WCPL will conduct rehabilitation/regeneration trials/studies of alternative management measures where rehabilitation/regeneration areas are continually not achieving completion criteria.

11 ROLES AND RESPONSIBILITIES

The Wilpinjong Coal Mine is managed by a small Peabody management team headed by a Peabody employed General Manager. Thiess employ a range of managerial and technical personnel to undertake mining, mine planning, coal processing and administrative functions at the Wilpinjong Coal Mine and are headed by a Project Manager. Specific responsibilities in relation to the RMP are set out below.

Peabody General Manager

- Ensure that sufficient resources are available to enable the effective implementation of the RMP and other environmental functions.
- Develop a RMP in consultation with the Thiess Project Manager and Peabody Environment and Community Manager.
- Monitor the performance of the RMP and provide ongoing directives as necessary.
- Attend public forums as required

Thiess Project Manager

- Ensure Thiess personnel are familiar with all environmental management plans and strategies including those associated with the RMP.
- Ensure that mining and coal processing is undertaken in accordance with all applicable legislation and regulations.
- Ensure that systems and procedures are developed and implemented to prevent or reduce environmental impacts associated with the RMP.
- Effectively delegate environmental responsibilities to Thiess personnel to achieve the environmental standards required by Peabody and government stakeholders.

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Peabody Environment and Community Manager

- Develop environmental strategies to prevent or reduce environmental impacts including those associated with the RMP.
- Effectively delegate environmental responsibilities to site personnel to achieve the environmental standards required by Peabody and government stakeholders.
- Monitor and regularly revise the performance of environmental management strategies including those associated with the RMP.
- Attend public forums as required including the Wilpinjong CCC.
- Respond to community complaints.

Peabody Environmental Advisor and Thiess Environmental Advisor

- Maintain environmental monitoring equipment including those associated with the implementation of elements of the RMP. This can be undertaken by delegation to site personnel or appropriate external resources.
- Consult with the supervising ecologist regarding the practicality of implementing fauna management strategies.
- Liaise with the local community as required.

Other Managers, Supervisors and Coordinators

- Ensure all site personnel have received the required training and exposure appropriate to their responsibilities with environmental management.
- Ensure that operational personnel are implementing all environmental requirements consistent with applicable legislation and regulations.
- Providing all data and information required for Peabody and Thiess environmental monitoring and reporting requirements.

12 ANNUAL REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

In accordance with Condition 3, Schedule 5 of the Project Approval, WCPL will conduct an Annual Review of the environmental performance of the Project by the end of December 2011, and annually thereafter.

The Annual Review will specifically address the performance of the RMP and will:

- describe the works carried out in the past year, and the works proposed to be carried out over the next year;
- include a comprehensive review of the monitoring results and complaints records for the Wilpinjong Coal Mine over the past year, including a comparison of these results against the:
 - relevant statutory requirements, limits or performance measures/criteria;
 - monitoring results of previous years; and
 - relevant predictions in the EA;

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- identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data over the life of the Wilpinjong Coal Mine;
- identify any discrepancies between the predicted and actual impacts of the Wilpinjong Coal Mine, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next year to improve the environmental performance of the Wilpinjong Coal Mine.

In accordance with Condition 11, Schedule 5 'Access to Information', WCPL will make the RMP publicly available on the Peabody website. A hard copy of the RMP will also be maintained at the Wilpinjong Coal Mine site.

13 REFERENCES

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Triggs, B. (1996) *The Wombat: Common Wombats in Australia*. University of NSW Press Ltd, Sydney.

Wilpinjong Coal Pty Limited (2005) *Wilpinjong Coal Project Environmental Impact Statement*.

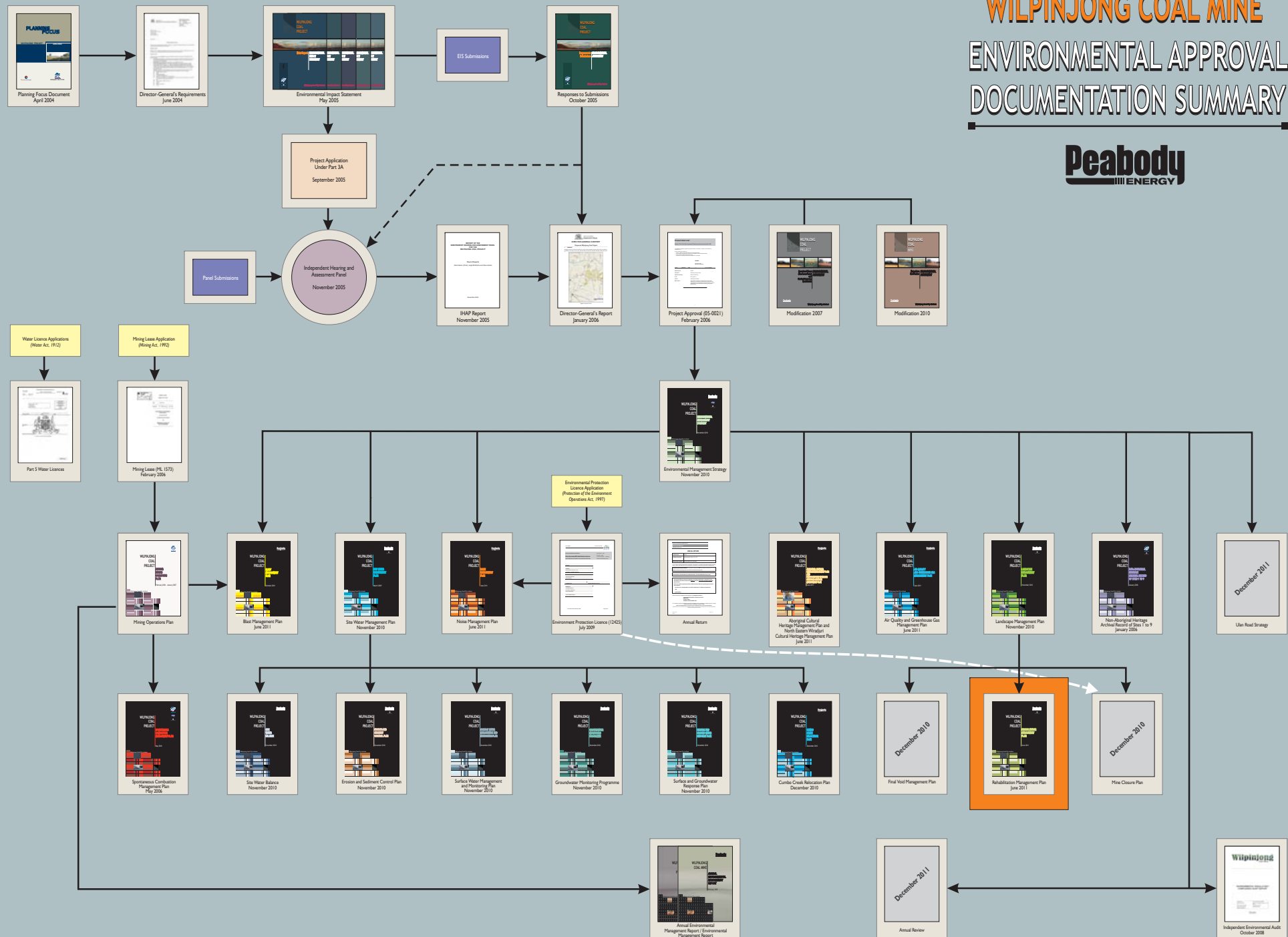
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ATTACHMENT A

WILPINJONG COAL MINE
ENVIRONMENTAL MANAGEMENT STRUCTURE

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WILPINJONG COAL MINE ENVIRONMENTAL APPROVAL DOCUMENTATION SUMMARY



ATTACHMENT B

METEOROLOGICAL DATA SUMMARY

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Meteorological Data Summary

Month	Relative Humidity Monthly Average (% mean)				Average Daily Air Temperature (°C)				Average Rainfall (mm)				Average Evapotranspiration (mm)
	Mudgee		Gulgong		Mudgee		Gulgong						
	9 a.m.	3 p.m.	9 a.m.	3 p.m.	Max.	Min.	Max.	Min.	Mudgee	Gulgong	Wollar (062032)	Wollar (062056)	
January	63	39	65	38	31.0	15.5	30.8	16.5	68.6	71.2	68.2	84.8	220
February	65	44	70	42	30.2	15.4	29.8	16.3	63.7	60.7	63.0	65.9	175
March	66	43	69	43	27.8	13.0	27.3	13.6	50.7	54.8	51.7	60.2	170
April	71	45	71	46	23.3	8.5	23.3	9.8	44.9	45.2	39.7	46.0	120
May	77	52	80	52	18.8	5.0	18.9	6.5	50.5	45.9	39.0	46.1	85
June	80	56	84	57	15.2	2.6	15.4	3.4	54.3	50.0	43.1	40.9	65
July	79	53	83	53	14.4	1.3	14.6	2.5	53.3	48.5	41.3	50.3	70
August	74	49	77	48	16.0	2.3	16.3	3.4	54.0	47.2	42.4	53.5	100
September	68	46	70	46	19.6	4.4	19.3	6.1	51.7	46.3	39.5	54.4	120
October	64	44	63	42	23.4	7.6	23.2	9.1	60.5	57.0	54.2	67.2	168
November	61	39	63	39	26.9	10.8	26.3	11.9	59.3	57.9	52.2	58.8	200
December	60	37	61	36	29.8	13.7	29.7	14.9	63.2	63.9	56.6	66.4	235
Annual Average	69	46	72	45	23.0	8.3	22.8	9.4	-	-	-	-	-
Annual Average Total									674.6	648.6	590.7	696.2	1,728

Source: Bureau of Meteorology (2005).

ATTACHMENT C

PROVISIONAL LIST OF NATIVE SPECIES TO BE USED IN REVEGETATION

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Provisional List of Native Species to be used in Revegetation

Scientific Name	Common Name
Trees	
<i>Allocasuarina luehmannii</i>	Bulloak
<i>Allocasuarina verticillata</i>	Drooping Sheoak
<i>Casuarina cunninghamiana</i>	River Oak
<i>Angophora floribunda</i>	Rough-barked Apple
<i>Eucalyptus albens</i>	White Box
<i>Eucalyptus blakelyi</i>	Blakely's Red Gum
<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark
<i>Eucalyptus melliodora</i>	Yellow Box
<i>Eucalyptus moluccana</i>	Grey Box
Shrubs	
<i>Acacia implexa</i>	Hickory Wattle
<i>Acacia decora</i>	Western Silver Wattle
<i>Acacia ulicifolia</i>	Prickly Moses
Grasses and Herbs	
<i>Austrodanthonia</i> sp.	A Wallaby Grass
<i>Themeda australis</i>	Kangaroo Grass
<i>Poa labillardieri</i>	Tussock Grass
<i>Austrostipa scabra</i>	Speargrass
<i>Austrostipa verticillata</i>	Slender Bamboo Grass
<i>Dichelachne micrantha</i>	Shorthair Plumegrass
<i>Elymus scaber</i>	Common Wheatgrass
<i>Lachnagrostis filiformis</i>	Blown Grass
<i>Aristida ramosa</i>	Wiregrass
<i>Bothriochloa macra/decipiens</i>	Redgrass/Pitted Bluegrass
<i>Chloris truncata</i>	Windmill Grass
<i>Chloris ventricosa</i>	Tall Windmill Grass
<i>Cymbopogon refractus</i>	Barbed Wire Grass
<i>Digitaria brownii</i>	Cotton Panic Grass
<i>Eragrostis curvula</i>	Consul Lovegrass
<i>Phalaris aquatica</i>	Phalaris
<i>Digitaria divaricatissima</i>	Umbrella Grass
<i>Eriochloa pseudoacrotricha</i>	Early Spring Grass
<i>Panicum effusum</i>	Hairy Panic

ATTACHMENT D

NOXIOUS WEEDS RELEVANT TO THE RMP

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Noxious Weeds in the Mid-Western Regional Council Control Area

Common Name	Scientific Name	Control Class ¹
African Boxthorn	<i>Lycium ferocissimum</i>	W4a
African Feathergrass	<i>Pennisetum macrourum</i>	W5
African Turnipweed	<i>Sisymbrium runcinatum</i>	W5
African Turnipweed	<i>Sisymbrium thellungii</i>	W5
Alligator Weed	<i>Althernanthera philoxeroides</i>	W2
Anchored Water Hyacinth	<i>Eichhornia azurea</i>	W1
Annual Ragweed	<i>Ambrosia artemisiifolia</i>	W5
Arrowhead	<i>Sagittaria montevidensis</i>	W4b
Artichoke Thistle	<i>Cynara cardunculus</i>	W5
Athel Pine	<i>Tamarix aphylla</i>	W5
Bathurst, Noogoora, Hunter, South American, Californian, Cockle Burrs	<i>Xanthium</i> spp.	W4a
Bear-Skin Fescue	<i>Festuca gautieri</i>	W5
Black Knapweed	<i>Centaurea nigra</i>	W1
Blackberry	<i>Rubus fruticosus</i> (agg. spp.) ²	W4ab
Blue Heliotrope	<i>Heliotropium amplexicaule</i>	W4a
Bridal Creeper	<i>Asparagus asparagoides</i>	W4b
Broomrapes	<i>Orobancha</i> spp. ³	W1
Burr Ragweed	<i>Ambrosia confertiflora</i>	W5
Cabomba	<i>Cabomba</i> spp. except <i>C. furcata</i>	W5
Cayenne Snakeweed	<i>Stachytarpheta cayennensis</i>	W5
Chilean Needle Grass	<i>Nassella neesiana</i>	W4ab
Chinese Violet	<i>Asystasia gangetica</i> subsp. <i>micrantha</i>	W1
Cineraria	<i>Cineraria lyratiformis</i>	W4a
Clockweed	<i>Gaura parviflora</i>	W5
Columbus Grass	<i>Sorghum x alnum</i>	W3
Coolatai Grass	<i>Hyparrhenia hirta</i>	W3
Corn Sowthistle	<i>Sonchus arvensis</i>	W5
Dodder	<i>Cuscuta</i> spp. ⁴	W5
East Indian Hygrophila	<i>Hygrophila polysperma</i>	W1
English Broom	<i>Cytisus scoparius</i>	W4a
Espartillo	<i>Amelichloa brachychaeta</i> , <i>Amelichloa caudata</i>	W5
Eurasian Water Milfoil	<i>Myriophyllum spicatum</i>	W1
Fine-bristled Burr Grass	<i>Cenchrus brownii</i>	W5
Fountain Grass	<i>Pennisetum setaceum</i>	W5
Gallon's Curse	<i>Cenchrus biflorus</i>	W5
Galvanised Burr	<i>Sclerolaena birchii</i>	W4c
Glaucous Starthistle	<i>Carthamus glaucus</i>	W5
Golden Dodder	<i>Cuscuta campestris</i>	W4a
Golden Thistle	<i>Scolymus hispanicus</i>	W5
Green Cestrum	<i>Cestrum parqui</i>	W3
Harrisia Cactus	<i>Harrisia</i> spp.	W4ab
Hawkweed	<i>Hieracium</i> spp.	W1
Hemlock	<i>Conium maculatum</i>	W4a

Noxious Weeds in the Mid-Western Regional Council Control Area (Continued)

Common Name	Scientific Name	Control Class ¹
Horsetail	<i>Equisetum</i> spp.	W1
Hymenachne	<i>Hymenachne amplexicaulis</i>	W1
Johnson Grass	<i>Sorghum halepense</i>	W3
Karoo Thorn	<i>Acacia karroo</i>	W1
Kochia	<i>Bassia scoparia</i> ⁵	W1
Lacy Ragweed	<i>Ambrosia tenuifolia</i>	W4a
Lagarosiphon	<i>Lagarosiphon major</i>	W1
Lantana	<i>Lantana</i> spp.	W4b
Leafy Elodea	<i>Egeria densa</i>	W4b
Lippia	<i>Phyla canescens</i>	W4ab ⁶
Long-leaf Willow Primrose	<i>Ludwigia longifolia</i>	W4b
Long-style Feather Grass	<i>Pennisetum villosum</i>	W4a
Mesquite	<i>Prosopis</i> spp.	W2
Mexican Feather Grass	<i>Nassella tenuissima</i>	W1
Mexican Poppy	<i>Argemone mexicana</i>	W5
Miconia	<i>Miconia</i> spp.	W1
Mimosa	<i>Mimosa pigra</i>	W1
Mintweed	<i>Salvia reflexa</i>	W4a
Mossman River Grass	<i>Cenchrus echinatus</i>	W5
Nodding Thistle	<i>Carduus nutans</i>	W4a
Noogoora Burr	<i>Xanthium</i> spp.	W4a
Pampas Grass	<i>Cortaderia</i> spp.	W4a
Parkinsonia	<i>Parkinsonia aculeata</i>	W2
Parthenium Weed	<i>Parthenium hysterophorus</i>	W1
Perennial Ragweed	<i>Ambrosia psilostachya</i>	W4a
Pond Apple	<i>Annona glabra</i>	W1
Prairie Ground Cherry	<i>Physalis hederifolia</i>	W4a
Prickly Acacia	<i>Acacia nilotica</i>	W1
Prickly Pear	<i>Cylindropuntia</i> spp.	W4ab
Prickly Pear	<i>Opuntia</i> spp. except <i>O. ficus-indica</i>	W4ab
Privet (Broad-leaf)	<i>Ligustrum lucidum</i>	W4ab
Privet (Narrow-leaf/Chinese)	<i>Ligustrum sinense</i>	W4ab
Red Rice	<i>Oryza rufipogon</i>	W5
Rhus Tree	<i>Toxicodendron succedaneum</i>	W4a
Rubbervine	<i>Cryptostegia grandiflora</i>	W1
Sagittaria	<i>Sagittaria platyphylla</i>	W5
Salvinia	<i>Salvinia molesta</i>	W2
Scotch Broom	<i>Cytisus scoparius</i>	W4a
Scotch, Stemless, Illyrian and Taurian Thistles	<i>Onopordum</i> species	W4a
Senegal Tea Plant	<i>Gymnocoronis spilanthoides</i>	W1
Serrated Tussock	<i>Nassella trichotoma</i>	W4ab
Siam Weed	<i>Chromolaena odorata</i>	W1
Silk Forage Sorghum	<i>Sorghum</i> spp. hybrid cultivar	W3

Noxious Weeds in the Mid-Western Regional Council Control Area (Continued)

Common Name	Scientific Name	Control Class ¹
Silverleaf Nightshade	<i>Solanum elaeagnifolium</i>	W4a
Smooth-Stemmed Turnip	<i>Brassica barrelieri</i> subsp. <i>oxyrrhina</i>	W5
Soldier Thistle	<i>Picnomon acarna</i>	W5
Spiny Burrgrass	<i>Cenchrus incertus</i>	W4ab
Spiny Burrgrass	<i>Cenchrus longispinus</i>	W4ab
Spotted Knapweed	<i>Centaurea stoebe</i> subsp. <i>micranthos</i>	W1
St. John's Wort	<i>Hypericum perforatum</i>	W4a
Sweet Briar	<i>Rosa rubiginosa</i>	W4a
Texas Blueweed	<i>Helianthus ciliaris</i>	W5
Tree-of-heaven	<i>Ailanthus altissima</i>	W4a
Water Caltrop	<i>Trapa</i> spp.	W1
Water Hyacinth	<i>Eichhornia crassipes</i>	W2
Water Lettuce	<i>Pistia stratiotes</i>	W1
Water Soldier	<i>Stratiotes aloides</i>	W1
Willows	<i>Salix</i> spp. ⁷	W5
Witchweed	<i>Striga</i> spp. except <i>S. parviflora</i>	W1
Yellow Burrhead	<i>Limncharis flava</i>	W1
Yellow Nutgrass	<i>Cyperus esculentus</i>	W5

Source: Industry & Investment NSW (2010).

1 Control Class:

W1: Plants that pose a potentially serious threat to primary production or the environment and are not present in the State or are present only to a limited extent.

The plant must be eradicated from the land and the land must be kept free of the plant.

W2: Plants that pose a potentially serious threat to primary production or the environment of a region to which the order applies and are not present in the region or are present only to a limited extent.

The plant must be eradicated from the land and the land must be kept free of the plant.

W3: Plants that pose a potentially serious threat to primary production or the environment of a region to which the order applies, are not widely distributed in the area and are likely to spread in the area or to another area.

The plant must be fully and continuously suppressed and destroyed.

W4: Plants that pose a potentially serious threat to primary production, the environment or human health, are widely distributed in an area to which the order applies and are likely to spread in the area or to another area.

W4a: The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority.

W4b: The plant must not be sold, propagated or knowingly distributed.

W4ab: The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant must not be sold, propagated or knowingly distributed.

W4c: The plant must be controlled where it impacts on normal agricultural practices including cropping and pasture management.

W5: Plants that are likely, by their sale or the sale of their seeds or movement within the State or an area of the State, to spread in the State or outside the State.

The requirements in the *Noxious Weeds Act, 1993* for a notifiable weed must be complied with.

2 Except cultivars Black satin, Chehalem, Chester Thornless, Dirksen Thornless, Loch Ness, Murrindindi, Silvan, Smoothstem and Thornfree.

3 Includes all *Orobanch* spp. except the native *O. cernua* variety *australiana* and *O. minor*.

4 Includes all *Cuscuta* spp. except the native species *C. australis*, *C. tasmanica* and *C. victoriana*.

5 Except *Bassia scoparia* subsp. *trichophylla*.

6 This plant may be sold, propagated and/or knowingly distributed by a person involved in hay or lucerne production.

7 Includes all *Salix* spp. except *S. babylonica*, *S. x reichardtii* and *S. x calodendron*.

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ATTACHMENT E

FLORA AND SOIL SURVEY SITES

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Flora and Soil Survey Sites

Enhancement and Conservation Area (ECA) A		
Site number	Coordinates (GDA94 Zone 55)	
A1	772,033	6,416,232
A2	772,151	6,416,822
A3	772,460	6,417,040
A4	772,634	6,417,351
A5	773,117	6,417,709
A6	773,261	6,416,962
A7	773,222	6,416,771
A8	773,420	6,416,971
A9	773,485	6,416,607
A10	773,538	6,416,979
A12	773,573	6,417,252
A13	773,763	6,416,773
A14	773,817	6,416,670
A15	773,773	6,416,450

Enhancement and Conservation Area (ECA) C		
Site number	Coordinates (GDA94 Zone 55)	
C1	768,634	6,418,562
C2	768,547	6,418,092
C3	768,515	6,417,983
C4	768,543	6,417,887
C5	768,562	6,417,754
C6	768,500	6,416,973
C7	768,444	6,416,912
C8	768,400	6,416,827
C9	768,365	6,416,914
C10	768,232	6,416,909
C11	769,000	6,417,240
C12	768,969	6,417,170

Enhancement and Conservation Area (ECA) B		
Site number	Coordinates (GDA94 Zone 55)	
B1	770,433	6,420,843
B2	770,350	6,420,516
B3	770,648	6,420,451
B4	770,695	6,420,487
B5	770,735	6,420,393
B6	770,890	6,420,435
B7	771,166	6,420,623
B8	771,091	6,420,279
B9	770,682	6,419,938
B10	771,268	6,420,103
B11	772,061	6,420,337
B12	773,065	6,420,508

Wilpinjong Creek		
Site number	Coordinates (GDA94 Zone 55)	
WT1	771,548	6,419,984
WT2	770,913	6,419,874
WT3	771,089	6,419,870
WT4	770,740	6,419,890
WT5	770,009	6,420,896

Wilpinjong Coal Rehabilitation		
Site number	Coordinates (GDA94 Zone 55)	
R1	770,482	6,419,353
R2	770,373	6,419,421
R3	770,360	6,419,262
R4	770,353	6,419,152
R5	770,234	6,419,256

